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THE CANADA FARMER

VOL. II. No. 9.

TORONTO, CANADA, SEPTEMBER 15, 1870.

NEW SERIES.

The Field.

Hints on Autumn Work.

FALL PLOUGHING.—As much of this should be done as time and means will allow. Let the work begin as early as possible, in order that the teams may not be too much pushed to get it done before hard frosts render the work impossible. If every field intended for spring crops can be fall ploughed, so much the better. Land that is fall ploughed always is more certain to yield good crops, especially of barley and spring wheat, than if this work is neglected. Land intended for roots should never fail to be fall ploughed. There is more value and profit in the practice than most farmers ever dream of. On clay soils, especially, it is of the greatest value. If a barrel of salt per acre can be sown on such soils immediately after the fall ploughing is done, it will help greatly to dissolve and render available the mineral elements of plant food in them.

No harrowing should be allowed on fall ploughed lands. The rougher the state in which they can be left exposed to the action of frosts the better. It is generally noticeable that those farmers who give the most cultivation to their soils, provided they contain sufficient plant food, always obtain the best crops, and those who get their spring crops in earliest, and in the best manner, are least liable to suffer from such unfavourable seasons in early spring as that of 1870. Land that is fall ploughed, well laid up in ridges, and water-furrowed, is usually ready to be worked much earlier in spring than that not so treated.

SEEDING WINTER WHEAT.—Every effort should be made to get this operation performed as early as possible. A good tillering out in the fall is of great advantage to the wheat-grower, and with some varieties like the Soules and Blue-stem, it is especially so. The Diehl is allowed to be a variety that succeeds well only on good rich soils, and

with good culture, though it may make a fair stand if sown somewhat late. The Lowe wheat promises well, though we are not yet well informed as to its particular merits. It is of fine quality where grown this year. The new varieties lately introduced by Mr. Arnold of Paris, and said to be obtained by cross-fertilization, we have not yet had an opportunity of examining this season. Their value can only be determined by experience in successive years, and without this experience no one can rightly speak either in their favour or otherwise. Now that the once destructive wheat midge seems to have in a great measure ceased its ravages in the crops of winter wheat, our farmers can with confidence grow more of that old favourite, the Soules, than which probably there is no better and more suitable variety for this climate. It combines high quality with productiveness, under good culture, and always commands the top price in the market. Let particular pains be taken to have the seed wheat made clean and free from seeds.

SELECTING SEED CORN.—In those sections where corn can be profitably grown, it is well to be particular in selecting ears from the growing crop for next season's seed. The time to do it is just when the corn is ready to be cut. Choose the finest and largest ears from the strongest stalks, and particularly from stalks bearing two ears; the uppermost ear is usually the best. See that the corn completely covers the cob from bottom to top, and is solidly laid together. Open out the husks, but do not detach them, and hang up the corn by them in a dry place, there to remain all winter. By thus selecting the very best ears, the corn crop on a farm may be greatly improved from year to year in productiveness and value.

STACKING STRAW.—When the grain crops are being threshed out, let every care be taken to preserve the straw clean and sweet, by having it properly stacked, if there is not room enough to stow it away under cover. A vast amount of straw is uselessly wasted for want of a little attention to this matter,

and frequently straw stacks are so badly put up, or get undermined by stock, that during the winter they get blown over, and smother some of the stock in the yard. We had a neighbour who lost several head of cattle in this way during a stormy winter's night.

TOP-DRESSING MEADOWS.—Those farmers who have on hand a supply of well rotted or composted manure should not fail to give a good top-dressing of it to such of their meadows as are most in need of a little stimulating in order to carry heavy crops of grass. The fall is the time to do this work, as then the manure will have the benefit of the fall rains to wash it down among the grass roots. It will also act as a slight mulch to protect the roots from being heaved out by frost. The dressing need not be heavy, say eight to ten waggon loads per acre, scattered evenly over the surface from the waggon box.

GATHERING APPLES.—In this matter there is often too much carelessness shown. Many find it less troublesome to sell the entire produce of their orchards, (reserving only such trees as may be required for a supply of fruit for home use), to some dealer, who having the facilities at command, and knowing the importance of care, will take pains to have them properly gathered, sorted and barrelled. In this case the farmer can generally obtain a fair price for good fruit, and runs no risk of loss from freezing up or bad handling. Sell as early as you can get a fair offer, and insist on a payment down sufficient to cover any risk of loss should the buyer neglect to gather them in time. The better the fruit, the better should be the price. Those who can spare the time and expense of barrels, and will take the trouble to gather and sort properly, and have a good place for storing away, will find their profit in keeping over their fruit, provided they have really valuable winter-keeping varieties.

POTATOES.—This crop should be taken up as soon as they are ripe, which is when the tops are dead. There is nothing gained by leaving them in the soil after they are ripe, and some risk run of freezing up, or rotting should the weather prove wet. On no account

should they be stored away till they are dry, and yet they should not get exposed too much to the sun or their flavour will be injured.

GATHERING AND STORING ROOTS. Do not neglect this operation too long, and get your crop caught in the hard jaws of Jack Frost while in the ground, as was the case last year with many. Sugar-beets must be taken up and stored before frost touches them; mangels and carrots are easily injured by frost, though they will bear a slight touch of it. Swedes can stand frost till it gets severe enough to harden the ground, but in any case they are safer if made sure of in good time, as soon as they have attained their growth, and they will not grow to any extent after the first hard frost comes. If they are taken up and piled in the field in small heaps, with a slight covering of straw or earth, to sweat a little before being stored away for the winter, they will keep all the better, and as soon as the ground freezes up advantage can be taken of fine days to cart them to the root-house or barn cellar.

FATTENING HOGS.—The earlier this is begun, after the feed for them can be had, the better. If their food can be cooked, so much the better. Hogs thrive and fatten more quickly and at less cost on cooked than raw food. If that cannot be conveniently done, the next best thing is to have what grain or pulse is used soaked in water till soft and fermentation has begun. If, before putting up to fatten, every hog could be weighed, and its weight recorded, and an account kept of the weight and value of each kind of food supplied, and the state it was in when fed out, cooked or raw, and the hogs weighed alive before slaughtering, much could be done to ascertain which is the best and most profitable manner of fattening them. We hope some of our most enterprising readers will try some experiments of this kind with different foods and lots of hogs, and report results. It is well for the farmer to know by actual experience what he is about, instead of working in the dark, as too many do.

Let us have some careful and reliable facts about the difference between the live and dressed weight of hogs when slaughtered, noting the breed, so that something definite may be arrived at as to the value of each breed, and the amount of shrinkage that ought to be allowed in selling fat hogs alive. English experiments have shown that good, well fatted hogs will dress from 80 to 87½ per cent. of their live weight. It would be well to know which pays best, to sell the live hog or the dressed carcass.

CROPS IN NOVA SCOTIA.—The last number of the *Nova Scotian Journal of Agriculture* gives a favourable report of the condition of crops in that Province. Most of the cereals are said to be above an average. There is a great increase in the extent of wheat, oats, barley, roots, and especially potatoes, grown by the farmers this season. The pastures were in good condition and dairy produce was favourably reported.

Beet-root and Beet-root Sugar.

When we tell our agricultural readers that the value of the sugar and molasses which are imported into the Provinces of Ontario and Quebec yearly, (and the whole of which we could produce ourselves), amounts to nearly *Three millions of dollars*, while the wheat and flour which we export amount to only about double that value, the question seems too large to be dealt with by the agricultural community, and the farmer, with a sigh, thinks, "that is too big an affair for me; I must leave that to the Parliament of the Dominion." But when we tell the farmer there is a crop which he can raise on his own farm, which in value will amount (in addition to his other produce) to any sum from three hundred to one thousand dollars annually, he will begin to pay some attention to his advisers, and see if he cannot carry out what it is proposed he should do. This is the fact as regards beet-root sugar and the beet-root. It is a crop which every one can raise; and if once public attention can be directed to it, farmers will find it their interest to include this among their regular crops.

First, let us show what is done with beet-root and beet-root sugar in France, Germany, and Belgium; all of these countries no better adapted for growing the root than Canada is.

In the year 1866, the total sugar produced in the world from all sources was two millions three hundred and twenty thousand tons; and of this the sugar produced from the beet-root amounted to nearly one-fourth, and the whole of this beet sugar was grown in France, Belgium, Germany and the other European countries, none of which are more favourably situated for its production than Canada is. Of this enormous amount of sugar France alone produced two hundred and seventy-five thousand tons. In addition to this, an immense quantity of spirit was also distilled from the root direct, and from the molasses and other fermentable matters produced during the manufacture of the sugar, and most of which spirit is turned into French brandy. Now, if the French can grow sugar at this rate, the Canadians can also produce it when once the thing is understood, and its advantages appreciated.

Every farmer throughout Canada knows how to grow mangel-wurtzel, and consequently he knows how to grow beet, for the sugar-beet requires no other culture than the mangel; the man that can grow the one can grow the other. Undoubtedly, before we can have beet-root sugar, we must grow the sugar-beet, and it is fortunate that that root is not only as easily grown as the mangel, but is actually more profitable to grow as cattle food for the farmer. In mangels (or rather "mangolds," but the former term is now most generally used), the root consists of 91 per cent. water, and 9 of solid matter. In Silesian, or sugar beet, the root consists

of 82 per cent. water and 18 of solid matter. Now, as the only profitable, nourishing part of the root is the solid matter, (for water can be supplied at a far cheaper rate than by growing it in the shape of roots), it is clear that it must be better to grow the sugar-beet than the mangel, for there is twice the solid matter in the beet; so that no one can have any excuse for growing the mangel in place of the sugar-beet. Again, to do well, the mangel must have a great deal of room; this allows for the growth of weeds, and requires at least one extra hoeing; whereas the sugar beet can be grown far closer together, both between and in the rows, and its leaves cover the ground and smother the weeds better than the mangel does. The sugar-beet grows more under the ground than the mangel, and when grown for sugar requires to be earthed up, and is doubtless somewhat harder to get out of the ground at harvest time; but being so covered, it is far less liable to injury from frost than the mangel, should accident prevent its being harvested, or should early frost set in.

Then, again, the mangel contains two per cent. of salt, while the sugar-beet contains only one per cent. of salt, so that the sugar-beet is the least exhausting crop of the two. There can, therefore, be no reason why the sugar-beet should not be grown on every farm, even if only used for cattle. It is more nourishing, less bulky, requires less house-room, is equally easily cultivated, and, in fact, more profitable than mangel; cows are fonder of it, it makes better milk and butter; the leaves are as good for food, and the crop is both a safer crop and a more profitable one. There is, therefore, no valid reason why the raw material for the sugar manufactures should not be produced here in any quantity.

We next come to the manufacture of the sugar, and here we find that popular prejudice has already implanted in the agricultural mind an idea that beet-root sugar can only be manufactured in large and expensive buildings, and on an enormous scale. This idea has got so firm a hold on the public mind, that it will take a good many small manufactories in actual operation to banish it; but that it will be banished is as certain as that sugar-beet can be grown as easily and with greater profit than mangel-wurtzel.

The manufacture of beet-root sugar was in the first place a state necessity. The great Napoleon's policy was that France should be self-sustaining, and should be independent of British and other Colonial produce; this could not be unless sugar could be produced as a French manufacture. Napoleon called in the aid of the great chemists of the day. They pointed out starch sugar and the sugar from beets as the only substitute. The starch sugar as an edible was soon abandoned, while that from beets was as quickly brought to a moderate perfection; the necessity of the state required an immense supply, and to

meet this, enormous manufactories were erected. These were fitted up, not by practical, but by scientific men; cost of production was in a measure lost sight of in the necessity for quantity, and the consequence was unnecessarily great expense in machinery and buildings, which, when erected, could not be altered or amended to meet the requirements of practice and experience and the progress of invention.

It is an indubitable fact that no manufacture ever reaches perfection so quickly as it does when it is originated by the people. Science comes in much better to mend practical errors than to originate processes. The object of science is to produce *in perfection*, that of popular effort is to produce with *profit*. Where a manufacture is in the hands of the people the utmost ingenuity of thousands is exerted; whereas, when science originates, it feels bound by its own rules, and seldom branches out. Science ignores accidents; everything must be produced and carried as "secundem artem." Popular effort tries everything; and amongst the millions of experiments which popular effort makes, there will be many important successes which would never be attained by more regular means; accident has originated many of the most important improvements in the world. It is true that science can always step in and ascertain the reason of the success, and in doing so will almost always improve upon the original; but the purely scientific man, for his own credit's sake, will seldom go out of the beaten track, and incur loss or be supposed to commit errors, where there is but little or no probability of success. So it was with the cotton manufacture; when first started it was so profitable and promised such mines of wealth and easy work, that it called forth the exertions of the entire population; members of every imaginable trade left their ordinary avocations, and rushed to the spinning and weaving of cotton; the shoemaker, knowing the properties of leather, when he came to be a cotton spinner and weaver, introduced his original material into all such parts of his new machinery as admitted of it; the tinsmith and sheet-iron worker could, and did, prepare tools and machinery of equal efficiency, and at a quarter the cost of that made from more expensive materials; and so on with fifty trades, each one adapted such material and skill as he had originally used for a different purpose to the manufacture of cotton. Millions of mistakes were made, but hundreds of improvements were made also; the mistakes sunk with their projectors, the improvements, when aggregated, have made the cotton interest of England the greatest in the world. As it was said above, the opposite to this was the case with the beet-root sugar manufacture; it was required in full growth, and not having passed through the necessary stages of infancy, youth, adolescence, and maturity, came forth an imperfect, instead of a perfect, process.

Hence some of the most important elements of success are only just now being adopted. For instance, refiners of sugar had only been used to deal with sugar in its dry and crystallized state as brought from tropical climes, where skilled labour could not be had to refine it; hence, in the first manufacture of beet-root sugar, the coarse sugar was made from the juice of the root, and then subjected to the expensive process of refining to get rid of the impurities, many of which had occurred in bringing it to its crude state of brown sugar. Now, the case is altered; the refiner takes the juice when brought to a syrupy consistency, and before it is burned by evaporative process, (and it is always more or less so burned or coloured); the refiner now takes it in the state of syrup, whenever he can get it in that shape, and at once reduces it into refined or loaf sugar. Thus enormous savings are effected, and a more perfect product is attained. The first beet-root sugar manufactory that has been erected in England is for syrup only, it belongs to a refiner, and as soon as the juice is sufficiently reduced he takes it off to his London premises and refines it into white sugar at once.

Another simple discovery has just been made. When, owing to certain accidents of nature or cultivation, the beet-roots have imbibed from the earth a more than due proportion of salt, they produce uncrystallizable sugar, to the great loss of both the manufacturer and the farmer. The extraction of this salt from the sugar was for a long time an impossibility, and such sugar as contained it and would not crystallize, was abandoned to the distiller or molasses cistern. Now, the following simple process is found to free the syrup from salt, and to render the sugar all crystallizable: Long troughs are provided with partitions at small spaces, which partitions are made of skin, bladder, parchment, or parchment paper; the compartments are filled alternately with syrup and with water. Thus, partition No. 1 will be filled with molasses or syrup; partition No. 2 with water, No. 3 with syrup, No. 4 with water, and so on. The article now used as being equally efficacious, and the cheapest, is paper, which, by the action of sulphuric acid, has been made into artificial parchment, and is called parchment paper. Improbable and impossible as it seems, the salt leaves the molasses or syrup and goes through the dividing partitions into the water, while the pure sugary syrup is kept back. When the operation is completed, which is in a very short time, the contents of the compartments are withdrawn, the sugar at once crystallized, and the salt liquid either reduced to its elements, or otherwise employed for different purposes.

Now, had the manufacture of beet-root sugar progressed naturally, from small things to great, these facts, and a hundred others, would have become known to the operators. Science, although it pointed out the evil, failed in the first place to produce the re-

medy, although when produced, either by experiment or accident, science has made the most of it, and added further improvements and information.

It will thus be seen that at the present time the manufacture of beet-root sugar is beginning to be so well understood, that we can afford to drop the heavy and cumbersome machinery adapted to it in large manufactories, and by simplifying the process adapt it to the means and skill of the producers of the roots.

NO. II.

It is only necessary to arouse the attention of the Canadian farmer in order to effect the manufacture of beet-root sugar as a home article, made as maple sugar is made, and by processes requiring far less skill than the manufacture of good butter and cheese. The farmer's common-sense reasoning is this: An acre of sugar beets costs no more to raise than an acre of mangels. When reduced into sugar by the help of the labour of his own family, and the wood growing on his own farm, he gets nearly two thousand pounds weight of sugar, while the refuse and other matters will fully pay for the expense of conversion.

Farmers will naturally say, "Yes, that may be all true, but I never saw beet-root sugar in my life, and I do not know that there is such a thing."

We reply:—"You never use refined sugar in your tea and coffee, nor use molasses or treacle that have been purchased at the stores, that one-third at least of each article is not made from beet-root sugar, grown on the continent of Europe, and brought into Canada under a heavy duty. You do not know this, but it is a fact.

Now let us look at the thing from a common-sense point of view, and there are thousands of readers who are quite as capable as the writer, or any other man, of analyzing and bringing down to everyday practice the elaborate system pursued in the large manufactories.

Sugar beets require to be ground or grated as finely as possible, but to that process we are all well accustomed in our cider mills. The juice then must be separated from the pulp—also in a similar way to cider-making. The more clear and perfectly strained the juice is, the more easy will be the subsequent process. If it is thought well, the sweet that remains in the ground pulp may be leached out with water, but whether it is worth doing so is a question for your own judgment. If you do not get the remainder of the sweet, the cattle do when consuming the pulp, so that it is possibly not worth the trouble of getting out more than you can squeeze out in your cider press. The juice will, of course, be strained into the boiler, and you then have what is equivalent to so much maple sap, only far sweeter and stronger; but there are impurities in it, and

these impurities must be got rid of. The first thing to do is to raise the heat of the liquor to 178 degrees Fahrenheit, then add quick lime which has been liquefied with water and strained, in the proportion of one and a half ounces of dry lime to one hundred pounds of juice. This is well mixed by stirring, and when well united, the heat in the boiler is gradually raised. The action of the lime combined with the juice causes a portion of the impurities to coagulate, while other portions seem to be caught up by the action of the lime; the whole of the impurities rise as a scum to the top of the liquor, and must be carefully skimmed off, taking care not again to mix them with the juice. In large factories they draw the purified liquor off by a tap in the lower part of the boiler, but in a private and small way, skimming will answer just as well. The liquor is not brought exactly to a boil, but the heat is raised and continued until the scum is properly formed. A little experience shows how to do this.

The purified juice is now boiled until it is reduced to a syrup-like state. In the boiling there will be a precipitate of some of the dissolved lime, which is not allowed again to mix with the juice.

This syrup is then run through a charcoal filter, which further purifies it, and it must then be submitted to the system of the troughs already described, containing divisions of thin skin or parchment paper. The action of these troughs takes out all the salts which the juice contains, and leaves the syrup with nothing in it but pure crystallizable sugar and water. The syrup is then further evaporated, until it is brought down to a proper strength for graining, just as maple syrup is, and it then is set by until the sugar forms; and this sugar can be brought to a greater state of purity by running off the molasses, and either refining it in the ordinary way or by claying it, which process will be described in a future article, or it can be run into cakes like maple sugar. Now there is nothing in all this which cannot be done by any person of ordinary intelligence. Any one who can make maple sugar can make beet-root sugar, if they will, by following out the course here pointed out, and the hints now given.

In cases where the farmer is near a sugar refinery, or within reach of one, the concentrated syrup is at once a merchantable commodity. All the farmer has in that case to do is to reduce the syrup to so strong a state that it will not ferment, barrel it up, and take it to the nearest sugar refinery, and they will gladly give all it is worth. This saves all the difficult part of the process, and gives the farmer a much better chance than he would otherwise have. There are now sugar refineries in Montreal on an enormous scale; there is one now erecting in Toronto which will also be very large, and in the course of far less time than it will take to persuade farmers to cultivate the roots, and

prepare the crude syrup, that article will bring a definite price according to its strength and purity, and be merchantable at every country store, just as potash now is.

The first successful beet root sugar manufactory which has been established in England is at Lavenham. It has been established by a sugar refiner, and, as before stated, he only reduces the juice of the root to a syrup, which is then taken off in barrels to the refinery in London, and made up at once into refined loaf sugar, without first undergoing the process of making it into ordinary brown sugar.

Manufacturers prefer this, as they have less impurities to deal with, and sugar which has been injured by burning always contains a large proportion of a sugar that is uncrystallizable.

VECTIS.

Draining at Low Levels.

To the Editor.

SIR,—I am thinking of draining my land, but am rather puzzled about my outfall. The land slopes down to lakes in all directions, the low land at foot of the hills lying so near the level of the lakes that tile drains put in three feet six inches (and I don't think putting them shallower is of much service) would simply form a duct for the lake water to come into the land, instead of letting the subsoil water off; besides, I have always understood that letting the air through the outfall does as much good as letting the water out. Is not this so?

The only remedy I see is to bring my covered drains down until they are above high water level, then continue to the outlet in open drains; but this cuts up the field very much and prevents the use of mowing machines. Believing in machine work, I was thinking of getting one of Carter's Ditching Machines. My soil is loam on surface, with stiff clay subsoil, and tolerably strong. How would the machine work in such land, and at what distance apart do you consider drains should be put in such land?

Another question—Can soot be used to advantage on grass land; if so, when, how, and in what quantity?

IMPROVER.

Nova Scotia.

REPLY.—The only way to get over the difficulty is to lay a large sized tile drain along the bottom of the slope, giving it an inclination towards a point to be a common point for another drain coming from the opposite direction, and making an open drain down to the lake. This will certainly interfere to some extent with mowing machines, but if the leading drains are pretty long, two, or at the most three, open drains will do all that is required. The mouths of these tile drains being above the level of the water will allow the air to circulate, which has been found from the experience of late years to be a great help to drainage operations.

Carter's Ditching Machine, supplemented with some hand work to finish out the ditch to the requisite depth, works satisfactorily, as far as we know, and has been used without difficulty through such a subsoil as our correspondent's, though there is occasionally some trouble if there are many stones. They can, of course, cut a good many more rods in a day than a man, and have been found by the experiments to work cheaply.

Nine or ten yards would be a good distance to place the drains apart; the depth should be 3 feet 6 inches; and where practicable, the drains should come to the surface. Let care be taken, in joining the side and main drains, to have the side drains curved for ten to twelve feet in the direction of the fall—ordinary tiles are all that are necessary at the junction, and a few stones placed over the joints will allow thorough communication.

Soot makes a very efficacious top-dressing, applied in the Spring to grass lands.

Lifting and Storing Potatoes.

The potato crop of this season will not be a large one, not perhaps from lack of yield per acre, but because the low prices realized in the past season for this esculent have prevented many from cultivating it as largely as usual. Should the Colorado beetle extend its destructive ravages eastward of the point it has reached this year, we may find the potato crop so precarious as not to be worth growing except at a very high price. Last year we gave a cut of the best of the potato-lifters yet invented; and we have, so far, seen nothing of more recent origin.

In whatever way, however, the potato crop is to be lifted, it is well not to take out too much at a time. The exposure of the potatoes to the rays of the sun for any length of time is apt to give them a twinge of bitterness in their flavour. Let them be exposed no longer than is sufficient to dry them, and then have them gathered together in heaps and lightly covered with straw till they are to be hauled to the cellar or root-house.

When potatoes are to be stored away by pitting on the field, the greatest care must be taken to make the pits only on such spots as can be depended upon to retain no moisture at the bottom. If the land is clayey or naturally retentive of moisture, it is best to make a slightly elevated bed for the pit to rest on. If the soil is sandy and perfectly dry, such as is found on little knolls or hillocks, a small pit may be dug from one to three feet deep, and the potatoes dumped in, and piled up till they give enough slant to make a roof that will shed rain.

In covering the pits, it will be found that the potatoes will keep much sweeter and nicer, and be less liable to suffer from sudden

and severe changes of weather, if they are covered with clean straw before earthing them up. Our plan was to have the grain in some sheaves beaten out with the flail, and the straw kept for the purpose of laying over the potato pits before covering in with earth. By doing this the straw can be laid like the thatch on a house, and be of more value as a protection from rain and frost than if it had been taken from the straw-stack.

It is well to have the potatoes sorted before putting in, if there is time to do so. Let all the small ones be picked out and put away separately, or carried to the barn to be fed out to the milch cows or store hogs.

If the potatoes are stored away in a cellar or root-house they must go into it perfectly dry, and should be divided into lots of about one hundred bushels each, with board partitions between to prevent the whole mass from getting heated and rotting. If they cannot be dried in the field before storing away, they should be drawn to the barn and spread out to dry on the floor. If there is any rot in the crop, the very greatest care must be taken to reject every potato that shows the least suspicion of it. It is better to do this than to find out, a few weeks afterwards, that one speck of rot had developed into such proportions as to necessitate the throwing away of many bushels.

Rye for Early Pasturage.

The shortness and inferior quality of the hay crop of this season make it probable that, by the time spring comes, many farmers will find themselves with less of it than is desirable to carry through their stock in good condition till grass comes. The price also may rule so high as to be an inducement to sell hay, rather than consume it on the farm.

In order to provide for this contingency, it will be well for those who breed stock largely, especially sheep, to grow some crop that will give them an extra early bite in spring, should the winter fodder not hold out.

For this purpose, nothing better adapted to the climate, or more certain to succeed than winter rye, can be found. It will grow on almost any soil, with very little preparation, and if sown early enough, will acquire such a growth before hard frosts stop it, that when the snow melts in spring the sheep will find a very good bite, and it will start again so early that much feed can be had from a field of it before there is a bite of grass in any of the meadows. The seed required will cost but little, as from a bushel to a bushel and a half per acre will be sufficient seeding. Stubbles, and land intended for fallows or roots next year, may as well be sown with this crop, if it is thought probable that there will be a deficiency of forage before grass comes again. But it is a

very undesirable crop if allowed to go further and grow up to maturity, and those who sow it for the purpose of obtaining late fall or early spring feed must not be tempted by the fine appearance of the growth to neglect ploughing it up as soon as the stock can go to other pasturage. It is also better to be careful with stock when they are turned on such very early spring feed, and allow them to get gradually accustomed to it, otherwise the sudden change from dry fodder to green food will prove prejudicial by rendering them liable to scouring, and giving them a distaste to what dry fodder can still be spared to them. They should get out on the rye only for a short time each day, and in no case be allowed to live on it exclusively.

Thin Seeding of Wheat.

I notice a good deal of controversy in the English papers on this head, and being somewhat practical in my notions, and at the same time observant from habit, I am led to believe that all their theories and doubts, so far as Canada is concerned, will be swept away by the oft-repeated observation made in the spring by almost every farmer, namely, "My wheat is pretty good so far, but too thin." Who ever heard of wheat being too thick on the ground in spring in Canada? Very few; and what every one says must generally have a great deal of truth in it, at all events so far as the practical results go here. Wheat may do well at home if dibbled in at a distance of 12 x 9 inches; but I am very sure if our farmers had their crops winter killed so as to leave only one plant at this distance, they would make the above observation, and it would almost always be exactly the fault such a thinned out crop would have. "It would be too thin."

It may be that the land here, combined with our short season, will not allow of the stooling out of wheat so thinly sown; but such is the fact, and all the statements of English agricultural experience will not convince our farmers that they would be more certain of a crop, with plants at 9 x 12 inches apart, than if twice as thick. Such statements as those we read of in English papers are calculated to mislead, and sometimes to discourage experiment, unless followed on with great caution, and due consideration as to circumstances attending them.

Storing Roots for Winter Use.

The most advantageous method is undoubtedly a cellar under a side-hill barn, where the roots can be cut up and fed out to the stock at one operation, and without the necessity of exposing them to severe cold in conveying them from the place where they are stored to the place where they are to be fed out. Except in a side-hill barn where the roots can be on the same floor with the stock, it is seldom advisable to have a root cellar under

a building. If a cellar is made to hold them under an ordinary barn, it is apt to be damp, and the roots to suffer for want of ventilation. A root house, either on the surface or but little below it, and adjoining the cattle stables, is preferable to a cellar underneath them. The outside walls above the ground may be banked up with earth, and the top portion covered with stable manure. The root house may be made of two inch plank, if more substantial materials are not convenient. Where timber is abundant, a cheap and substantial frost-proof root house can be made of logs, the roof being made of strong poles, covered with pine branches, and then with manure or earth. The manure can be removed in spring, and a fresh coating put on each year. Where a root cellar is used for storing, it is well not to fill it too full at once, but to let a part of the roots be pitted on the field, and afterwards drawn in on mild days in winter or early spring, when the roots in the cellar have been nearly fed out. If very large quantities are stored in the root cellar, there should be partitions made to divide them into quantities of 200 to 300 bushels, to prevent heating.

Salt as a Manure.

With the present abundance of salt in Canada, it is most desirable that its value applied as a dressing to the soil should be definitely ascertained, which can only be done by means of actual experiment. It is not yet known as it should be, that salt, although not possessing chemical constituents of value as plant food, yet acts as a powerful solvent of those elements contained in the soil that, when dissolved, go to make up the bulk of the food of plants growing upon it. This accounts for the fact that the richer the soil the more likely is a dressing of salt to prove valuable to it. The best time to apply the salt would probably be, in the case of winter wheat, to sow it broadcast on the soil just before sowing the wheat; on land intended for spring crops it might be sown on the surface late in the fall on newly ploughed land, or very early in spring as soon as the land is ploughed for a spring crop. It is quite probable that the barley crop would be benefited by the application of salt, as well as wheat. For mangels, salt is said to have been used in Britain with marked advantage. The quantity that can be given with profit can only be ascertained by repeated trials; but one barrel per acre is little enough to begin with. An increase of even one or two bushels per acre would amply repay the small cost of the salt, and it is likely that a much greater increase would be given in many cases.

It is said that in combination with lime, by slaking the lime with water in which salt has been largely dissolved, a good material for composting with swamp muck, and quickly decomposing it, may be obtained. The slaking of the lime with salt water causes

a portion of the muriatic acid in the salt to unite with the lime, thereby rendering it more soluble, while the soda left is then free to combine with any acids in the muck, and form soluble salts, thus making the composted material more quickly available as plant food for the crops to which it is applied. It is worth experimenting whether salt, if applied to barn-yard manure by throwing a little over the compost heap or yard once in a while, would make it more valuable and quickly available by the union promoted between the different materials in the manure heap.

Norway Spruce as Hedge Shelter.

Some weeks since I had occasion to visit the nursery gardens at Leslieville, and whilst there carefully examined the various hedges that are planted out, as proof of the efficiency of the various sorts.

The Buckthorn certainly makes a very handsome hedge, but it affords no shelter when most required in winter, and as a farm fence many years must elapse before it will afford protection against cattle; and one great fault all the Thorn tribe have, is that it is almost impossible to mend a gap in an old hedge, caused by accident or otherwise, by planting young quicks, as it is a well known fact that the old plants rob the young ones to such an extent as to seriously dwarf their growth, if not to kill them outright.

Henlock hedges have a more serious objection; the plants are very difficult to be made to grow, and although the hedge when grown affords good shelter, yet it becomes hollow and bare at bottom in a few years.

Norway Spruce, on the contrary, grows freely, and, from some cause, old plants do not prevent young ones from growing when planted in their vicinity. The expense, however, of Spruce plants at present prices will, it is feared, prevent its general introduction as farm shelter; but for lawn and garden ornamental hedges, fences and shelter, it is altogether unsurpassed. The growth is rapid. If the peculiar growth of the Norway Silver or Black Spruce is noticed, it will be observed that when any one of the end shoots is cut off, two or three will sprout at the next joint to supply the want. Another great excellence is that the growth is only in the spring, so that you need not be pruning several times during the year, as is the case with some ornamental garden hedges, if you would have them look well.

If, when first establishing a homestead, we were to appropriate a few rods of ground for the purpose of growing these plants, together with Horse and Buckeye Chestnuts, Mountain Ash, Locust, and several more of the ornamental trees, the cost would be quite nominal, and in a few years we should have an abundance of the various kinds, to embellish our homes and defend them from the cold winds and frosts, as nothing will defend a garden border from early frost so much as

a thick evergreen hedge close to it. The above seeds can readily be procured, but do not on any account trust to the Canadian variety of Spruce; they are worthless for the purpose of hedges, as they will not bear cutting, and get hollow and bare at bottom directly. No other kind will answer so well as the Norway variety.

C.

Selection of Seed.

One of the most important items of farm economy that calls just now for special consideration is the proper selection of seed wheat. Repeatedly during the last two years has the attention of farmers been called to this subject. The results of carefully selected seed have been very forcibly exemplified by the prodigious yields of certain new varieties of grain and roots, such as the Norway oats and Early Rose potatoes. The productiveness of these novelties has not been due to any particular quality of manure used, or any remarkably extra good land, but chiefly to renewed seed. I have myself seen Early Rose potatoes yielding fifteen to twenty good marketable potatoes from one single eye or set, and these potatoes were as large as eggs on the 5th day of June last, and were grown as ordinary potatoes in the open ground, and without extra culture in any way. There are many similar examples that might be cited, but these familiar cases will serve the present purpose.

The principle involved is further illustrated in the case of wild animals. These do not deteriorate or degenerate, notwithstanding the constant intercourse between relations, in fact re-sowing a win and again the same seed; and why is this? Simply because the largest, strongest and most vigorous males are always masters, and the poor weakly members are driven away and not allowed to procreate the species. Were it not for this, wild animals would have become dwarfs long since. The law of nature which thus secures the perpetuation of the species in undiminished vigour and perfection is exemplified among the comparatively solitary beasts of prey, such as the lion, as well as among the gregarious tribes which multiply more rapidly, such as the wild deer of our own forests. These all have retained from time immemorial their original proportions and physical development. The only cause that has been found practically to influence size and power is scarcity of food, and occasionally this has exerted a deteriorating effect where civilization has encroached on the natural resources of the wild animal. Now, we may follow out the same train of thought, and apply it to the vegetable kingdom as well as to the animal. But in the case of vegetables there is no passion that compels the weaker to retire. The poor dwindled seed, therefore, so long as it retains its vegetative power, will produce its kind in abundance, but in constantly deteriorating quality.

Hence it follows that, in our artificial husbandry, we should select all our best and finest productions for propagation, and reject all inferior specimens as utterly unfit for the purpose of reproduction.

The idea of changing seed is no doubt excellent, and the practice has often been found beneficial; but it may be questioned whether in these cases the benefit is not due to the superior quality of the new seed rather than the mere change. The selection has probably been carefully made from a farm of noted excellence, and more than usual careful culture has been adopted, so that a product of improved quality is secured. The benefit is, however, soon lost by the farmer who trusts alone to such a way of keeping up his supply. No doubt "like produces like," and a fine crop is often due to this course, though generally somewhat inferior to the sample sown; the succeeding crop will probably be reduced in quality and quantity, and ultimately all the original excellence will have disappeared. We need, then, some system, in order to keep up the good qualities of any sample. Admitting the benefit of a change of seed, admitting also that new varieties of seed from hybridization are often valuable, still the most important means at our command is the selecting the finest and best of the crop for the coming season.

Last harvest I carefully examined a crop of wheat, and with a pair of scissors cut off the upper portion of a great many ears. These were threshed out and put by. The middle parts were next cut off, and also threshed and preserved separately. The lower ends were then threshed out, and the samples compared. There was a manifest difference. The product of the top was equally plump, but much smaller, and moreover only contained two corns in a chest. The middle were full and plump, and contained three corns in a chest. The lower was a medium between the middle and top, better in sample than the top, but not as good as the middle; and also many of them had only two corns in a chest. Now, on counting the number of chests used and the number of corns produced, I found that the yield of the top was not only smaller in the size of the grain, but more than one-third less in number, and a proportionate decrease followed the lower parts of the ears compared with the middle.

Now, we cannot suppose that wheat grown during a succession of seasons from ears, or parts of ears, that contained two corns in a chest, would have the same tendency to produce three corns in a chest as that which had previously always grown the largest number. And it hence follows, that it is of great importance to grow that portion of the wheat ear for seed that had previously produced the best quality of grain and the greatest number of kernels. The true way to accomplish these very desirable ends is to follow the course I adopted; but this would involve so much labour that no field of wheat could

well be grown from seed so obtained; but the results of a small lot so saved could be sown, and seed thus collected for another year.

Mr. Hallett, of the Pedigree wheat notoriety, has shown that the above ideas are quite correct, and has also for many years so increased the yield of wheat by these means that he once grew 103 bushels to the acre, as the greatest yield he ever obtained; 50 to 60 bushels were ordinarily grown, and 65 lbs. a bushel often attained. He went further; he selected all the larger ears, and from these he selected the largest kernels, and also in preference those specimens in which there were four grains in a chest, and by following out this system he obtained this enormous yield. But mark, not from exchange of seed simply, or any remarkably fertile land, but by adopting with plants the principle of reproduction among wild animals already alluded to.

All the new sorts of potatoes exemplify the same principle. Garnet Chilis now produce heavy crops, and the Early Rose still larger, and this increased yield is not due to the increased fertility of the land, but to the improved quality of the seed. Of course, food in abundance must be supplied to all plants, but manure and good culture are not the only means by which we can hope to increase our crops.

The course followed by one man in the township of Manvers has for many years been to obtain a sieve of just such a size as will allow all the smaller portions of his wheat crop to pass through, and all the larger and finer grains to be retained. He sifts his whole crop after this way, and always sells the siftings for flour, and retains the remainder, about eight-tenths, for seed, and his neighbours come for miles round to obtain it. He charges fifty cents a bushel more than the highest market price for his best seed, and never fails to sell all he has to spare.

Another way that was in use by one man for some years was called "thrown wheat;" many thought it named "throne wheat," but the name entirely originated with throwing the wheat on a long floor as hard as possible, with a small wooden shovel adapted to the purpose, and by which the large heavy grains of wheat went much further through the air than the light smaller ones. The man who first used this plan kept it secret, and made some money by thus selling his seed wheat, and attained a considerable notoriety, as the wheat was by many thought to be a new variety and very fine; but the plan soon was known, though its very simplicity caused it to be abandoned, or perhaps it is seldom practised because few have floors long enough, or indeed skill sufficient to throw the wheat to advantage.

To test the foregoing principles and practice, I would advise any one to procure a sieve, and by selecting their wheat as before described, out of 100 or 200 sifted bushels, they will obtain 50 bushels of very fine wheat, the growth

of the middle portions of the ear, combining many of the requisites of a first-class seed. The cost is little, and trouble nothing; about a day's work will suffice to complete the sifting process; and when buying the wire gauze for the sieve, take a gallon of your wheat with you, and test the exact size required.

C.

Ploughing Stubble after Harvest.

We are inclined to think that there is not enough care bestowed on land that has just gone through the process of producing a crop of grain. It seems to be thought that once the harvesting is done, the husbandman's labours are ended on that particular piece till such time as he requires to use it again for the production of another crop, be that crop what it may. Farmers are too much inclined to look for present profit rather than endeavour to secure continuous prosperity.

The simplest operations of tillage are of more value and importance to the soil than most farmers are aware of. The more the soil is turned and exposed to the sun and air and the more its particles can be brought into contact with atmospheric influences, the more soluble and available becomes the plant food stored up in it.

Prof. Stockbridge, in a recent essay, says: "Silently and unseen, but surely and incessantly, are these agents accomplishing their appointed work. The frost of winter, with its crushing, disintegrating power, is reducing the rock particles to powder to prepare them for the more efficient action of its co-working agents. The heat of summer is decomposing the organic ingredients, and giving to the soil gases and acids for their secondary work. The air is permeating it with its oxygen to form acids and corrode and take to pieces its metallic elements; with its carbonic acid and ammonia to unite with other acids or alkalis in the soil, forming new and needed compounds. The moisture of the atmosphere is condensed to rain, and, descending to the earth, carries into the soil its gases for plant food, and dissolves the material prepared by the other agencies."

But this is not the only benefit to be derived from keeping the soil as much under tillage as possible, when it is not either occupied by crops, or locked up in the grim embrace of the frosts of winter. The soil is more or less full of the seeds of foul weeds, and the pupæ of grain-destroying insects, which can be in a measure diminished, if not destroyed, by tillage operations. We know it is usual to consider that the stubble fields are worth something as pasturage for stock, and to turn the poor beasts into them for a while till the pastures proper become recuperated. They doubtless manage to pick up a living, and for the first week or two may thrive passably well with the help of the fallen grain; but in many cases the animals come off them in a worse condition than if

they had been kept on the pastures. If, instead of this being done, the stubbles, where not seeded down, were ploughed up, scarified with a gang plough, or by a cultivator, within two weeks after harvest, the work being so shallowly done as not to bury the weed seeds on the surface too deep, there would be heat enough to start germination of those seeds, yet not time enough for the plants to grow up to a second seeding. Even harrowing the stubble, provided a very heavy sharp-toothed harrow was used, would, in those cases where the soil is not too heavy or compact, accomplish this end. When the land is much infested with the midge, ploughing to a moderate depth, say five or six inches, and turning the furrows wide and flat, would throw most of the midge pupæ so near the surface that the birds would destroy many of them, and the frost, if severe in the fall, would put the remainder out of the way of doing much injury the coming season.

A Backwoods Farm—An Old Settler's Experience.

It may not be uninteresting to many of our immigrant readers to have portrayed before them the history of a new farm in the backwoods, comprising about five hundred acres. The following narrative, having been compiled from actual experience, is entirely reliable, and cannot fail to prove valuable to new settlers, who, whilst reading the record of some failures, can at the same time revolve in their own minds the course they would have pursued under the same circumstances. By this means many mistakes may be avoided, that the writer of these reminiscences occasionally fell into. Of course, he had many successes and triumphs, and also some reverses; and, when a truthful account is given, the reader can have the benefit of all the experience thereby gained.

As the history extends over nearly twelve years, it must necessarily require more than one or two articles; but we think we serve the interest of the farming community in general, and that of the immigrant in particular, by allowing space for the interesting record.

ED.

LOCATING AND CHOICE OF LAND.

Our first task was carefully to examine the tract of five hundred acres of land we contemplated purchasing. We hired a surveyor, and under his direction and guidance we walked over the land backwards and forwards almost all one day; and since that time, and now that we have the farm almost all cleared up, and have learned to know every hole and corner, tree and shrub on it, we can fully appreciate how little we were clearly enlightened by walking over the land. To test the quality, we were told to examine "turn-ups," that is, upturned trees, and found about eight or ten inches of dark soil, and below that a subsoil of clay,

mixed with small limestone gravel, a large portion of which adhered to the superstratum. The gravel appeared to be mixed with the clay in the subsoil in about the same proportion that the raisins in a poor man's pudding bear to the pudding itself.

We saw that the land generally, although it appeared rich, and was all covered with the best hardwood, was what is called "cradle-knolly," and at that time we did not understand the quality so developed. We now know that "cradle knolls" are a sure sign of a poor, wet subsoil, no matter how rich the surface may appear to be, as otherwise the trees would have gone deeply into it, and by consequence would not have been so readily uprooted in previous years. For the fact is that the roots of trees do not like to penetrate into such a sour, hard, uncongenial portion of the land, and consequently, by spreading out on the surface, and not penetrating deeply, they were continually being uprooted in all directions. Year after year, as the timber had attained its growth, and each uprooted tree had drawn with its roots the surface soil, and with it some subsoil adriag—the roots themselves, meanwhile, decaying in their turn—the earth so gathered had accumulated into heaps or knolls, to be again occupied with a new growth of timber. And so these cradle knolls are formed, and the subsoil, thus drawn into heaps, has left deep depressions or hollows in the intervals. These intervals were very rich, as the wind had many a time drifted them full of leaves, and of course had denuded the higher spots in the same ratio, thus leaving the elevated spots poor, and the lower ones too rich and wet.

When, therefore, in subsequent years, we succeeded in ploughing away the high spots, and thus levelling the land, we actually in the process covered up the best soil with the poor and exhausted knolls; and thus we found to our cost that "cradle-knolly" land must necessarily be comparatively poor for some years, and until the gradual mixture of hillock and dale was ultimately equalized by cultivation.

Here is an explanation to emigrants coming to Canada well worth their careful attention, as, independently of the causes above stated, the "cradle-knolly" land should be taken up with caution. The extreme roughness of its surface renders it three times as difficult to plough before the roots are decayed; and during wet seasons the water is sure to lie in the hollows, to the injury of the crop. And again, the roots of trees in the kind of land above described, which do not go deeply into the soil, but rather creep about near the surface, offer a terrible obstruction to ploughing during the first six years after clearing. We have often, since those days, seen land where the tree roots penetrated the subsoil so nearly to the stump that the plough could be conveniently used years before it could in our case.

Surface Application of Manure.

It is now becoming generally understood that the old plan of ploughing barnyard manure into the soil is not the most advantageous plan that can be adopted to secure its being eliminated as plant food by the crops to be grown on the land. As years pass on, and more experimental observation is taking the place of old faith in the doings of our forefathers, among the agriculturists, it is being demonstrated by practical experience that much of the success in applying manures to the soil will be dependent upon the art used in adapting the method of application to the circumstances of the case. The natural tendency of all manures applied to the soil is to work downwards; that is, the elements of plant food contained in them, as soon as set free by the action of water, which in all cases is the greatest solvent, are carried beyond the reach of the roots of plants, unless they can be placed in a position to be made immediately available as plant food, by being taken up by the roots of the crop as fast as they become resolved into their chemical constituents. This course of action is constantly going on from the time the manure is first deposited in the yard, until it is finally taken up as food by the plants in the soil to which it is applied. This action may be accelerated or retarded, according to the method adopted in managing the material of which the manure is composed.

Now, if we apply the manure in a long undecomposed state to a stiff clay soil, and turn it under deeply with the plough, it will remain inert in the ground for a length of time, perhaps for years, according as the soil is worked or not afterwards, and its good effects will be divided over several successive crops, giving but a small proportion to each, as being deeply buried in a compact soil, it will not quickly be changed into plant food. Suppose, instead of being so buried, it was spread over the land late in the fall, and allowed to remain all winter, to be turned under with the plough early in the spring. The fall rains and winter's snows would wash every particle of available plant-food then in it into the surface soil, for some distance down, where it would be retained in solution, and go to help forward the crop to be grown in the succeeding summer, during its early stages. The inert material then left to be turned under by the plough in spring would be gradually decomposed under the surface, and become available either for the crop in its later stages of growth, as its roots penetrated into the soil, or for the succeeding crop, when the reversal of the soil would throw the partly or wholly decomposed materials again towards the surface.

Now, if we have the ground prepared and ready for a crop, and have on hand some barn-yard manure already in a state in which a large proportion can be readily dissolved

by rain and washed into the soil, it would be of vastly more benefit to that crop if the manure were spread over the surface, and harrowed in with the seed, than if it were buried out of sight with the plough. What would remain on the surface of undecomposed elements would be of no more value were they buried out of reach of the roots of the crop to be grown, but on being turned under at the next ploughing, and again turned back before the next crop is sown, they would become converted into available plant food for that crop. In applying barn-yard manure to the turnip crop, it is found the best plan to run furrows with the plough, fill them with green manure, and cover that with a light coat of earth, on which the turnip seed is sown. The roots of the turnips penetrate to the manure, and extract all the then available plant food in it, leaving the remainder to be decomposed by time and fermentation, to be made available for the next crop, when most of the manure will be turned up towards the surface, in a condition ready to have the fertilizers contained in it washed by rain back into the soil, among the roots of the grain crop that usually (under a proper system of rotation) succeeds a root-crop.

It is an old fallacy that by applying manure on the soil, much of its fertility is wasted by evaporation. This is not, and cannot be the case, unless to a very limited extent with a single constituent, namely, ammonia, and it may be questioned if anything more than the water contained in the manure can be evaporated, leaving the salts held in solution by it behind, to enrich the soil, when again dissolved.

The only advantage gained by turning under manure with the plough is the acceleration of the decomposition of the straw and other fibrous material contained in it, which in course of time become gradually resolved into plant food by the chemical action of the mineral salts contained in the soil.

Superphosphate of Lime.

W. G. S., of Toronto, wishes to know how to make superphosphate of lime. We presume he refers to the home-made article, and not to the commercial fertilizer. A ready way of manufacturing this important manure is to break up the bones as fine as possible, and then place them in a wooden box or barrel. Water, equal to about one-sixth the weight of the bones, may next be added, well stirred in, and left for a day or two, to heat and ferment. Boiling water would be best for this purpose. Then add sulphuric acid, mixing well with a wooden spade (no metal should come in contact with the mixture) in the proportion of about forty pounds of acid to one hundred pounds of bones. Let it stand for about two weeks, stirring daily. If the mass is not then dry, add some absorbent, such as sawdust, dry

earth or peat; but on no account use for this purpose lime or ashes.

Thus made, the compound will be a valuable manure, which may be kept for a long time without losing its strength; but it should be protected from exposure to wet.

A good manure may be made from bones without forming a superphosphate, by dissolving the animal matter of the bone by means of alkaline leys, and thus freeing the bone earth, which is then in excessively fine particles fit to be dissolved in the waters in the soil. Many recipes have been given for this. Dr. Nichols, in his *Boston Journal of Chemistry*, February, 1869, gives the following, which he recommends: Take a barrel of fine ground bone and a barrel of good wood ashes, mix well together and add three pailsful of water; mix the whole intimately, stirring daily; the mass will be fit for use in a week.

Hop Picking and Curing.

To the Editor.

Sir,—As it may interest some of your numerous readers, I take the liberty to give you a rough sketch of the process, as seen by myself, and learnt from the managers of the large yards in Waterloo, which I have visited.

The picking is done by women and children, who are waited on by men called tenders, who cut the vines, pull the poles, and bring them to the boxes, where they are soon stripped by the pickers, after which the poles are stacked up for the next year's use. The pickers are paid by the box, and can earn 50 cents to 75 cents a day, according to the nimbleness of their fingers.

The boxes are emptied from the boxes into large sacks, and carried to the dry-house, where they are immediately placed on the slat floors of the kiln, which are heated by large stoves, with long strong pipes running across the room under the slat floors. The hops are dry in about sixteen or twenty hours, and are then shoved off into the store-rooms, where they lie until cool. When they are ready for the press, they are pressed into tidy bales by strong lever presses. The sacking is first laid on the bottom of the press, then strong, wide sheets of paper, the press is then set up and trodden full, when another piece of sacking and paper are placed on the top, and the follower put on and pressed down. The sacking is sown together after the sides of the press are taken down, the follower and standards holding it secure and giving room for sowing.

This putting paper inside of the sacking is a new improvement, claimed to answer the purpose of preventing evaporation and the injurious effects of light. As paper is a non-conductor, and air-tight, it is thought to answer admirably.

The crop in Western Ontario is estimated at about three-quarters that of last year, and of about the same quality.

C. G. B.

Waterloo, Aug. 30, 1870.

Saving Corn Fodder.

The deficiency in the hay crop this year will be considerable in some places, and it would be well for farmers who have crops of corn to take a little extra pains in saving the stalks in such a way that they will keep over winter, and yet retain sufficient of the saccharine juices to be palatable as food for stock.

To do this the corn should be cut as soon as the ears are well filled and glazed, and, if possible, before frosts come. Then set up in shocks for a week or two, and husk out the corn. That done, the stalks should at once go under cover, and be stowed away standing up, if possible, or in such a manner as will prevent them from getting too compactly together, and becoming mouldy from heating. Corn stalks cut up and steamed, or mixed with cut hay and a little meal, and wetted slightly, at the time of feeding out, are much preferable as food for cattle to straw or poor hay. Corn sown in drills for fodder, and cut and cured before frost comes, is most excellent and nutritious food for milch cows.

Remedy for the Prevention of the Turnip Fly.

The following top-dressing for preventing the ravages of the turnip fly was stated by the late Mr. Fisher Hobbs to have been used by his steward for many years with perfect success.

One bushel of white gas ashes, fresh from the gas-house, one bushel of fresh lime from the kiln, six pounds of sulphur, and ten pounds of soot, well mixed together, and got to as fine a powder as possible, so that it may adhere to the young plant.

The above quantity is sufficient for two acres when drilled at twenty-seven inches. It should be applied very early in the morning, when the dew is on the leaf, a broadcast sowing-machine being the most expeditious mode of distributing it, or it may be sprinkled with the hand carefully over the rows. If the fly continues troublesome, the application should be repeated, but Mr. Fisher Hobbs stated it had never failed where applied at night to Swedes, turnips or rape.—*Gardener's Magazine*.

TREES CONDUCTIVE TO HEALTH.—By absorbing or emitting electricity, according as it is deficient or in excess, they (the trees) maintain a natural electrical state of the atmosphere around them, and we all know how intimately atmospheric electricity is connected with disease. Without trees there is always a deficiency of electricity, consequently a deficiency of ozone, and the air is not in its naturally healthy state. They act in like manner as regards heat, cooling the atmosphere at eventide during the hot summer months by rapid radiation into space, while streets and squares without trees remain hot and close.—*Scientific Review*.

Cheap Farm Gate.

A correspondent in the *Journal of Agriculture* gives the following directions for making a good gate at small cost and trouble:—

Take six pieces of stuff ten feet long, four inches wide, and one inch thick; lay these down on a level piece on the ground, leaving your first bottom space two and three quarter inches wide, the next three inches, the next three and a half inches, the next five and a half inches, and the next, or top space, nine and a half inches wide; then take the same kind of material and nail across the ends with annealed nails; then nail on a cross brace from the upper to the lower corner, also with annealed nails, so that it will fit neatly inside of your end pieces. Now turn your gate over, and nail similar upright pieces across the ends, even with the ones on the opposite side, and one upright piece midway between the ends. This latter is far preferable to putting on a diagonal brace on that side. In such a gate there is no morticing, and, for the weight of it, it is far stronger than any morticed gate that can be made.

Annealed nails, to my mind, are better than wrought nails. If you use such stuff, common eightpenny nails are heavy enough, as they are two and a half inches long, and half an inch is enough to clenck. The best way to anneal them is to put them in the stove while the folks are getting supper, cover them up in the hot ashes for the night and take them out next morning. This slow cooling serves to toughen them. To get the proper anneal, you should heat them to a white heat, but not enough to blister the iron. I find it better to drive the nails clear through, and clenck them after they are driven, as in this way a neater clenck is made.

Such gates as I have described look well, and are very quickly made. A good hand will put up five of them in a day—make them I mean, not hang them also. In hanging your gate, place the opening end at least one and a quarter inches above what you wish it to be, as any large gate, no matter on what kind of a hinge, will spring at least that much.

Indian corn, owing to the warm weather of June and July, has reached an extraordinary growth in the county of Lennox, and the present season is likely to be the best for that article that has been seen in many years in that section. The *Napanee Standard* says Mr. Jacob Schryver, of North Fredericksburgh, has shown a stalk which measures 10 feet in height, and says a large field from which it was taken will average about the same. Mr. D. Jennings, of Camden, also brought in some stalks measuring 9 feet 9 inches.

Stock Department.

Sundry Breeds of Swine.

In "Harris on the Pig," we find descriptions of some breeds of swine that are as yet unknown in Canada, and might be introduced with advantage for the purpose of improving the general class of those we already have by means of judicious crossing. Among the English breeds are two, named respectively "Cumberland" and "Small Yorkshire." The former is a somewhat coarse white breed, having no very high qualities of excellence about it except hardness of constitution.

THE SMALL YORKSHIRE is a white breed peculiar to Yorkshire, and has many points of excellence. It has a short head and small erect ears, broad carcase, deep chest, small short legs, and fine bone. It is spoken of as being always ready to fatten and turn to account, either in the way of roasting pigs or small porkers. Three or four of them will keep well and fatten on the food which would barely suffice to keep one of the large Yorkshires.

THE YORK CUMBERLAND BREED.—By a judicious crossing of the above named two breeds, and perseverance in the cross, a breed has been obtained that combines the size of the Cumberland with the quality and symmetry of the Small Yorkshire. This has now been established as a distinct breed, under the name of York Cumberland, and seems to be carrying all before it at the shows in England as prize winners in the white classes. It is said of them:—"No animal of the pig species carries so great a proportion of flesh to the quantity of bone, or of so fine a quality, or can be raised at so small a cost for the pork made." The ordinary weight of these pigs, when slaughtered, at ten to twelve months old, is from 280 to 340 pounds dressed, but it is said they can be profitably got up to 600 pounds each, where large thick bacon is desirable. It is said to combine size with early maturity and aptitude to fatten, in a very remarkable degree.

THE WHITE LEICESTER.—This is another breed of which as yet but little is known. They are a medium breed, white in colour, averaging about 300 pounds each when fattened at a year old. A pair of them carried off the prize for pigs at the Paris Exposition, and a pair of them, that weighed 180 pounds each at 18 weeks old, carried off the gold medal at one of the Smithfield Club shows.

IMPROVED OXFORDSHIRE.—This is a black breed, produced from a cross of some Neapolitan boars on Berkshire sows, afterwards adding a dash of the Essex by using Essex boars from Fisher Hobbs to breed the sows of the cross to. The produce has been quite a hit, and has proved very successful at the Royal and Smithfield Club shows, as

well as local ones. These pigs are of fair size, quite black, well covered with hair, very prolific, and good mothers and nurses. They are said to be remarkably healthy. They are especially adapted to dairy farms, and pork butchers, as they are said to give a larger proportion of lean to the fat than any other breed, and to be always in condition to kill for porkelets. At sixteen weeks old they will dress 90 pounds, at 9 months 220 to 230 pounds. With extra feeding, they will attain 400 pounds before they are a year old.

CHESTER COUNTY WHITES.—This is an American breed that originally appeared in Chester county, Pennsylvania. Mr. Harris appears to doubt if they are yet thoroughly established as a breed, but says the sows are admirably adapted to cross with boars of the refined English breeds. They are white in colour, and rather large in size, averaging about 500 pounds each at sixteen to eighteen months old. Some older specimens have gone to 900 pounds. They are hardy, strong, and vigorous, have good constitutions, and breed well, the sows being good mothers. They are heavy feeders, and require time to reach maturity and fatten well. Harris says:—"There are probably families among them that have been bred long enough together to permanently establish their good qualities. But it is certain that many Chester Whites have been sent out, that produce litters the pigs of which differ from each other as widely as the litters of common sows, and far more widely than the litter of a common sow got by a thoroughbred boar." Paschal Morris, of Philadelphia, who has bred them for many years, and probably knows as much about them as any one, says of them:—"There is a considerable misapprehension about this breed. It is constantly forgotten that it is not an original, but a *made-up* breed. They differ from each other quite as much as any one known breed differs from another." This, coming from such a source, is pretty good evidence that the Chester Whites are not an established breed, and can only be used to advantage in the same way as the common swine of the country, that is, to raise cross-bred pigs from, by putting the sows to a Suffolk or Berkshire boar, and thus obtaining pigs of a finer quality, earlier maturity, and more aptitude to fatten than the mother, combined with her size and strong constitution.

THE JEFFERSON COUNTY BREED.—This is a large white breed, originated in Jefferson county, New York State. For a dozen years past they have carried off all prizes at the New York State Agricultural Fair, against the Chester White and every other large breed. We saw several of them at the Fair at Elmira last Fall, and for their size they were the finest and handsomest pigs we ever saw of the white breeds. It is supposed that they originated from a cross of a boar imported from Yorkshire, probably a Small

Yorkshire or York Cumberland, on a large sow of the old Cheshire breed, said to be the largest of the old English breeds. At first, it is said, they were very large, but rather coarse, but since then they have been bred more towards an approximation to the fine bone of the Small Yorkshire, or, probably, York Cumberland. They are still large, though not equal in size to the Large Yorkshire, but with very different characteristics. Their heads, in proportion to their size, are the smallest we ever saw on a pig; the ears are small and fine, pointing upwards and forwards, cheeks very full, bodies of great length and very compact, legs very short and small. They have very small bone indeed for such large pigs. They are as much superior in quality to the Chester White as any pig can well be. The breed, coming as it does from a cross of two pure breeds carried through several generations, may now be said to have become established, and certainly the young pigs we saw with some of the brood sows at the Fair were of most uniform type throughout the litter, and as perfect in form as could be desired. Boars of this breed would doubtless be found of great value to cross on other large breeds, especially the Chester White, when it is desired to retain size while improving quality. That this breed has derived its best qualities from the Yorkshire blood is admitted by those who have bred it longest.

THE MAGIE BREED.—This is not yet an established breed, though it may ultimately become so. It originated in Butler County, Ohio, from a cross first of Poland and Byfield, afterwards again crossed with some breed called Big China, which was probably a large variety of the once well-known Chinese hog. All these were spotted breeds. Somewhat later some Irish Graziers, a medium-sized white pig, of fine quality and great aptitude to fatten, were imported, and used much to cross on the already improved cross-bred hogs of Butler County. Lastly, the Berkshires were brought in, and were freely used in crossing upon the then existing stock. By careful selection, and breeding from the very best animals produced from these various crosses, Mr. David M. Magie thinks he has succeeded in producing a hog that as a breed may be said to have become established. This is, however, doubtful, and we should not yet be inclined to place much reliance on their fixity of character. These hogs, so far as published statements of their weights go, do not seem to be anything extra, either as regards size, or early maturity. Their average weight, when fattened and slaughtered, at eighteen months old, is given as 450 pounds, which is no more than we should expect from good cross-bred pigs out of a large common sow by an Essex or Berkshire boar. They seem to be a close approximation to the Berkshire, but with larger carcasses and heads, and coarser bone. They might be greatly

improved, and perhaps increased in size, while reducing the offal, by using large Yorkshire boars of the very finest quality of bone that can be had.

The demand for very large hogs, however, is not now such as it was. Pork packers and bacon curers find it more profitable to encourage the raising of hogs of a medium size, say 250 to 350 pounds dressed weight, rather than larger ones. These very large hogs require more food in proportion to weight, to carry them through, than smaller and finer-bred ones do.

Cattle Feeding.

Mr. McCombie, of Aberdeen, Scotland, one of the most eminent and successful of British feeders, in his recently published work, entitled "Cattle and Cattle Feeding," tells much that is valuable and interesting. Speaking of buying store cattle to be prepared for feeding, Mr. McCombie claims that animals that have been brought up on anything of a forcing system, to induce a large development at an early age, contrary to the general impression are not the ones that can be most profitably used to be fed for the butcher. He says "an animal well bought is half sold," by which he does not mean that a low priced one is to be preferred, nor yet one already half fat, but one that possesses the best points necessary to ensure the making

of a moderate amount of first-class beef on a small amount of food—in other words, an animal that has a kindly disposition to take on flesh and produce meat of a uniform good quality throughout the carcass. He gives the preference to those that have been raised in the poorer districts, kept through the winter in straw yards, with the addition of a few roots, having the run of common pasture during summer, with abundance of exercise, till they are fully grown, say four to five years old. He buys these in spring, takes them to where they can have a good range of richer pasture for the summer, just enough to fill them out with flesh, and as soon as the pastures are done and the time for housing comes, at the approach of cold weather he puts them in the byres, and commences the process of feeding by giving hay, roots and meal, gradually at first, for months together. As soon as they reach the point where no more flesh can be profitably put on them, they are crowded up on oil cake till they become "ripe," when they are sent to Smithfield market. The object aimed at is to make beef that is termed "marbled," i. e. the fat and lean thoroughly blended together throughout the carcass. This is the kind of beef that is most valued, and brings the top price in British markets, and gives the rich, juicy sirloins, ribs and steaks, that make the roast beef of Old England so justly famous the world over.

Americans have not yet reached a nice point of discriminating in judging of the quality of the meat they consume, and so our butchers are not able to offer the same inducements to feeders to undertake and continue the process of feeding in the same way as is done in Britain. Here the idea seems to be to put the fat all on the outside, and into the form of tallow, which can be cheaply and quickly done by feeding Indian corn, either whole or ground. By the time the animals have been fed on corn from two to four months, they will, even though thin in flesh, have quite a layer of fat between their ribs and hides, and sell readily as first-class beef, though the meat when cooked too often proves stringy, tough and oily. Time will doubtless work a change in our manner of feeding cattle for winter beef, but not until by the introduction of a really first-class article into the great city markets, the consumer will discriminate sufficiently to enable the butcher to pay such prices as will encourage feeders to take more time and pains to carry out the art of producing beef that will reach the standard of excellence attained in Britain.—Country Gentleman.

A correspondent informs us that in the County of Brant an application of one part of carbolic acid to five parts of linseed oil has been found efficacious in the treatment of the cattle fly ailment.

THE CATTLE-KEEPER'S TABLE,

Showing at one view when FORTY WEEKS will expire from any day throughout the year, saving much trouble to all persons for whom it has been calculated.

NAME OF THE COW.	Jan.	Oct.	Feb.	Nov.	Mar.	Dec.	Apr.	Jan.	May.	Feb.	June.	Mar.	July.	Apr.	Aug.	May.	Sept.	June.	Oct.	July.	Nov.	Aug.	Dec.	Sept.	
1	8	1	8	1	6	1	6	1	5	1	5	1	8	1	7	1	8	1	8	1	8	1	8	1	7
2	9	2	9	2	7	2	7	2	6	2	6	2	9	2	8	2	9	2	9	2	9	2	9	2	8
3	10	3	10	3	8	3	8	3	7	3	7	3	10	3	9	3	10	3	10	3	10	3	10	3	9
4	11	4	11	4	9	4	9	4	8	4	8	4	11	4	10	4	11	4	11	4	11	4	11	4	10
5	12	5	12	5	10	5	10	5	9	5	9	5	12	5	11	5	12	5	12	5	12	5	12	5	11
6	13	6	13	6	11	6	11	6	10	6	10	6	13	6	12	6	13	6	13	6	13	6	13	6	12
7	14	7	14	7	12	7	12	7	11	7	11	7	14	7	13	7	14	7	14	7	14	7	14	7	13
8	15	8	15	8	13	8	13	8	12	8	12	8	15	8	14	8	15	8	15	8	15	8	15	8	14
9	16	9	16	9	14	9	14	9	13	9	13	9	16	9	15	9	16	9	16	9	16	9	16	9	15
10	17	10	17	10	15	10	15	10	14	10	14	10	17	10	16	10	17	10	17	10	17	10	17	10	16
11	18	11	18	11	16	11	16	11	15	11	15	11	18	11	17	11	18	11	18	11	18	11	18	11	17
12	19	12	19	12	17	12	17	12	16	12	16	12	19	12	18	12	19	12	19	12	19	12	19	12	18
13	20	13	20	13	18	13	18	13	17	13	17	13	20	13	19	13	20	13	20	13	20	13	20	13	19
14	21	14	21	14	19	14	19	14	18	14	18	14	21	14	20	14	21	14	21	14	21	14	21	14	20
15	22	15	22	15	20	15	20	15	19	15	19	15	22	15	21	15	22	15	22	15	22	15	22	15	21
16	23	16	23	16	21	16	21	16	20	16	20	16	23	16	22	16	23	16	23	16	23	16	23	16	22
17	24	17	24	17	22	17	22	17	21	17	21	17	24	17	23	17	24	17	24	17	24	17	24	17	23
18	25	18	25	18	23	18	23	18	22	18	22	18	25	18	24	18	25	18	25	18	25	18	25	18	24
19	26	19	26	19	24	19	24	19	23	19	23	19	26	19	25	19	26	19	26	19	26	19	26	19	25
20	27	20	27	20	25	20	25	20	24	20	24	20	27	20	26	20	27	20	27	20	27	20	27	20	26
21	28	21	28	21	26	21	26	21	25	21	25	21	28	21	27	21	28	21	28	21	28	21	28	21	27
22	29	22	29	22	27	22	27	22	26	22	26	22	29	22	28	22	29	22	29	22	29	22	29	22	28
23	30	23	30	23	28	23	28	23	27	23	27	23	30	23	29	23	30	23	30	23	30	23	30	23	29
24	31	24	Dec. 1	24	29	24	29	24	28	24	28	24	31	24	30	24	31	24	July 1	24	31	24	31	24	30
25	Nov. 1	25	2	25	30	25	30	25	29	25	29	25	Mar. 1	25	Apr. 1	25	June 1	25	Aug. 1	25	Sept. 1	25	Oct. 1	25	24
26	2	26	3	26	31	26	31	26	30	26	30	26	2	26	3	26	4	26	5	26	6	26	7	26	3
27	3	27	4	27	Jan. 1	27	Feb. 1	27	29	27	29	27	3	27	4	27	5	27	6	27	7	27	8	27	4
28	4	28	5	28	2	28	2	28	28	28	28	28	4	28	5	28	6	28	7	28	8	28	9	28	5
29	5	29	6	29	3	29	3	29	29	29	29	29	5	29	6	29	7	29	8	29	9	29	10	29	6
30	6	30	7	30	4	30	4	30	30	30	30	30	6	30	7	30	8	30	9	30	10	30	11	30	7
31	7	31	8	31	5	31	5	31	31	31	31	31	7	31	8	31	9	31	10	31	11	31	12	31	8

Veterinary Department.

Flies on Cattle.

Considerable alarm has been excited in many parts of the country by the reports of a terrible cattle disease that had made its appearance, and had even, according to some accounts, proved fatal in many instances. We have personally investigated a number of these cases, and have also received letters from veterinary surgeons in different parts of the country, who quite concur in our own view of the matter. We have no hesitation in saying that all these cases of so-called cattle disease that have yet come under our notice are due to the attacks of flies, that at this season torment cattle, horses, and dogs. These insects have made their appearance somewhat earlier than usual, and have abounded in unprecedented numbers. The irritation and suffering they inflict has consequently been more than commonly serious. They puncture the skin, and produce irritable sores, which set up inflammation, swelling, and sometimes considerable constitutional derangement. It is quite possible that in severe cases among feeble animals a fatal termination may have resulted, but we have no doubt that in a large proportion of fatal cases death has been caused by some other complaint. There is therefore, we feel confident, no cause for alarm, and no insuperable difficulty in dealing with the "plague."

The methods of combating the evil are preventive and curative. To ward off the danger, we recommend that, as far as possible, cattle, as well as horses, should be housed during the day, and only allowed to feed in pastures at night. The stables should be kept as cool as practicable, and comparatively dark, with thorough ventilation and the strictest attention to cleanliness. The manure should be removed frequently and to a distance.

The flies are more numerous in low, wet meadows than in dry pastures, and it is probable also that wetting the skin, as the animals do by standing in the water, and subsequent exposure to the air, has a tendency to promote cracks and sores, just as a similar transition will produce in the human subject chapped hands and the like.

The practice of soiling animals during the day, instead of pasturing them, has other advantages besides protecting them in a measure from the evil under consideration, and has been found eminently economical in saving food and storing manure.

The curative treatment to be adopted consists in first washing the parts thoroughly with soap and water, and if there is much inflammation, fomenting with warm water. Afterwards apply with a feather a lotion consisting of equal parts of oil of tar and tincture of benzoin. Or a similar applica-

tion may be made of impure carbolic acid, diluted with six parts of water to one of acid.

Flies on Horses.

Carbolic acid soap seems to be a most valuable remedy for most of the troubles and annoyances to which farm stock is subject. We have heard of so many wonderful cures and benefits rendered by it that we are beginning to be quite enthusiastic over it. As a sheep-dip, as an exterminator of vermin, as a plant-wash, as an ointment for galls and sores, in fact, as a remedy for almost every farm trouble it has proved successful. A friend of ours a few days since, being obliged to drive a valuable horse twenty or more miles, and knowing that flies would prove troublesome, conceived the idea that a wash of carbolic acid soap-suds over the entire coat of the horse would protect it from flies. The wash was applied, and through the day, although myriads of flies swarmed about the horse, and even alighted on it, not one made an effort to draw blood.

Now, with a remedy against these pests so easily available (a large piece of the soap costing but a few cents, and procurable at almost any drug store), there is no excuse for neglecting to provide it. Let a pailful be made and kept standing in the stable. Whenever a horse is to be taken out, either for the road, field or pasture, dip a sponge into the suds and moisten the animal's coat with it. The time required would not be a minute, and the cost not a cent, but the benefit rendered to the animal would be very great.—*Mass. Ploughman.*

Ergotized Grass.

To the Editor.

SIR, I have frequently noticed during the present season that the seeds of some kinds of grasses, in meadows and pasture lands, have in some way deteriorated, or been superseded by a peculiar excrescence, which I suppose is caused by a parasitical fungus. I herewith forward sample. Will you have the kindness to inform me what is its nature and properties, and in what manner it will affect horses and cattle, which eat of it? Some farmers suppose that it is causing their horses to have a species of distemper with severe cough, which may lead to the heaves; others believe that it is affecting the blood of cattle, and gives them the hoof ail. In fact each has his theory, and various injurious results are imputed to it.

W. M.

Port Barwell, 1st August, 1870.

Reply The sample sent is a specimen of ergotized grass, caused by a fungus somewhat analogous to the ergot of rye. If taken to any great extent, such feed is likely to prove injurious, either to horses or cattle. As to producing the specific diseases mentioned, we can scarcely hazard an opinion, but we

have no doubt whatever that the disease known as heaves in horses, in many cases is the result of improper feeding, and especially using inferior kinds of hay, which appear to have a peculiar and injurious action upon the pneumogastric nerve.

Hoof Ail.

To the Editor.

SIR,—Please inform me of some successful plan for treatment of the hoof disease in cattle. During spring and early part of summer, I lost eight cows from my herd, several of them very valuable animals, and all in good condition. The first symptoms were slight lameness in the hind feet, which gradually increased without much swelling, until considerable exertions were required to make the animal stand at all. Soon after a fissure, varying in depth, would be observed encircling the feet at their juncture, and increasing daily in depth, without sloughing, until the entire removal of the hoof was effected, leaving the animal only the ends of its legs, with bones protruding, to stand upon. They become quickly emaciated, and soon succumb to the disease. In a few cases of those I treated, I met with partial success, but some of the animals are still quite lame. I hope that yourself or some of your numerous readers can give me some information on this subject.

A SUBSCRIBER.

Port Barwell, 1st August, 1870.

REPLY—The treatment of such severe cases of hoof ail as described above cannot be undertaken with any great success. The severe inflammatory action which causes a separation of the sensitive and insensitive structures should be allayed by the use of poultices, and placing the animal in a comfortable stall, which must be kept clean; if the toe of the hoof is unnaturally long, it should be cut off, as the extreme length of toe throws a greater strain upon the coronet. Whenever an eruption is observed, the parts should be dressed several times a day with carbolic acid lotion; the patient must also be allowed a liberal supply of the best food. One drachm of the iodide of potassium might be given once a day. In many cases it may be found necessary to use the knife and remove any detached horn; and, if any matter forms, a free exit must be given, otherwise the imprisoned matter will act as an irritant, and soon lead to a separation of the laminae.

Veterinary Queries.

To the Editor.

SIR,—Will you please inform your readers whether the Quarter horse shoe has been tried in Canada and found satisfactory? Also give some description of the new Baltimore shoe, which is easily removable.

Is there any application (as glycerine) which will obviate the brittleness of hoof caused by standing on plank floors?

It is said that in England grass is cut early for young racers, and saved in a peculiar manner. How is it done? and would it not be good for other horses?

Books tells us that sows will always breed three days after farrowing. I have kept pigs for several years, but never had one to come sooner than three weeks.

J. C.

Orillia, July 20th, 1870.

REPLY.—We are not aware of the Charlier method of horse-shoeing having ever been tried in Canada. It is losing favour in Paris on account of its expensiveness. We cannot give you a description of the new Baltimore shoe.

Brittleness of the hoof is prevented to a certain extent by standing a horse for a couple of hours daily in moistened clay; the application of a hoof ointment composed of oil of tar one part, to eight parts of lard, is also attended with benefit.

If a certain kind of hay is good for race horses, it follows as a matter of course it must also be good for horses of another description. We believe that hay contains the greatest amount of nutriment when cut early before ripening takes place, and no doubt haymaking, like everything else, is better done in some parts than in others. English race-horses are usually fed on hay that is one or two years old.

Your experience with regard to sows breeding is the ordinary one. Instances of an earlier conception are exceptional rather than common.

Swollen Udder.

To the Editor.

SIR,—During the last two months our cow has been seriously afflicted with a swollen bag. As the swelling subsides, we get stringy or curdled milk from one or more teats.

If you know of any remedy, you will confer a great favour upon us by inserting it in your widely circulated paper.

A SUBSCRIBER.

July 1870.

REPLY.—Swollen bag, or inflammation of the udder, is usually best treated by cold applications. Apply a broad web of cloth around the cow, and cut holes in it to keep out the teats, then place some tow between the cloth and the udder, and keep it constantly moist with cold water. Give a good dose of purgative medicine, as three-quarters of a pound of epsom salts, dissolved in three quarts of water. When the swelling subsides, hand rub the udder several times a day, and give internally one drachm of the iodide of potassium daily for eight or ten days. The cow should be kept in a cool box or stall, and not exposed to the hot sun.

The Dairy.

Salting Dairy Cows.

The importance of salt for dairy cows is generally understood, but nevertheless it is much neglected. And where a quantity sufficient for a certain number of cows is supplied, it frequently happens that, from the manner in which it is fed, some animals get more than they require, while others obtain little or none at all. A late number of the *Rural New Yorker* has the following article on this topic:—

“The way to salt dairy cows is to have the salt conveniently located for stock where daily access may be had to it, and the animals allowed to take whatever their appetites crave. It may be placed in boxes arranged along in the feed alley of the stable, or in the troughs in the shed, or yard. When cows have free access to salt, they soon regulate their appetite to the daily use of small quantities of it, taking no more than is required to promote good health.

“Animals require more or less salt, according to the character of their food, and the practice of salting at certain intervals is often injurious, since they are liable to over-feed of it, causing excessive scouring and derangement of health. This is particularly the case when salt is thrown out to stock indiscriminately in the field at intervals of a week or more. In such cases, the master cows will traffic freely and gorge themselves, preventing the weaker animals from getting a due supply, and thus one part of the herd is injured by over eating, and the other part from not obtaining what is needed. When the animals have free access to salt, nature dictates as to its use, and hence, good results both as to health and the yield of milk follow.

“Salt is very necessary for milch cows. Without it the milk becomes scanty and imperfect. It is an important element in the blood, and furnishes the soda necessary to hold the cheesy part of the milk in solution. Haidlen found, in his analysis, 1,000 pounds contained nearly half a pound of chloride of sodium. There was also one and three-quarters pounds of chloride of potassium. There are various purposes in the animal economy that require salt, and cows in milk should at all times have free access to it.

“Perhaps the greater necessity for its use is in Spring, when cows are first turned to grass. The feed then is rather deficient in saline matter, and does not furnish sufficient for a large quantity of milk. As the grass becomes more mature, the mineral elements are more abundant, and there is less desire on the part of animals for salt. It is on this account, and because cows have been dried off of their milk, that in Winter much less salt is required in the dairy than in Summer. From experiments that have been made, it has been found that in May and June, when milch cows have been deprived of salt for

several days the milk shrunk from one to two per cent. in quantity, and from four to six per cent. in quality. Later in the season the experiments showed less difference.

“Thus it will be seen, that dairy stock, to produce the best results, should have a daily supply of salt, and the quantity is much better regulated by the animal than it can be by the stock-keeper who doles it out at intervals.

The Production of Cheese.

It is estimated, says the *New York Mercantile Journal*, that there are in the United States and Canada 1,000 factories, whose average production is equal to 117,250 boxes. The cheese made in the United States and Canada in 1867 reached 215,000,000 lbs., and in Great Britain, 179,000,000 lbs. The consumption in America during the same period amounted to 160,000,000 lbs., and in Great Britain to 490,000,000 lbs., leaving a deficiency over the joint-production of the two countries of 75,000,000 lbs. This deficiency was supplied by Holland and Belgium. The principal States engaged in the manufacture of cheese in this country are New York, Vermont, Massachusetts, Pennsylvania, Illinois, Ohio, Michigan, and Wisconsin. Western New York, the Western Reserve, and some sections of Illinois and Michigan, enjoy a deservedly high reputation for the excellent qualities of the products of their dairies. England has long been justly celebrated for the abundance and superior quantity of its cheese. Cheshire, Stilton, Derbyshire, Suffolk, and Cheddar, are the best known varieties. Gouda cheese, the best made in Holland, is very pungent, which preserves it from mites; and this pungency is attributed to the fact, that muriatic acid is used in curdling the milk instead of rennet. Parmesan cheese, made at Parma, in Italy, owes its rich flavour to the fine sweet herbage of the meadow along the Po, where the cows are pastured. The best Parmesan cheese is kept several years, and none is sold until it is at least six months old. Swiss cheese is made, in part, of skim-milk, and is flavored with fragrant herbs. They usually weigh from 40 to 60 lbs. each, and are exported in casks, each of which contains ten cheese. Westphalia cheese derives its flavour from the curd being allowed to become soured before it is compressed. Dutch and Swiss cheese contains, according to chemical investigation, from 26 to 40 per cent. of nitrogenized matter, considered the most nutritive constituents of food. The best cheese is from 22 to 100 per cent. more nutritious than bread and meat, which contain only about 22 per cent. of nitrogen. The superior qualities of cheese have been repeatedly proved by the experience of labourers in those countries where it forms one of the principal articles of food. To delicate stomachs, cheese is objectionable, on account of its slow and difficult digestion; but to individuals of great physical strength,

it is a healthful and agreeable article of consumption. In combustible or heating qualities, cheese is only exceeded by oil, butter, and like unctuous substances.

Butter for Winter Use.

Mary A. Lee, of Cain, Pa., writes to the American Institute Farmers' Club on the subject of making butter for winter use. She says that butter made in October and November, if good, may be kept so by printing in small table prints, and sprinkling each with salt, and laying loosely in a stone jar. To keep butter good that is made in the fall is one thing, but to keep that good which is made in early summer is quite another. The best and richest Pennsylvania butter is made in May, June, and July, when the cows' milk is strong, and before the flies trouble them too much. The best of butter may easily be kept good till April; and this is the way to do it:—

First:—It must be good butter when made; all the buttermilk must be worked out, and in doing this keep it out of water—don't have any water come in contact with it. Butter that is washed in working, as it is termed, if good, would be much better if it had not been washed. Salt to suit the taste of those who are to eat it; half an ounce of salt to a pound of butter is about right; keep out saltpetre, sugar, and all other curative ingredients; it will keep better without them, and perhaps, too, without salt, but will not be so palatable. Do up the butter after each churning in neat, round rolls of two or three pounds each; cover each roll with a clean muslin cloth, large enough to go round it twice or more, so that it will be completely enveloped, and sink it in a strong brine as strong as the best salt will make it. Stone vessels are the best, and each roll, as it is put in, may be sunk by placing a clean stone on it.

Continue to add more rolls until the vessel is full, always keeping the whole completely covered with brine, and to insure strength add more salt when full. Keep it in the cellar or spring house, and see if it is not worth in winter or spring 100 per cent. more than any winter-made butter. In this manner a supply of choice butter may be kept perfectly safe. But, mark, the butter must be good—well made by one who understands how to do it, must be well worked, and should by all means be wrapped up, and sunk under the brine, the same day that it is churned, not kept lying around for two or three days after churning.

A good spring, with the water at 56 degrees, is indispensable to make the best butter in the summer months, and then it must be churned slowly, that it may come solid. Bradley's Atmospheric Dasher Attachment is superb, making the old barrel churns complete atmospheric churns, with half the revolutions breaking the butter just as soon; then, in warm weather it is solid and firm, and no trouble to wash out the milk.—*Prairie Farmer.*

Accounts with the Cows.

The author of *Ogden Farm Papers* in the *American Agriculturist* says:—We are just commencing to keep a record of the weight of milk given every morning and evening by each cow. A printed blank for each week is tacked against the wall, and a lead-pencil hangs near it. As each cow is milked, the pail is hung on an ordinary spring scale. The pails being of uniform weight, it is easy to make the record sufficiently accurate for practical purposes. At the end of each week the total yield for each cow is footed up, and divided by seven for the daily average. The total weekly yield of the whole herd is also recorded. The utility of such a record, especially if continued for a series of years, will be great. It will show: 1. The performance of each animal in her different conditions, and especially the degree in which she holds to her milk towards calving time. 2. The relation that the progeny bears in its milking qualities to its dam. 3. The milk producing quality of the progeny of certain bulls. 4. The effect of different kinds of food, and of different systems of feeding on the production of milk. 5. By comparing the weekly yield of milk with the weekly production of butter, the effect of feeding can be determined in regard to this latter.

The practical results of the knowledge thus obtained will be valuable. We shall know which animals to sell and which to keep; which bulls to breed from; which families to depend on for the final herd, and what methods of feeding it is best to pursue in winter and in summer—this will be especially valuable as showing the relative advantages of soiling and steaming, as compared with dry feeding and pasturing, and the relative value of corn meal, wheat, bran, etc.

HOW TO TREAT KICKING COWS.—A friend told us the other day of a method of treatment that he had found successful in curing cows of the habit of kicking while being milked. It is as follows:—As the cow stands in the stanchions, he puts a bull-ring in her nose, throws the rope attached to the ring over a beam or girt above the head of the cow, and drawing her head as high as possible without raising her feet from the floor, makes fast the end of the rope. The cow cannot kick while standing in this strained position, and the milking process is then conducted gently and rapidly. As soon as she learns that she has nothing to fear from the milker, but everything to fear from the ring—and this knowledge she is said to acquire rapidly—she is cured of her disagreeable habit. A young heifer may often be thus cured by a single application.

GRAFTON CHEESE MANUFACTURING COMPANY.—A company is about being formed for the manufacture of cheese in the vicinity of Grafton. The committee, appointed for that purpose by a public meeting, have secured a most favourable site, about one mile west of the village. Nearly all the required capital is already subscribed, and the buildings, upon quite an extensive scale, will be proceeded with at once, to have everything in complete readiness for business next spring.

Poultry Yard.

Physiology of Eggs.

Every fowl has two small organs near the extremity of the body, called the ovaria. It is filled with elastic tissue, and feels under the finger like sponge. The eggs are started here, and those which will mature a year, or two or three years hence, are in embryo. One is forced up and seized by the stroma, which is seventeen inches long, and passed rapidly through. When the egg leaves the ovary it consists of yolk only, but in its passage through that short canal, the yolk is surrounded by enough albumen to perfect the chick. The white of the egg has in it all that nature requires for making bones, muscles, blood-vessels, connecting tissue, skin and feathers. Just before the egg leaves the body, this canal has the power of secreting lime for the shell. This shows how valuable the egg is as nutriment, and it also shows what demands are made for rich food by a hen that lays an egg daily. Besides what she requires for her sustenance, she is called upon to secrete the material for the body of an entire chick, and also retains for the little creature sufficient to last many hours after it leaves the shell.

It shows also that a hen cannot make albumen so rapidly, except out of albuminous food, such as wheat, meat, and small animals. It is not true that there is a certain number of eggs, and that, this number exhausted, no more can be expected; but it is true that the secretions lessen as old age comes on, and latterly the hen fails to have sufficient force to carry forward the process. The practical bearing of this is, that we must see that the fowl is always well kept. The way to have good laying pullets is to quicken the circulation and strengthen the system by liberal nutriment.—*Ex.*

VULTURE HOCK.—A correspondent wishes to be informed as to what constitutes this defect. The vulture hock is the projection of feathers behind the knee, and inclining towards the ground. The feathers of a fowl's leg usually should be close around the knee, and the leg clean below it, like that of a boy wearing knickerbockers. In a few breeds, such as the Booted Bantams and Ptarmigans, this kind of feathering is necessary, but in Cochins and Brahmans it is considered a serious defect.

LOSS OF FEATHERS.—This is a complaint to which fowls confined in close yards or houses are liable, and is best combated by scrupulous attention to cleanliness, and by giving with dry food a supply of vegetables and insects, and other animal substances. Tegetmeier recommends five grains of Plummer's pill, given occasionally at intervals of two or three days. But, as this composition contains calomel, we doubt its propriety or efficacy for poultry. A little sulphur might be useful, but diet and cleanliness are the chief points in the treatment.

Entomology.

The Cattle Fly.

From many parts of the country, as well as from this neighbourhood, we have received complaints of the grievous injuries inflicted upon cattle by the attacks of a small fly. Many cases also have come under our own notice. In some localities, the attacks of this creature have been so numerous and persistent, and the irritation produced by them so severe, that the farmers have concluded that their cattle were afflicted by some malignant disease of a novel and destructive character. Their alarm, we trust, has been to some extent allayed by the letters of Mr. Smith and others, that have already appeared in the DAILY GLOBE. We now hope that they will relinquish their fears and set to work at once to employ the means recommended for the alleviation of their stock, and the warding off of the enemy.

The fly that has been doing all the mischief is called the *Stomoxys calcitrans*—the former name meaning "sharp-mouthed," the latter "kicking," applied to the insect from the effect its bite produces upon cattle. It is smaller, but resembles considerably the common house-fly (*Musca domestica*), and belongs to the same family (*Muscidae*) of two-winged insects. Upon close examination it will be found to differ from the house-fly in the form of its proboscis, which is very long and slender, and projects horizontally from the head. It lays its eggs in the dung of stables and barn-yards, upon which its maggots feed. It closely resembles the house-fly in its transformations. The usual time of appearance of this insect is the end of August and early part of September, but this year, owing probably to the unusual heat of May and June, it has been developed earlier, and become infinitely more numerous than in ordinary seasons. The same excessive development has taken place in the house-flies this year, and is the subject of bitter complaint all over the Province. The cattle fly often comes into houses in rainy weather, and does not scruple to attack human beings, inflicting a sharp wound, and usually drawing blood. We have often been tormented by them, and observed the structure of their proboscis and their mode of procedure. The house-fly worries by creeping over the skin and putting down its trunk-like sucker to draw up the moisture; but the cattle-fly thrusts its sharp-pointed proboscis into the flesh, and proceeds to imbibe the blood of its victim, causing him to start, and possibly excrete the molester. The effect produced upon the legs of cattle by the combined attacks of hundreds or thousands of these creatures can readily be imagined by any one who has experienced the bite of a single specimen; the wonder is

that the poor creatures display the amount of patience that they do.

The only remedies that we know of for warding off these pestilent creatures are the following: 1. Wash all the parts liable to be attacked with an infusion or "tea," made of the common smartweed (*Polygonum hydropiper*, or *P. acre*) which grows in waste places all over the country, especially in spots which have been covered with water in spring and fall, but are dry in summer. 2. Wash the animal with a solution of carbolic acid soap. These are both useful preventives. For treatment of cattle already affected, we must refer the reader to the veterinary department, as that part of the subject does not come within the scope of practical entomology.

All our readers have, no doubt, heard, if not read, about the "Tsetse fly," which is so destructive to cattle in Central Africa. Its ravages have been vividly described by Dr. Livingstone in his "Missionary Travels and Researches in South Africa." This formidable insect (*Glossina morsitans*) belongs to the same family (*Muscidae*) as our insect, but it is of a larger size, and of a much more dangerous character. It stings mortally the ox, horse, sheep, and dog; but is not dangerous to man, to any wild animals, or to the pig, mule, ass, or goat. "It darts from the top of a bush as quick as an arrow on the object it wishes to attack," writes a French traveller. "This sucker of blood secretes in a gland, placed at the base of its trunk, so subtle a poison that three or four flies are sufficient to kill an ox." Thank God, we have nothing so terrible in North America!

Black Currant Worm.

Our Black Currant trees were desperately attacked this summer by the Measuring Caterpillar, a yellow variety somewhat different to that of last year. The eggs are laid by a dan, yellow-coloured butterfly, or rather moth; and two weeks since there were scarcely any leaves remaining on the whole row of trees. We had tried hellebore, tobacco, lime, whitewash, alkali, soap suds, hot water, and indeed almost everything we could think of—amongst the rest, coal oil mixed with water, and during the application kept in constant agitation, so that only a small portion was very sparsely distributed with the water over the bushes. All would not do; nothing killed these pests. At last, in desperation, we tried corrosive sublimate, one ounce dissolved in four pails of water—a most deadly poison—with which we watered the trees freely, believing nothing with life could withstand this treatment. But the worms "increased and multiplied," until absolutely starved away for want of food. The curious fact connected with the treatment is, that the currant crop does not seem at all injured, there being now more ripe currants and currants yet to ripen than we ever

had before, although somewhat late, and a fresh crop of leaves again graces the trees; very young, to be sure, but bidding fair to be as great as ever. The worst is to come; now that we have a crop and the worms are all gone, we have used so many poisonous articles as to make us fear to eat the currants. Probably the wet weather may have washed away the corrosive sublimate; but we do not know this, and consequently are afraid to make any pies or preserves with them.

It is, however, a curious fact that the denuding the bushes of their leaves should not have ruined the crop of fruit. It certainly somewhat retarded the ripening, but does not seem to have injured the quantity. Last year our red currants were stripped in the same way, and great loss was sustained to the crop, and I am aware of many who lost trees and all by the worms. Whether we ultimately killed the worms or not I do not know, but believe not, as no application that we could subject them to seemed to hurt them in the least.

C.

About Caterpillars.

To the Editor.

SIR,—Trees generally have had a large assortment of caterpillars this year. Elms were considerably affected early in the season, and just now I see some very large caterpillars marching in solid phalanx over the white willows. Apple trees have furnished a great variety. The ordinary Tent Caterpillar was numerous represented in May. Now we have the Fall Web-worm, also using a tent, and two other kinds which march in a body. One of these was described in the CANADA FARMER last year (page 328), from specimens which I furnished. The other resembles it in its habits, and I will send a specimen with this communication. But in addition to the above we have some queer customers who work singly.

1st. A large green worm resembling the much dreaded Tomato-worm, but devoid of that horn. It is rather prepossessing in appearance, having two rows of orange protuberances on the back; the front ones marked with dark spines, and side rows of fine blue spines. I kept one on a small crab-apple tree, but it suddenly disappeared. 2nd. A bristly caterpillar (as per specimen forwarded) having an imitation of four feet extending laterally, and composed of black bristles. The body is mostly covered with yellow bristles, while both sides and four spots on the back are black. 3rd. An extraordinary-looking smooth green worm, with a yellow ring about its stout neck. Its body tapers from head to tail—and such a head! It resembles the head of a codfish, or some other fish; even the eyes are there. It has a flesh-coloured-extension-style of snout, and when angry, which is not seldom, it projects two horns, which give forth a perfume just like that of the Celery-worm. I will send you

the only specimen I ever saw; notwithstanding his uneven temper I hate to part with him.

I should be glad to know more of these solitary kinds of leaf eaters.

E. R. M.

Halloway, Aug. 9th, 1870.

NOTE BY EDITOR.—The caterpillars "marching in solid phalanx over the white willows" are, no doubt, the large black spiny larvæ of the Camberwell Beauty Butterfly (*Panassa antiopa*, Linn.), which we have figured in the August number of the CANADA FARMER. The large green worm, one of the "queer customers who work singly," is the larva of the *Cecropia* Emperor-moth, referred to several times lately. It appears to be very common this year; we recently observed a small tree at Collingwood with about twenty specimens upon it, which the owner killed with coal oil. The "bristly caterpillar" belongs to the family of "Woolly Bears" (*Arctia* *l.*), so called from the shaggy appearance of the caterpillars; some species of this family are very destructive, as, for instance, the Nail Web-worm (*H. Textor*), while others are rare and very beautiful, both in their larval and winged states. We are not familiar with the specimen before us, and therefore cannot give its specific name. The "extraordinary-looking smooth green worm" is the larva of one of our handsomest butterflies—the Tiger Swallow-tail (*Papilio turnus*, Linn.). The strange mimicry of a head presented by the anterior segments of this caterpillar, and one or two others of the same genus, is very remarkable; it is probably intended by a wise Creator to render their appearance formidable and save them from the attacks of enemies. This species feeds upon the leaves of apple and cherry trees, but is never sufficiently numerous to inflict much damage. When full-grown, towards the close of summer, it selects some secluded spot and turns into the chrysalis state, first attaching itself by the tail to some convenient object, and then supporting itself by a silken girth passed around its body. It remains in this state all winter, and appears as a large handsome yellow and black butterfly in the following May or June. All the caterpillars of the Swallow-tail butterflies (genus *Papilio*) possess the curious orange-coloured tentacle, shaped like a Y, and giving out a strong and rather disagreeable odour. The "celery-worm" referred to is the larva of the Black Swallow-tail (*Papilio asterias*, Fab.)

Entomological Queries and Replies.

EMPEROR MOTH CATERPILLAR. A. R., Hagersville, Ont. The large caterpillar found by your wife on the apple-tree is a specimen of the larva of the great *Cecropia* Emperor moth; it is quite different from the Tomato-worm, and is not at all poisonous. You will find a picture of the moth and the cocoon formed by the caterpillar in the July number of the CANADA FARMER. The eggs

so tightly fastened to the limb of your apple-tree do not belong at all to this insect, but were laid by a very much smaller moth; if allowed to remain on the tree they would hatch out early next spring, and produce a brood of the well-known Tent-caterpillars. You do well to burn all you can find.

IO-MOTH CATERPILLAR.—B., Mimico, Ont.—The beautiful, pale yellowish-green caterpillar, covered with tufts of branching spines, and with a red and white stripe for three-fourths of its length along each side of the body, found by you on a currant bush, is the larva of the handsome Io-moth (*Saturnia Io*, Fab., *Hyperchiria variata*, Walk.). It is almost the only caterpillar we know of in this country that can in any way injure the human person; if handled incautiously, its prickly spines will sting the more tender parts of the body—as, for instance, the back of the hand—like a nettle. The moth is of a very beautiful bright-yellow colour, and has its hind wings adorned with a handsome eye-like spot resembling that on peacocks feathers; it is thus somewhat similar to the Polyphemus Emperor-moth, figured in the July number of the CANADA FARMER, but is much smaller, its wings only expanding to a width of about three inches. The caterpillar feeds on a great variety of trees and plants; viz. willow, elm, balsam, poplar, dogwood, sassafras, locust, cherry, Indian corn, clover, hop, and—according to you—currant also.

WALKING-STICK INSECT.—W. Woodman, Leaskdale, Ont.—The strangely-shaped specimen that you captured on the outside of your window-sash is a female Walking-stick Insect (*Diaperomera femorata*, Say). We were glad to receive the eggs that you enclosed, being two out of five that the creature laid the first night of its capture; we have had specimens of all sizes and ages of the insect, but never before saw its eggs. The male differs from the female in being of a greenish and not brownish colour, and in being furnished at the extremity of the abdomen with a singularly shaped pair of claspers, instead of an ovipositor. The eggs are of a flattened oval shape, whitish on one edge, very dark brown on the sides and other edge, and with a black ring around the tip of one end which is of a paler colour. You will find some account of the creature in the last number of the WEEKLY GLOBE, and further remarks in the January number of the CANADA FARMER.

CRICKET AND HAIR-SNAKE.—G. G., Beachville, Ont., writes as follows: "When crossing the parlor floor this evening I stepped on a cricket, at the moment my daughter was busy at the table securing some butterfly specimens in a case, and stooping down I lifted the cricket to prevent its being squashed on the carpet, and handing it to her I said 'There is something else for you to stick a pin into.' She took up the cricket, and on examining it said, 'Why, this cricket has a tail' and almost in an instant

stant she exclaimed 'Father, look at this.' On turning, I saw a snake-like production, which had just come from the cricket, wriggling on the table. Now, this may be a common enough production, but—in my ignorance, perhaps—it seems to me very curious and uncommon. I should, therefore, like to hear some scientific account of it. The product of the cricket has a mouth, and it measures eight inches in length; and what astounds me most, perhaps, is how such a thing could pack itself away in the body of this small cricket."—The occurrence thus graphically described is certainly one of the curiosities of nature, though not altogether uncommon. The snake-like creature is one of the so-called Horse-hair Snakes, a species of parasitic worm (*Gordius*) about which we have said a good deal in these columns. A short account of the creature will be found in the July number of the CANADA FARMER. It is certainly a great marvel how eight inches of *Gordius* can be packed away in a small cricket, though, to be sure, the former approaches very nearly to the mathematical definition of a line, "length without breadth," and can coil itself up into a very small compass.

VARIOUS CATERPILLARS.—Subscriber, Toronto.—The large caterpillars, whose spines caused a prickly sensation when they came in contact with the fingers, are specimens of the larvæ of the Io Emperor Moth (*Saturnia Io*, Harris; *Hyperchiria variata*, Walker), the only Canadian caterpillars we know of that possess this urticating power. They feed upon a great number of plants, as we mentioned in a recent reply to "B, Mimico." The pretty green caterpillar with golden yellow and black oblique stripes along the sides, and a stiff projecting tail at the posterior end, is the larva of the Ash-coloured Sphinx (*S. cinerea*, Harris). It feeds upon the leaves of the lilac and privet, coming to its full growth about the close of the summer, when it goes down into the earth and forms its chrysalis, emerging as a large ash-coloured humming-bird moth during the following July. The caterpillar sent was not nearly full-grown; they sometimes attain to the length of nearly four inches. The tomato with the caterpillar inside, that you speak of having sent us, has failed to make its appearance; the insect was probably the Bell-worm (*Heliopsis arnicipra*, Hubr.), which is very injurious to both corn and cotton in the United States, and also shows a great fondness for tomatoes.

CATERPILLARS DESTROYING CARFOTS.—We have received from an anonymous subscriber several beautiful velvety-green caterpillars, ornamented with transverse bands of yellow and black spots; he complains that they are destroying his garden carrots, and desires to learn from us something about them. They are the larvæ of the handsome black Swallow-tail Butterfly (*Papilio asterias*, Fab.) These caterpillars feed upon a

large number of both wild and cultivated species of umbelliferous plants. Harris enumerates the following.— Parsley, carrot, parsnip, celery, anise, dill, caraway, and fennel of our gardens, as well as on the colium, cicuta, sium and other native plants of the same natural family." They are not often so numerous as to be destructive, but when they are, the only remedy appears to be careful hand-picking.

COLORADO POTATO-BEETLE AT STRATFORD.—Our friend, Mr. N. H. Cowdry, of Stratford, Ont., has sent us a specimen of this beetle, which was found on a sidewalk in that town on the 23rd of July. He remarks that "it has probably done no harm among the potatoes this year, as there have been no complaints as far as I have heard, and this is the first one that I have seen." We fancy that we shall hear complaints loud and deep from the potato-growers of Stratford next year, if the advanced guard of the Colorado army has already reached them; we trust they will keep a sharp look-out and destroy the invaders as fast as they make their appearance. It is astonishing how rapidly this pestilent insect is advancing eastward.

SPIDER AND WASP.—F., of Fergus, Ont., writes as follows:—"I send you what is a stranger to me, a white and pink spider which I captured two days ago with the wasp dead in its arms, clinging to the sweet-pea. If you notice the colours, you will observe, that, to a shade almost, those of the spider and sweet-pea are identical. The spider was hard to kill, as it fell into the phial of alcohol and lived two or three minutes. The likenesses of the large moths in the last number of the CANADA FARMER are capital." We have several times observed this pretty species of spider about flowers, though not always the sweet-pea; its colours are probably designed to render it inconspicuous when amongst flowers, both to its enemies and to the objects of its attack. The wasp, a large "Yellow-jacket," much bigger than the spider, had evidently "caught a Tartar," and found his wily antagonist more than a match for him.

CATERPILLARS.—We have received by mail a box of caterpillars, bearing the Kneardine post-mark, but with no name attached to it. It would have been much more satisfactory had the sender afforded us a little information as to his desires regarding the specimens, however, we shall take it for granted that he wants them to be identified for him.— (1). The two large green caterpillars, each furnished with a curved reddish-coloured tail, and ornamented on each side with seven oblique lilac stripes, edged with white below, are larvae of the Plum Sphinx (*S. drupiferarum*, Smith & Abbott). They pass the winter in the pupa state under ground, and emerge as large ashen-coloured "humming bird" moths in the following summer. One of these caterpillars has been attacked by some parasitic ichneumon, and appears decidedly un-

happy, his days are evidently numbered.

(2). The small hairy caterpillars are specimens of the Fall Web-worm (*Haplodactylator*, Harris), which lives in communities protected by large web-covered nests on apple, plum, cherry, ash, willow, and various other trees. It must not be confounded with the Tent Caterpillars (*Ulisirampus*), which appear in early spring and turn into rusty-brown coloured moths; but it appears about mid-summer and remains upon the trees till late in autumn, coming out the following year as a pretty snow-white moth, free from any markings on the wings, but with its fore-legs yellow, and feet alternated with black and white.

WALKING STICK INSECT.—W. Coleman, Vroonantown, Ont.—The curious thing I send you, is a specimen of what are commonly called Walking-stick Insects or Spectres (*Diapheromera femorata*, Say). Like the so-called Hair-snake (*Gordius*) that ignorant and superstitious people believe to be derived in nine days from a horse hair dropped in water, this singularly shaped creature has been the subject of many wondrous stories. One, for instance, relates how a dead stick sprouted and put forth legs, and presently walked away before the affrighted gaze of the historian, who thereupon believed that some dire event was about to befall the human race! This odd creature is not uncommon, but is seldom observed by unpractised eyes, owing to its wonderful resemblance to a stick; it feeds upon young shoots and tender leaves, but is never numerous enough to cause appreciable damage.

BEE HAWK-MOTH.—John Carroll, Oakville, Ont.—The moth you sent us is a specimen of what is sometimes called the Bee Hawk-moth, or Clear-wing (*Sesia diffinis*, Boisd.); the former name is given to it from its resemblance, when hovering over flowers in the hot sunshine, to a Humble-bee, and the latter from the transparency of its wings. It belongs to the Humming-bird or Hawk-moth family (*Spiraxidae*), most of the members of which appear at twilight, noising themselves on their rapidly vibrating wings over flowers, and extracting the sweet juices with their long flexible tongues. The caterpillars of this family are furnished with a stiff, horn-like tail, the supposed sting of the innocent, but much blamed Tomato-worm.

THOUSAND-LEGGED WORM.—The Thousand-legged Worm or Millipede (*Iulus*) recently left at our office is not a true insect, but belongs to the Myriapods. Its body is of a dark chestnut colour, about three inches long, cylindrical in shape, and with an immense number of short legs; it crawls with moderate rapidity, and coils itself up on its side when at rest. It lives under old logs, where we have often found specimens when searching for insects, and feeds upon decaying vegetable matter. By many it is called a Cen-

tipede, and therefore thought to be poisonous like the creature of that name in tropical countries, but it is very different in reality, and possesses no noxious qualities whatever.

STRANGE CATERPILLAR.—Daniel Reynolds.

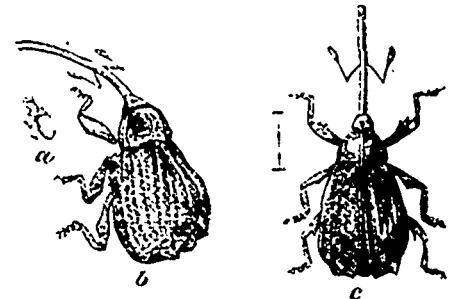
The beautiful green caterpillar, with the strange eye like spot, found by you on a dish of apple, is the larva of the handsome Tiger Swallow-tail Butterfly (*Papilio torturus*, Linn.). See our remarks on the communication of E. R. M., headed "About Caterpillars," for further particulars respecting this creature.

The Apple Curculio.

(*Anthonomus quadrigibbus*, Say.)

We have received from J. H. H., Millbrook, Ont., a specimen of the Apple Curculio—an insect that has not yet been much observed in Canada, though well known to entomologists in the western parts of Ontario. Our correspondent writes that "it had done a good deal of damage by eating a considerable portion of the surface of several apples. I could only (he adds) find a single specimen, though the appearance of a number of apple showed that there were more."

The accompanying illustration gives an excellent representation of the Apple Curculio, considerably magnified, the natural size



being shown by the small figure a. b represents a side view, and c a back view of the beetle.

This insect is about the same size as the only too-familiar Plum Curculio (*Conotrachelus nenuphar*, Herbst.), but may be readily distinguished from it by its much longer and more slender snout; its colour, which is dull brown, shading into rusty red behind; and the four conspicuous humps on the wing-covers behind the middle, which are brownish-red, and not shining black, as in the case of the Plum Curculio. Its original fruit appears to be the fruit of the hawthorn and other similar indigenous trees, but of late years it has been found to attack the apple, often to a very injurious extent. The late Mr. Walsh relates in the *Practical Entomologist* that, in 1864, fully one-half of the fruit of some trees at Beverly, Illinois, had been punctured by it, hardly an apple on the lower limbs escaping its attacks, and many having eight or ten holes in them. It makes round and not crescent-shaped holes in the fruit, most of them apparently for the purpose of eating, as but a small proportion have been observed to contain eggs or larvae. The only known remedy for its attacks is vigorous and continued "jarring."

Apiary.

Feeding Bees and Strengthening Stocks.

Feeding or strengthening weak stocks by giving cards of honey from strong ones is generally delayed too long. The bee-keeper will find it a great saving of syrup or honey, to feed early, as the bees will deposit far more of what they take up if fed just at the close or winding-up of the honey harvest. In all localities where there is but little fall pasturage it would be well to feed in August, or at the latest by the first of September.

At this season most of the feed given them will be deposited in the cells, and capped over the same as the honey brought in from the field, which prevents its becoming sour and unfit for winter use. And if stocks are to be strengthened, it disturbs the bees far less to do so while the weather is warm, and the bees will not consume so much of what is given them if it is given early, when they are gathering a little. Feeding or giving cards also stimulates to greater industry, and seems to encourage labour in the field, when given early, before all the flowers are gone.

Let bee-keepers try it, and they will not feed late afterwards. As a rule, it does not pay to keep stocks that require much feeding; still, many stocks with a very little early feeding would become good ones, and in such instances it pays to feed.

J. H. THOMAS.

Brooklin, Ont.

The Honey Season of 1870.

Now that the honey harvest is over, or nearly so, for this season, it may be well to compare notes with last year. For several years past we have not had what might be considered a first-rate season for bees, but that of last year proved to be the worst we have had for years. The season was wet and cold, bees could not work well, and the honey gathered was of an inferior quality.

At the time bees were put into winter quarters, the best judges supposed that the stocks had sufficient stores for winter use, but it appears that the hives were weighted with bee-bread to an unusual degree, and the honey was poor. The consequence was that there was a fearful loss of bees throughout the country, many even losing their entire stock, while others lost heavily. Hence this season opened with fully one-half less of bees in the country than last fall. The season, however, though a little dry, has been one of the best for many years, so much so that the loss of last winter is nearly if not quite made up, and far more honey has been taken than for years past, while the increase in stocks is all that can be desired.

The honey gathered is of an excellent qua-

lity, and stocks generally are well supplied with winter stores. O FitzWilkins writes that from one stock in a Thomas hive he took four boxes of twenty pounds each, making eighty pounds of pure virgin honey, and 142 pounds from the body of the same hive, with the honey extractor, making altogether a yield of 222 pounds of honey from one stock, which at 20 cents per pound would amount to \$44 40. Mr. John McLatchie, of New Edinburgh, writes that in the spring he commenced with 57 stocks—50 good and 7 weak or poor ones. He increased to 96, and took in boxes a little over 2,000 pounds in virgin honey, and 500 pounds with the honey extractor, making altogether an increase of 39 stocks and 2,500 pounds of honey from 57 stocks, including the weak ones.

The prospect is also that bees will go into winter quarters more than usually well stored with good honey, and if all be well we may expect them to come out in fine condition in spring.

J. H. THOMAS.

Brooklin, Ont.

NOTE.—Since writing the above we received a letter from Mr. McLatchie, saying that on the 17th August 46 stocks of bees, about 2,000 pounds of honey, and all his surveying instruments and clothing, were consumed by fire.

Ventilation of Stocks in Winter.

After all that has been written relative to the ventilation of hives in winter, the right principle is little understood. It is true that bees winter better when the moisture is carried off by upward ventilation, provided the heat is retained; but it is absolutely as necessary to retain the heat generated by the bees in the hive as to get rid of the moisture, if the former object is not even more imperative. Evidently, then, proper ventilation should allow the moisture to escape while the heat is retained. This may be done in the following manner. Cover all upward ventilating passages or openings with some warm material that will absorb the moisture, but retain heat. Thick flannel or woollen cloth, an old bag, or quilts made for the purpose, will answer. Hence, if the honey-boards of the Thomas hive are removed entirely, and a frame covered with wire cloth or strong linen put on instead, and over this some warm material, the moisture would entirely escape, leaving the bees and combs dry, while all the heat would be retained.

J. H. THOMAS.

Brooklin, Ont.

An army of bees are said to have swarmed into a church in Gloucester, Mass., one Sunday, during divine service, but retreated when the sexton shook the contribution box at them.

Bee Culture—Controlling Fertilization—Hungarian Process.

Mr. Semlitsch, an experienced German apiarian, communicates to the *Bienenzeitung* a method of controlling the fertilization of queen bees with selected drones, which is merely a modification of the plan already made public, but which will interest apiarians, and may suggest some useful practical hints. The process described was invented by Mr. Dax, of Duns, in Hungary, and is thus described by Mr. Semlitsch:—

“For our purpose we need, first of all, a common cylindrical wire gauze queen cage, fastened securely to the middle of a piece of board $\frac{1}{4}$ inch thick, and having a $\frac{3}{4}$ inch hole through its centre. This board must be sufficiently large to cover the hole in the top of the hive. A second similar board serves to have a queen cell attached to its under side with melted wax, and is laid on the first mentioned board, with the queen cell passing through the $\frac{3}{4}$ inch hole—thus closing the queen cage. Next we need a tin plate six or seven inches square perforated with numerous small holes, so small that a worker bee cannot pass through. And finally, we need a four-sided case of wire gauze or a glass cylinder, six inches wide and six or seven inches high, open at top and bottom, and having within, on one side, three or four inches from the bottom, a wooden peg or spear on which a small piece of honey comb may be suspended. These are all the requisite materials.

“When we are having queens reared, it is important that we should note the day on which the cells are sealed. On the second day thereafter cut out a queen cell, attach it by means of melted wax to the under side of the second board above described. Then, inverting the board, pass the cell through the $\frac{3}{4}$ inch hole of the first mentioned board, into the queen cage, so placing the board that the cell shall be freely suspended in the cage, with room all around and below, for the young queen to emerge when mature. With the second board then placed on the first, the queen cage is perfectly closed. Now open the hole in the top of the hive, and place the board on it, with the attached queen cage passing down into the hive as far as the board to which it is fastened will permit. Close all crevices tightly, and cover the whole with a piece of blanket doubled and securely fastened. By lifting the blanket and raising the upper board to which the queen cell is attached we may at any time ascertain whether the queen has emerged or not. On finding that she has left the cell, we wait four or five days longer, or more precisely, from after the third till the first fine, warm and favourable day that occurs, such as young queens themselves select for their bridal excursions. On such a day, we lift out the queen cage with all its adhering bees, cover the hole in the top of the hive with the perforated tin plate, and set the wire gauze cage or glass cylinder on it; thrust

into it the adhering bees from the queen cage, liberate the queen, let her pass down among the bees, and cover the top of the case or cylinder. There ought to be somewhat more than a hundred bees in the cluster. Should there not be so many, draw back the tin plate gently and let an additional number of workers pass up. Now suspend a piece of honey comb on the peg or spear, cover the case or cylinder, and place it in a dark chamber. At any time between eleven o'clock in the forenoon and three o'clock in the afternoon, a selected drone may be introduced, light partially admitted, and fertilization will soon follow. Should it not take place on the first day, the experiment must be repeated on the next, when it is almost sure to occur. Mr. Dax assures me that he had frequently used the process, and only on two or three occasions had he found it necessary to introduce a second drone, and was then invariably successful. 'Make the trial,' said he, 'it will not fail.'

"Apart from the undoubted credibility of Mr. Dax, other strong reasons lead us to presume that a successful result would follow a properly made experiment. Why does not fertilization take place within the hive itself? Evidently because in the crowded condition of a colony it could not be effected without interference, leading to commotion which might endanger the life of the queen. This being so, natural instinct has provided that, for this purpose, the queen shall leave her hive. Even should the bee-keeper undertake to interpose in the ordinary manner, by catching, confining and removing the queen, she would still be filled with alarm, and all her efforts would be directed to effect her escape and return to her hive—excitement and anxiety dispelling every other passion or natural impulse. Whether a queen thus removed be liberated in a roomy chamber and permitted to fly among workers and selected drones, or allowed to fly in the open air, restrained only by a silken string, the desired result will rarely be attained. But by the method employed by Mr. Dax, the queen becomes neither alarmed nor excited, for she is born in a state of confinement; and when permitted to mingle with a limited number of workers, she feels herself free and companionable, yielding readily to her natural impulse to provide for the growth of the small colony. If now a mature drone be introduced, fertilization will almost certainly follow, because, from the small number of workers present, clustered too, for the most part on the inserted honey comb, no interference or disturbance need be apprehended. Such are the grounds which induce me confidently to expect a successful result.

"Next spring I shall prepare for the hives having a honey chamber in the top, a division board $1\frac{1}{2}$ inch thick, with a suitable centre hole, substituting it for the ordinary top division board, for the purpose of experiment. If I should then also separate the honey

chamber by means of glazed division frame, I may possibly be able to dispense with the wire gauze case or glass cylinder. But in such case the tin plate must have precisely the length of the common top division boards, and take the place of the division board with the central hole."

The above process, it will be seen, is very similar to the method already described in this journal. We have experimented with one queen, and succeeded in getting her artificially impregnated.

Ed.

Profits of Bee-Keeping.

To the Editor.

Sir, I commenced last spring with one live of Italian bees from the stock of J. H. Thomas, Brooklyn, Ont., in one of his patent hives.

I have now ten splendid swarms, all of them being almost too full of bees to work with profit, besides a good deal of surplus honey. I had another swarm last week, but returned it to the live, as the season is so far advanced.

All the bees in this locality have done very well this season, but none so well as mine; and the only reason is that mine are Italians, while the others are the common black bees. Does it not pay to keep Italian bees?

JAMES LOCKIE.

Listowel, Aug. 2nd, 1870.

Bees should have a liberal allowance of air during all extremely hot weather, and if the stocks are strong the entrance blocks may be entirely removed.—LANGSTROTH.

All the choicest spare honey should be removed from the hives, before the delicate whiteness of the combs becomes soiled by the travel of the bees, or the purity of the honey is impaired by an inferior article gathered later in the season.—LANGSTROTH.

It would appear from the following extract from Purchas that bees have been from time immemorial in favour of the present fashion of cropping the hair. This quaint writer observes:—"Bees are much offended with long hair on head or face. Let such, therefore, as must be often among them, wear short hair, or be well covered, on peril of stinging."

HONEY FROM LINDEN.—Bees are doing finely in this locality. The present prospects indicate a grand yield of surplus at the end of the harvest. The weather is fine and honey abundant. The Linden is in full bloom at this date, being some twelve days in advance of last year. To give the readers of the *Journal* some idea, I have taken notes of the following stands, four in number:—Weight of each in the morning, 66, 74, 78, 70 pounds; in the evening, same day, standing thus, 85, 71, 72, 76 pounds, making the sum total twenty-six pounds in one day. These were not No. 1 full colonies, all having been swarmed, or brood taken from. It would not be too great a stretch of the imagination to say that good colonies can double the above figures. Is this not enough to stimulate the cultivation of this favourite tree? Already I see a movement in that direction.—*Cor. American Bee Journal.*

Correspondence.

Crops—Irrigation.

To the Editor.

SIR,—At this date we are still busy harvesting hay. Fall grain and barley are nearly all housed and safe. Hay in this vicinity is rather light, especially clover, a great deal of which was winter-killed or ice-smothered, so that our main reliance is the surplus crop of last season, and the hardier varieties of grasses that survived. Timothy is very good in some localities, especially near the margin of creeks or rivers, made rich and moist by the spring inundations. The protracted drought of the spring affected the hay and barley materially. "Store is no more," and those who were wise enough to keep their hay will profit thereby.

Barley does not yield as largely as last season; it is short, and ripened very unevenly, some being quite green while the rest around was quite ripe; this is especially the case on clayey soils. Barley needs generous culture. Farmers are too anxious about the quantity sown, and not careful enough about the quality. These heavy clay soils need a great deal of moisture and stirring to render them fit for spring crops. It would be better and surer on such soils to raise fall grain, which would receive all the benefit of fall, winter, and spring moisture, and would become rooted so strongly that the drought would have little effect upon it.

Very little fall grain has been grown in this township this year. Those who have held to fall wheat-growing are well repaid, both in yield and quality. The Diehl and Treadwell varieties especially have done well. We should grow more. Oats are an abundant crop. Spring wheat promises well. Peas are very good and well podded.

The subject of irrigation has engaged my mind of late. Can we not to some extent mitigate the severity of our periodical droughts by some artificial means? 1st. By securing the water that comes down our hill-sides and through our fields, and forming reservoirs from which it might be dispensed in time of need to the thirsty ground, through channels or pipes. 2nd. By using waggons or carts similar to water carts, with broad tires, and otherwise adapted to the purpose. 3rd. By the use of steam power and hose, one of which might serve for two or three concessions. 4th. By applying such manures to the soil as absorb moisture, and ploughing under green crops. 5th. Diverting the channels of creeks, and making them spread over a large area of land. In Eastern lands they seem to appreciate the gifts of inundations better than we. True, manual labour is cheaper; but here, with all the aids of machinery, much might be done to economize the water so lavishly bestowed upon us. Would not hydraulic rams be of service in this respect? I would like to hear more on this subject.

JOHN S. BOUTILLIER.

Sidney, Aug. 9, 1870.

The Potato Beetle.

To the Editor.

SIR,—You seem to be desirous of having the opinions of those who have suffered from the Colorado potato beetle.

I have grown about eight acres of potatoes this year—six acres of Garnet Chilis and two of Early Melters, a potato much grown about London, and in productiveness, earliness, and flavour, far surpassing the much vaunted Early Rose.

The beetle settled upon the Melters first about the second week in June, and whilst the tops of this potato were green, no beetles touched the Chilis, but when the Melters were exhausted they attacked the Chilis. I do not intend to say anything about the beetle that will encroach on the work of the entomologist: but I think that as yet there has been no practical mode of dealing with these pests made known to us. I look upon all the suggestions as to the mode of poisoning them as utterly useless, when potatoes are grown on a tolerably large acreage. In a small garden patch they may be sprinkled with hellebore, or shaken off and trodden on, or troubled with Paris green, but not when they are grown by the acre. The cost of doing any one of these things would swallow the potatoes, for they would require sprinkling every other day. This pest is not a caterpillar only; it has wings, and the beetles are marching westward at a considerable rate. They are constantly recruited by fresh arrivals. If the main army is destroyed, the reserve takes its place, and the militia succeeds, and the *levy en masse* comes after the militia, so that such modes of destruction are altogether impracticable to the farmer, though the cottage gardener with children may succeed in effecting their destruction.

What, then, will succeed? In difficulties of this nature it is, after all, to the practical farmer that we must look for an effectual remedy. One summer's experience is only of small value, but I will tell you mine. My potatoes were planted the first week in April; they were well up by the first week in May. Having no frosts in this neighbourhood at that period of the year is, no doubt, an advantage. The result of early maturity is this—that the crop of Melters were too far advanced to be much damaged, notwithstanding the loss of the tops. The Chilis are not so good as in ordinary years, having lost the nourishment they should have received from the injury done to their tops, but they are far beyond the same potatoes grown by many of my neighbours, but not put into the ground until after mine were well up. The reason seems to me to be that the beetle in mine did not destroy the tops until after the potato was well advanced, but with my neighbours the potato was much younger, and therefore suffered more from loss of the tops. One mode, then,

of cheating the beetle will be by getting the crop in early, and selecting those kinds of winter potato which mature early. Now, the Early Melter is one of these kinds—one of the earliest, and good as long as you can get it, that is, as good in the next spring as any other potato. The Chili, for a winter potato, is an exceedingly early kind, and keeps remarkably well.

I am, of course, presuming from this year's experience that this pest will not commence its devastations earlier in any other year than it has in this, which may or may not be correct. Then, as to early planting, those parts of the country where there are spring frosts may be supposed to be shut out of my remarks. I think not, however, and I should plant as early as I could get the ground ready for them, and as soon as the tops peep above ground I would cover very lightly either with the hoe or double mouldboard plough, and repeat as often as the tops appear, until all danger of frost has gone. I do that here, although there is little chance of frost. I have done it at the London Asylum farm this year to protect the young tops from frosts. I think these measures of planting early and covering over, and selecting the earliest maturing kinds, may give us good crops until this pest disappears, as all such pests do in a few years, from some cause or other which scientific men have not yet discovered. I would add frequent hoeing and scuffling between the rows, in order to worry those insects which, in one form of development or other, hide themselves in the earth.

HENRY FANDON, M. D.,
Malden Asylum.

Amherstburgh, Aug. 22, 1870.

Lucerne, Etc.

To the Editor.

SIR,—I should be glad if you or your readers would, from actual experience, give me information on the following questions:—

1. Can Lucerne or Saintfoin be depended on to stand the winter for several years?
2. Will autumn-sown tares live through the winter?
3. Can a hay crop of tares be got off in time to get buckwheat in?
4. Will clover hay chaffed and steamed keep young pigs in winter?

A SUBSCRIBER.

REPLY.—1. From a limited experience with Lucerne we believe it will endure the Canadian winter. Many years ago we saw this crop grown on sandy loam soil, and although neglected in its culture there was an excellent yield the first year. It was sown about the first of May, 1832, and endured our winters, and yielded two cuttings each year for about five years. It was then destroyed to make room for a garden. The owner, a bricklayer, knew little of farming, and took no care of the young plants even the first

year. It was sown broadcast with barley. Many of the stalks were four feet high, and several horses were fed during the summer from it.

2. It is very doubtful if the winter variety of tares will survive the severe cold of this climate.

3. If sown early, there would be plenty of time after the removal of the crop for one of buckwheat.

4. We should not expect that such feed alone would suffice for hogs. It is even doubtful if they would eat it, however well they may relish the fresh, young and green clover.

Mouldy Beans.

To the Editor.

SIR,—In examining to-day a bin containing beans which had been lying more than a foot in depth, I found that beneath the surface they had heated and become covered with a white mould which rubs off with the fingers, and were very musty also. They had not been stirred in the bin since winter.

Though half ashamed to confess ignorance with regard to the necessity of stirring such crops in warm weather, yet I deem it a duty to give my dear experience to my brother farmers, lest some of them lose through similar neglect.

Please mention: How can such beans be used to best advantage? Can they be fed with profit to store sheep, or to sheep for breeding; if so, how should they be prepared? Is it profitable to raise beans for feeding on clay soils?

THOMAS SHAW.

Woodburn, July 29th, 1870.

DOUBLE IMPREGNATION.—A correspondent from Troy asks "whether it is possible for a sow to breed from two boars at the same litter?" Such an occurrence is certainly possible, and is not inconsistent with physiological laws. Well authenticated cases of a parallel character have been recorded as having taken place among animals where such instances must be rare, and with some animals the case can hardly be considered exceptional.

CALF FEED.—In reply to the enquiries of T. N. Sylvan, respecting feeding grain to his calves, we would say that a mixture of grain feed, such as he proposes, is very serviceable for growing as well as fattening stock. For the sake of obtaining variety, which is very desirable in feeding, by keeping up the appetite and strengthening the digestive powers, it would be well to alternate the various grains, rather than mix them all together at one time. From four to six pounds of grain daily would be sufficient for the calves, but they must have, in addition, a fair allowance of hay or straw, chopped and steamed, if possible. A proportion of roots also will, besides preventing constipation, prove very useful in the absence of green food.

SEASON PLOUGH.—J. Morley, of Thorold, and W. Walker, London, manufacture them.

WINTER BARLEY.—Can any of our readers give information of recent experience with winter barley in Ontario?

CANARY GRASS.—The specimen of grass sent for identification by J. Y., Springheld, is Canary Grass (*Phalaris canariensis*), a variety which furnishes the well-known canary seed.

WILD RASPBERRY PATCH.—If enclosed, there should be no difficulty in dealing with trespassers; but if unenclosed, the enforcement of the owner's legal right might cost more trouble than the fruit was worth.

SNAILS.—Mr. F. Fowler, of Haysville, asks for a remedy for snails in the garden, having tried a number of applications in vain.—Snails can not travel in chaff, and if this be spread in a circle around the plants an inch deep, they will be found in the chaff with it adhering to their bodies. Air-slaked lime, sprinkled on the plants when they are wet, with dew is useful.

ALSIKE CLOVER.—A subscriber from Mount Forest writes:—"Would it harm Alsike clover, that was sown last spring, where there is a large percentage of red clover that was seeded in with the dung the previous year, to cut it now? There is quite a heavy crop, and I think it would smother with the weight of snow in winter." A very heavy crop, such as you describe, mixed with some of last year's seeding, might be cut now without damage, though under ordinary circumstances it would be best to let it alone till next year.

GERMINATION OF WHITE CLOVER.—T. N. is puzzled about the spontaneous appearance of white clover in his meadow several years after the first seeding. White clover is very capricious, so to speak, in germination. When purposely seeded, it will sometimes not come up for several years, and may then make its appearance in patches. It also appears spontaneously in blue-grass and other pastures, and increases in some years with extraordinary profusion. Wherever it springs up the germs must, of course, have been already in the soil, or been mixed with the other seeds used in artificial seeding. It is a kind of seed that will remain dormant, without losing its vitality, for almost an indefinite period.

WHITewASH.—"Cultivateur" asks, "What is the best mixture for a whitewash for out-buildings?" The following is a good receipt for the purpose:—Slake half a bushel of lime with boiling water, when thoroughly slaked, add more water, two pounds of sulphate of zinc and one of common salt. Colour can be obtained by the addition of three pounds of yellow ochre for a cream tint; for fawn colour add four pounds of umber, one pound Indian red, and one pound of lampblack; for stone colour, use four pounds of raw umber and two of lampblack, and for lead colour add lampblack only.

The New Cattle Disease.

The following reply from Mr. Atkin the Secretary of the North Middlesex Agricultural Society, to a letter of enquiry from Mr. Buckland, Secretary of the Bureau of Agriculture, may be taken as a sample of others on the same subject, all giving uniform testimony of the nature of the disease.

Mr. Atkinson says:—"At a meeting of Directors of the North Middlesex Ag. Society, held at Ailsa Craig on the 29th inst., your communication of the 22nd inst., relative to "Cattle Disease," was read, when it was unanimously concluded by the Board, then in session, that there is at present in this section of the province no appearance whatever of a cattle disease; and that the so-called "cattle disease," or "plague," is nothing more or less than a grievous annoyance caused to the cattle by unusual swarms of flies. These flies, in low and marshy places, so afflict a beast as to cause in a few instances considerable swelling in the legs.

The application of almost any simple embrocation will not only prove a cure, but a sure preventative against the flies."

Advertisements for the "Canada Farmer" must be sent in to the office of publication early, and in order to secure their insertion in the forthcoming number, must in no case be later than the 7th of the month.

The Canada Farmer.

TORONTO, CANADA, SEPT. 15, 1870.

Harvest and Weather Notes.

Though the threshing-machine is the true measure of our cereal crops, and estimates formed from standing grain or the harvest field are often erroneous, yet the time has now arrived when a tolerably correct opinion can be formed of the produce of the year.

The accounts that reach us from outside our own Province are of a very varied character, but not on the whole discouraging. In Great Britain, notwithstanding the long-continued and extreme drought, the most severe with which the country has been visited for a great number of years, the returns are far from unfavourable. A report published in the *Mark Lane Express* and other British journals states that the harvest weather has been remarkably fine, and the quality of the grain for the most part excellent. With regard to wheat, the yield on light soils has been below the average, but that on the heavier lands has turned out well, and of superior quality. The barley crop is said to be poor, and about twenty per cent. under average. Oats are set down as fifteen per cent.

under average. Beans have proved a comparative failure. Peas will be up to the average. The potato crop is reported to be looking well and free from disease. Other root crops are also promising. Hay has suffered seriously, and cannot be other than very short, though in the north of England and Scotland a much better account is given of this staple fodder.

Very little can be said of the Continental harvest. From a large portion of Europe, war news absorb every other interest. The fields that had suffered from the drought are rendered yet more fruitless by the devastations of opposing hosts. In the countries not implicated in the terrible contest, the season has not been unfavourable.

The reports from the United States represent a falling off in the yield of wheat, fair crops of other grain, and an abundant yield of Indian corn.

Within our own borders, the character of the season affords abundant grounds for thankfulness. Though in some districts short crops and comparative failures are reported, yet for the most part the yield of all field produce will be good. In some localities, the heavy storms of wind and frequent showers have seriously damaged the wheat, but the harvest returns of the country, taken as a whole, will probably come nearly up to the average. Root crops everywhere look well. The prices of farm produce, there is every reason to believe, will be good. Hay will, no doubt, be dear, not only because the crop will be somewhat short and damaged, but there will probably be an extra demand for export.

The accounts from the sister Province of Quebec are less cheering. Vegetation has suffered severely from the protracted drought, and the amount of damage inflicted by the forest fires has added a serious element to the tale of losses. The generous aid of the more prosperous dwellers in Ontario will be required, and, no doubt, be cheerfully rendered, to relieve, in a measure, the sufferers from these accumulated disasters.

The character of the weather during the past month may be gathered from the following notes, taken from the records of the Toronto Observatory:—

The mean temperature of the month was 67° 07, being warmer than the average of the past 30 years, by 1° 07, and warmer than that of August, 1869, by 3° 43. The highest temperature was 84° on the first, and the lowest 40° on the 27th. The warmest day was the 8th, the mean temperature of which was 73° 1, and the coldest day the 26th, with a mean temperature of 54° S. The amount of rain-fall was 3.422 inches, being slightly (0.407) above the average, but below that of the corresponding month of last year by 1.688 inches. Rain fell on fourteen days, and eight thunder-storms occurred in this neighbourhood. During the thunder-

storm on the 5th, .60 inches of rain fell in 15 minutes, and .86 inches in 45 minutes. The sky has been perfectly clear only on seven days, totally clouded on four days, and partially so on twenty days. The prevailing winds have been westerly, with some easterly, and very little from either north or south.

A Day's Labour.

The "labour question," as it is somewhat vaguely called, has of late given rise to much controversy and some questionable legislation. Among other matters to be decided, the term of a day's labour has been warmly discussed, and while the limitation to ten hours or even eight hours has each found advocates, not a few are opposed to any restriction in the case whatever, believing that perfect freedom should be permitted on all hands, and that thus a right adjustment will be best secured. Yet that such freedom has been abused, and always will be, has been clearly demonstrated by experience. In the case of young children, for instance, it has been found necessary to protect the helpless class against the greed and cruelty of those who ought to be their most humane and tender guardians. When labour also is overabundant, and employers have from this fact a tyrannical power, it may be necessary to interfere on behalf of the over-tasked working man. But in this country the preponderance is all on the other side, and the tyranny is felt to be exercised by the labourers rather than by the men who require their services. This is the case more particularly in the agricultural community, among whom the supply of labour is certainly much below the demand, and the legitimate profits of farming are thereby often very unreasonably reduced. The "hire of the labourer" too often in Canada swallows up a most disproportionate share of the income of the farm.

Let it not be supposed that we would justify excessive demands on the labourer's powers or time, or that we are advocates for anything like unremitted toil. We are firm believers in the benefit, nay the absolute necessity, of relaxation, rest, and a fair amount of thorough recreation. But there are peculiarities about the farmer's calling that render the rigid application of any fixed rule in respect to working hours, such as might be quite compatible with the requirements of a factory or a store, altogether impracticable on the farm. The season during which the farmer has to complete all the operations of husbandry is very short, and often precarious; seed-time and harvest especially are periods of unavoidable hurry, during which the loss of a single day, or even of a few hours, may seriously affect the crop. A few hours may suffice to complete the seeding of a field just before a threatening storm or accession of wet weather, which, while it puts a stop to further work, may be just what was required for giving the seed an early start,

and securing for that particular crop most important advantages, such as immunity from insect damage, strength to resist early frosts, or a gain of weeks, perhaps, in the time of maturity. And again, during harvest there are occasions continually occurring when it is of the utmost consequence to push on the work of in-gathering and securing under shelter the produce of the field with all possible energy and despatch, and it now and then becomes necessary to use every minute of daylight, or even to prolong the day's labour under the benign aid of the traditional "harvest moon." Such extreme occasions are, of course, exceptional, but when they do occur they are imperative, and no farmer would consent to forego the advantage of the extra hours under an arbitrary regulation to "quit work" at a certain time. The loss of a valuable crop may result from a few lost hours.

Taking one day with another, moreover the farm labourer has his compensations for these extra hours of work. The man who is hired by the year can set against the long days of summer, the very short days and often interrupted work of winter; and he who is engaged especially for harvest receives extraordinary and often exorbitant wages, which certainly should cover a little additional demand on his exertions. Wet seasons and storms will also often break into the regular course of work, and make the day's labour lighter, and often in effect shorter, without any corresponding deduction in the high rate of remuneration received. The men most likely to rebel against these unavoidable extra tasks are not the regular farm labourers, who have been brought up in the country and know the exigencies of farm life, but the occasional "city hands" who have been tempted by harvest wages to "hire out in the country" during the busy season. Such men often give no end of trouble, and farmers should resolutely set their faces against their unreasonable stipulations. Better dispense with their services altogether, than submit to their dictation; their help is often dear at any price.

There is, of course, another side to this question; and while the peculiarities of farm work render some latitude necessary in the hours of labour, there must on every well ordered farm be a generally regular system of daily work, and there need not be any immoderate share of toil. There is no fear, under existing circumstances, that Canadian "hands" will be overtaken. So long as the number and proportion of employers and employed continue as they are, there will be plenty of choice for the latter, and the unreasonable master will soon find himself a marked and avoided man, unable to obtain help when he most needs it; while his less selfish and exacting neighbour will be cheerfully and well served. A kindly and considerate treatment of farm hands, or indeed any class of labourers, will generally enlist them heartily in their employer's service,

and establish that mutual interest and good understanding between the contracting parties, without which neither farming nor any other business can be pleasantly and prosperously conducted.

Agricultural Premiums.

The signal advantage to be derived from competition, and the immense aid to progress which the system of agricultural exhibitions and prizes has developed, do not require, in the present day, to be enforced by illustration or argument; but it would be unreasonable to expect that we had reached perfection, and that there was no room for improvement. Indeed, it is now generally acknowledged that the existing class of premiums needs some additions, if not substitutions. There are, for instance, some departments in which the specimens that gain prizes are of comparatively small value. Among live stock, a single excellent animal is of intrinsic worth for breeding purposes, or some other desirable object, and deservedly obtains distinction; but among field or garden products an individual or very limited sample may be raised at a disproportionate cost, and may afford a very inadequate idea of the general character of the crop, or the good management of the producer. Prodigious Swedes are not unfrequently culled from a field of very inferior growth, and mammoth fruits are sometimes merely the pets of a neglected garden, and like the spoiled children of a family, very unfit subjects of reward.

It is with such classes of premiums that there is need of some change, and additions of the character required are being introduced both in Great Britain and in the United States, with very encouraging results. To some of these improvements it may be well briefly to direct the attention of those who have the management of our agricultural exhibitions.

The actual trial of implements with the practical testing of their work is becoming each year more extensively adopted as an essential element in competition. Indeed, there is no other fair indication of merit, and without such test awards are comparatively worthless as a guide to farmers. This feature in the exhibitions of the Royal Society of Great Britain is one of the most noticeable of modern innovations. The trials are very thoroughly and systematically conducted, considerable time being devoted to the purpose, and only a limited class of implements being submitted to examination in each year, so that all may in rotation be fully tested. The New York State Agricultural Society has also set a good example in this same direction, and there can be no doubt that great improvements in agricultural machinery will result from such a system.

Another commendable novelty in this year's prize list of the Royal Society has excited much interest, namely, the award of premiums for the best managed farms. The

competition was confined to the County of Oxford, in which the show was held. The first prize, a silver cup, value £100, was awarded to Mrs. Millington, of Ash Grove Farm, Ardley, Bicester; the second, of £50, to J. B. Tredwell, of Upper Minchenden, besides commendations for other farms, and, in one case, the recommendation of a third prize. The farm of Mrs. Millington, we are told, was by no means a model farm, in the general acceptance of the phrase, with extensive buildings, high-bred stock, steam cultivation, and all the appliances of modern science, but was an ordinary tenant farm, judiciously managed in accordance with a tenant's limited capital, and with a primary view to profit. No doubt the decision of the judges will be sharply criticised, and in future some more specific regulations may be found necessary to determine the awards; but the principle is a sound one, and the example will be followed up by other societies on both sides of the Atlantic.

As a further excellent illustration of this subject the prize list of the New York State Agricultural Society for their forthcoming exhibition may be cited, and is deserving of general imitation. An enumeration of some of the novel objects for which premiums are offered, will show the practical character of the competition, and may suggest valuable hints to some of our own societies. Among the special features to which we allude, are premiums for essays and experiments; for the best specimen of farm book keeping; the best examples of underdrainage, of reclaiming swamp lands, of irrigation; the best experiments with wheat, liquid manure, feeding stock, etc. Besides these, special prizes are offered for tree planting, for crops, for the best vineyard, the best dairy, and the best managed farms. These are all objects of prime importance, and bringing them into prominence by public competition cannot fail to diffuse much valuable information, to stir up a rivalry of the most practical character, and to lead to improved methods of husbandry.

We earnestly commend the subject to the consideration of agricultural societies in our own Dominion.

A Natural Method of Salmon and Trout Raising.

A strict system of preserving fish, similar to the practice adopted with game, was formerly the only method in operation for preventing the gradual extermination of many valuable species; but, in addition to legal restrictions against wholesale or unseasonable slaughter, a far more efficient plan has, within a comparatively recent period, been successfully introduced, not only to arrest the decimation, but to re-stock depopulated waters, and multiply their finny inhabitants almost indefinitely by artificial breeding. This system of pisciculture has been chiefly applied to salmon and trout, as being the most valuable, and perhaps the most easily raised in

this way. The subject has occupied considerable attention, and been practically tested on an extensive scale in Europe, and quite recently has begun to attract the notice which its importance deserves, both in the United States and in Canada. The method most generally practised is that of trapping and catching the adult fish during the spawning season, pressing out the ova of the female, and impregnating them with the milt of the male similarly extracted by pressure. To this method objections have been raised as being unnatural and violent, inflicting more or less injury on the parent fish, and from the liability of ejecting immature ova, as well as subsequent artificial treatment, producing a degenerate offspring.

We are not prepared to discuss the force of these objections; but admitting that bungling performances in unskilful hands may give colour to them, and, moreover, that the attention of some prominent pisciculturists has been too much devoted to the lucrative trade of selling ova and very young fish, rather than raising them to maturity, still the very marked success that has attended carefully conducted operations in artificial fish hatching furnishes strong grounds for believing the system to be sound, and the results most advantageous and important. Our object, however, at present, is to direct attention to a simpler and more natural method, which the objectors to the artificial system would substitute for attaining the same object. The matter has been recently brought into public notice by Mr. W. H. Furman, of Maspeth, Queen's County, N. Y., who has devoted much patient investigation to the subject, has tried and at length abandoned the purely artificial method, and proposes instead one which he claims is not only more consonant with nature, but more satisfactory in its results. He has arrived at his conclusions by carefully studying the habits of the fish, and aiming to secure the conditions which are naturally essential or desirable. He observes that the spawning beds must be clean and gravelly, having the water of a certain even temperature, somewhat warmer than the average temperature of the stream. The absence of a strong current, and comparative darkness, are also important; such situations are usually found over springs in the bed of the stream. In the plan which Mr. Furman advocates, he combines all these conditions, and imitates nature as closely as possible.

The main feature of his method is what he calls a shanty, which is simply a commodious, healthy and safe spawning ground. The bottom or bed is composed of a layer of clean gravel from four to eight inches thick. Through this bed, springs, natural or artificial, percolate from underneath. The structure is covered, so as to protect the eggs from the injurious effects of sunlight, and is kept free from eels, frogs, water-snakes, water-rats, muskrats, and other enemies of the young trout.

The shanty having been set in order, the trout are left to find their way to it by natural instinct, which is always sufficient. They flock to the spot at spawning time and deposit their eggs on the gravelly bottom. The eggs immediately sink in the gravel beyond the reach of the male trout or other interlopers. As soon as the eggs begin to hatch, the trout are all driven from the shanty, a screen is put at its mouth to prevent their return, and the young fish are left in absolute safety. They are kept in the shanty, and fed there, till they become old and active enough to be turned out into a pond to take their chance in wider and deeper waters.

The method certainly seems feasible, and we commend a trial of it to those who have suitable streams on their farms; and have no doubt that with comparatively little trouble they may obtain an acceptable variety of wholesome food for their own tables, as well as increase the profits of their husbandry by supplying the market with the produce of the waters in addition to the fruits of the earth.

Quebec Provincial Exhibition.

The Council of Agriculture for the Province of Quebec have issued their regulations and prize list for the forthcoming exhibition, to be held in Montreal during the third week in September, from the 13th to the 16th inclusive. The occasion will, no doubt, be one of great interest, and the more so from its occurring less frequently than our own exhibition, being a biennial instead of an annual affair. Extensive preparations in buildings and grounds are in progress, and the Council, under the energetic leadership of the President, H. G. Joly, Esq., and M. H. Cochrane, Esq., the Vice-President, are bestirring themselves to render the exhibition of this year one that shall eclipse its predecessors. The presence of Mr. Cochrane's stock alone would render the show peculiarly attractive, and repay the visitor for the trouble of a long journey. Others also in the sister Province have been stimulated by his example, and have recently made valuable importations from Great Britain, and these will, no doubt, be on view as competitors for distinction. The time fixed is early, and has been so arranged as not to interfere either with the New York State Fair, or our own Provincial Exhibition, and the occasion will, doubtless, draw a large crowd to Montreal. The Council, we are informed, will make arrangements with steamboat and railroad proprietors for carrying passengers and articles at reduced rates, and also with the Customs Department for the free entry into the Province of articles for exhibition.

The competition is open to all; and intending exhibitors are notified that all entries for live stock must be made on printed forms supplied by the Secretary, Mr. Leclere, of Montreal, on or before Saturday, August 27th,

two weeks preceding the show. Entries in other classes may be made up to Saturday, September 3rd, one week preceding the show, after which date no entries will be received.

In the list of premiums—a liberal one mounting up to nearly \$9,000, more than \$5,000 of which are offered for the live stock department—there are some special features. The Prince of Wales Prize of \$60 is offered for the best herd of cattle, consisting of one bull and five cows, no specification, however, being made as to breed. The Council also offer a second prize of \$50 for the herd next in merit. The classification of horses is somewhat peculiar, as giving prominence to special breeds—Clydes, Percherons, Normandy, Suffolk, and pure Canadian—for each of which three prizes are offered. A number of other varieties are also entered in this class, and among them, at least, Shetland ponies are included. In cattle also a distinctive breed, but one of world-wide celebrity, the Alderney, comes in for a share of honours. At the last exhibition, two years ago, there was a beautiful herd of these animals shown that had been recently imported from England, and selected chiefly from the Prince Consort's farm.

The absence of any horticultural department challenges comment; but is no doubt accounted for by the fact of the Montreal Horticultural Society taking this branch under their special charge. They will assuredly hold their show simultaneously with the Agricultural and Industrial Exhibition of the Province, and thus supply what would otherwise be a grave deficiency. We trust the efforts of the Council will be amply rewarded, and that the forthcoming competition will be at once an evidence of progress, and an incentive to yet further advancement in agriculture and the industrial arts.

Encouraging the Importation of Thoroughbred Stock.

The Provincial Association have, during the present and past years, adopted the following resolution, which has been published in their prize list, appended, ss 23:—

"With a view of encouraging the importation of improved stock, the exhibitor of any male animal imported into this Province from Great Britain or any foreign country, and not previously exhibited, which shall take the first prize in any of the above classes, will be paid three times the amount of the premium offered in the list; the exhibitor of any female animal imported and not previously exhibited, taking the first prize, will be paid double the amount offered. Such animals to be the *bona fide* property of persons residing in Ontario (Upper Canada) and to be retained in the Province for at least twelve months after obtaining the prize. Satisfactory evidence must have been given at the time of making the entry that the animal has been imported, and not previously exhibited at any Ontario Provincial Show, or the increased prize will not be paid."

This, one would think, was fairly enough expressed, and yet there are persons who

ask what it means, and contend that it violates the principle of open competition, restricting it to the Province of Ontario; whereas no one outside is precluded from obtaining his prize should he gain one, but he is not entitled to the *extra* premium for importation, unless the animal is retained in the country for a certain period. This is certainly only a reasonable stipulation, for it could not be expected that Ontario should offer any special inducements or rewards for importations into New York or other States for the exclusive benefit of those countries.

There is certainly another rule, the 12th, which will practically exclude exhibitors of male animals over one year old, in the horse and cattle classes, from taking a prize, unless they dispose of them to a resident, or allow them to serve in Ontario for one year after the Exhibition closes. This also we think only just and reasonable. The only improvement we would suggest is the offer of special prizes designed to encourage the importation into the Province of improved stock, even in cases where other imported animals may take precedence in the awards. Newly-imported animals, provided they are commended by the judges as being of good quality and real value for the improvement of our live stock, might be allowed an extra premium, whether they gained a prize in their respective classes or not. The importation of a really valuable animal deserves some such recognition and reward.

Galt Sheep Fair and Ram Sale.

A number of enterprising gentlemen, of the counties of Waterloo and Wellington, have determined to have an annual fair at Galt, on a similar plan to the well-known Kelso Tap Sale of Scotland. The first fair will be held on the 14th October next, when it is hoped the inauguration will be well attended by all the prominent sheep-breeders of Ontario. There is expected to be a large number of buyers from the United States, as the fair is extensively advertised in U. S. agricultural journals. It will be optional with breeders to sell by auction or private sale, though the former mode will have the preference with most of them. Galt is situated on a branch line of the Great Western Railway, and is easily accessible from all points on the G. T. R. via Guelph, and G. W. R. via Harrisburg. The notice of the fair will be found in our advertising columns.

NATIONAL LIVE STOCK JOURNAL.—We have received the first number of this new periodical published at Chicago, and edited by J. P. Reynolds. It is a handsome, well printed quarto magazine of 32 pages, containing much valuable information. A long list of its special correspondents and contributors includes the names of some of the leading stock-breeders and agricultural authorities of the Western States. It is published monthly, at three dollars per annum.

KELSO RAM SALE.—The annual autumn show of sheep and ram sale has been announced to take place at Kelso, Scotland, on the 9th of September. We expect shortly to receive full details.

MORRISON LODGE COTSWOLDS.—We direct the attention of sheep-breeders to the advertisement in our present issue of Mr. Stone's Cotswold sheep sale, to take place at Morrison Lodge on the 21st of this month. We are informed that the sheep are all closely shorn, and in good breeding condition.

SALE OF YOUNG THOROUGHBRED SHORT-HORN BULLS.—It will be seen by our advertising columns that Hon. D. Christie offers for sale a number of his young Short-horn bulls. These choice animals are in excellent condition, and show unmistakable evidence of the Booth blood they inherit through their sire, Knight of St. George.

IMPORTATION OF THOROUGHBRED STOCK.—We are informed that George Isaac, Esq., of the Haldimand Plains, Northumberland County, has made a second importation of thorough-bred Short-horns from Scotland. This importation consists of two bulls and seven heifers, three of the heifers being two-year olds and the others yearlings. They were selected by Mr. George Isaac's son, from the well-known herd of Mr. Sylvester Campbell, Aberdeenshire. It is gratifying to observe that so many Canadian stock-breeders are giving evidence of their enterprising spirit by making valuable importations from Great Britain.

FOUR-HORSE POWER THRESHING MACHINE.—Farmers have often felt the want of a convenient thresher, of smaller size than the ordinary travelling machine, and the price of which would bring it within the reach of men of ordinary means, so that it might be included among the regular implements of the farm, and be at hand when it was required, thus obviating the necessity, in busy and pressing seasons, of waiting the convenience of others. Such a private machine could also be worked by fewer hands, and at much less cost than the ordinary thresher, a consideration of no small consequence to the farmer himself, and to his good wife, on whom a large share of the extra toil of threshing days devolves. A machine of this kind has been now some time before the public, and has each year gained in favour. We believe that the "Little Giant Thresher," manufactured by Mr. James Sharman, of Stratford, and advertised in the present issue, is thoroughly reliable, and possesses all the advantages which the maker claims for it. It is of moderate price, can be worked with four or six horses, but is preferred by many who have used it to the larger machines. One of its chief excellencies, we understand, is that it threshes clean and without waste. It will be on view at the Provincial Exhibition.

Horticulture.

EDITOR—D. W. BEADLE,

CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

Fruit Growers' Association of Ontario.

REPORT FOR 1869.

We lay before our readers another extract from this valuable report, containing the information given concerning fruit-growing in that part of the Province known as the Lake Ontario section, East Division, embracing the counties of Frontenac, Addington and Lennox, Hastings, Prince Edward, Northumberland, Durham, Ontario and York.

APPLES—The following apples are recommended in the order named below, as most suitable to be planted, namely, Early Harvest, Fameuse or Snow-apple, Northern Spy, Rhode Island Greening, American Golden Russet, St. Lawrence, Red Astracan, Spitzenburgh, Baldwin, Talman Sweet, Twenty-Ounce Apple, or Cayuga Redstreak, King of Tompkins County, Early Strawberry, Golden Sweet, Ribston Pippin, Gravenstein, Sweet Bough, Duchess of Oldenburgh, Roxbury Russet, Wagener, Alexander, Fall Pippin, Swaar, Kentish Fill Basket, Bellflower, Summer Queen, Seek-no-Further, Cabashea, Pomme Grise, Keswick Codlin, Winesap, Vandevere, Nonsuch.

The following thirteen varieties were most numerously recommended in the order given, as profitable for market, namely, Northern Spy, American Golden Russet, Rhode Island Greening, Fameuse or Snow-apple, Early Harvest, Spitzenburgh, Red Astracan, Baldwin, St. Lawrence, Talman Sweet, Twenty ounce Apple, Duchess of Oldenburgh, Gravenstein.

The following ten varieties are the most numerously named in the order given below, as being the most hardy, namely, Northern Spy, American Golden Russet, Fameuse, Red Astracan, St. Lawrence, Talman Sweet, Early Harvest, Rhode Island Greening, Ribston Pippin, and Duchess of Oldenburgh.

The following are mentioned as being tender, especially when planted inland, remote from the influence of the lake, namely, Baldwin, Esopus, Spitzenburgh, Sweet Bough, Fall Pippin, Rhode Island Greening, Bellflower, Early Harvest, Cabashea, Colvert, Hawley, and Jersey Sweet.

The apple trees are considerably infested with the borer. Some complaint is made also of the tent caterpillar and bark louse, and one mentions the fire-blight. The fruit is somewhat affected by the codlin moth, but this insect does not seem to have, on the whole, become very troublesome.

The spring is recommended by all as the

best season for transplanting, though some advise that the trees be taken up in the fall and heeled in.

DWARF TREES—Dwarf apple trees succeed well. Dwarf pear trees require some shelter, and to have the quince roots, upon which the pear is worked, protected by a mulch or covering of coarse manure spread upon the ground over the roots. Dwarf cherry trees are reported to succeed better than the standard.

PEARS.—The following varieties of pear are reported as desirable sorts to plant, namely, Flemish Beauty, Bartlett, Vicar of Winkfield, Louise Bonne de Jersey, Seckel, Buffam, Belle Lucrative, Rostiezer, Howell, Beurre d'Amanlis, Glout Moreceau, Passe Colmar, Swan's Orange, Osband's Summer, Sheldon, Lawrence, Winter Nelis, White Doyenne, and Jargonelle. Of these pears the Flemish Beauty is evidently the most popular; Mr. Werden says it is the best out of seventy kinds.

Many state that they do not know the names of the sorts which have proved to be too tender, but the following are mentioned by others, namely, Bartlett, Buffam, Belle Lucrative, White Doyenne, Tyson, Henry IV., Beurre Rose, Beurre Dief, Duchess d'Angouleme, and Easter Beurre.

Mr. P. C. Dempsey says, "there are several varieties planted that appear tender when young, such as the Bartlett, Beurre Clairgeau, Doyenne du Comice, &c., still they appear to become more hardy if grown on suitable soil, well drained, unless the tree is allowed to overload. Several varieties have failed with me entirely, but I am not ready to cast them out without another trial on different soil. In testing a new variety now, I plant on different soils. My convictions are that soil and cultivation have something to do with the hardihood of a tree."

The Flemish Beauty is the most frequently named as the most profitable for market, and next to it the Bartlett, with the Vicar of Winkfield, Louise Bonne de Jersey and Duchess d'Angouleme, in the order above set down.

The most hardy varieties are Flemish Beauty and Vicar of Winkfield. With regard to these there is no difference of opinion; concerning the Buffam, White Doyenne, Tyson, Duchess d'Angouleme and Louise Bonne de Jersey there seems to be some conflict of experience.

The fire-blight prevails to a considerable extent, and mention is made of leaf blight and frost. The slug on the leaf has done some injury.

PLUMS.—The plum trees seem to thrive well in this division. Many sorts are mentioned—the Lombard, Washington, Yellow Egg, Yellow Gage, Coc's Golden Drop, Imperial Gage, Jefferson and Duane's Purple, the most frequently.

The Huling's Superb, Smith's Orleans,

Momoe, Red Magnum Bonum, Peach Plum and Victoria are the only sorts spoken of as being too tender. All plums are reported as being profitable and finding a ready sale, yet the Yellow Egg, Lombard, Yellow Gage and Duane's Purple seem to stand out the most prominently.

The curculio has evidently found his way very generally into this division, and is reported as injuring the fruit by nearly every observer. The black knot also prevails to a very great extent. Mr. Werden says that to wash with lye and put ashes round the roots is the best remedy for the black knot.

CHERRIES.—The Morello and Duke varieties of cherry may be generally cultivated in this part of the country, and in warm, dry soils and sheltered situations some of the Heart and Bigarreau varieties, such as Elton, Napoleon Bigarreau, Black Tartarian and Knight's Early Black can be grown. Mr. Werden says he has tried twenty sorts of cherries, and found them all too tender.

The common pie or Kentish cherry is found to bear most uniformly and abundantly, and on that account to be the most profitable market sort in this section.

There is a disease similar to the black knot on the plum, which seems to be very prevalent in this division. Mention is made of the slug on the leaf, and of the curculio as stinging the fruit, but these do not seem to be very serious. Mr. Werden complains of the climate as being the most injurious with him.

PEACH, ETC.—The peach, quince, apricot, and nectarine will not succeed in this division. Mr. James, of Napanee, however, says the quince can be grown.

STRAWBERRIES.—Strawberries thrive well. Wilson's Albany and Triomphe de Gand are very generally named as succeeding well, and the Wilson's Albany takes the lead for market purposes.

RASPBERRIES.—Raspberries seem to thrive well in this part of the country. In some sections the wild sorts are very abundant. The Fastold, Brinkle's Orange, Doolittle, Philadelphia, Franconia, and Red Antwerp are mentioned as having been grown with entire success.

GOOSEBERRIES.—The Houghton seedling gooseberry has here been found not subject to mildew, while in by far the greater part of this division the English varieties are badly injured by it. The Crownbob, Whitesmith, and Ploughboy are spoken of as being the least affected of the English sorts. Messrs. Charles James and Charles Anderson say that there is no mildew on the fruit.

Flour of sulphur, planting on rich clay soil, with clean cultivation and thorough pruning, are mentioned as preventive of mildew. Mr. Chaplin says a dry soil and open place will help the same, but the boys are the best preventive; they steal them before they are large enough to mildew.

BLACKBERRIES.—The Lawton or New Rochelle blackberry has been tried in some places, but it has been found too tender. No other sort seems to have been tried. Wild sorts grow in some parts very abundantly.

CURRENTS.—Currants of all kinds can be grown. The White Grape, Black Naples, and Cherry currants seem to be the most popular. Within a few years past the saw-fly worm has been very destructive to the foliage, thereby causing the death of the bushes, but it is also said that by a little care it can be easily overcome.

GRAPES.—The following varieties of grapes have been planted—the four varieties first named by far the most extensively, namely, Delaware, Isabella, Clinton, Concord, Hartford Prolific, Iona, Allen's Hybrid, Catawba, Diana, Adirondac, Rebecca, Isabella, Union Village, Creveling, Tokalon, Diana, Hamburg, Walter, Agawan or Rogers 15, Barry or Rogers 43, Landley or Rogers 9, Massasoit or Rogers 3, Merrimack or Rogers 19, Salem or Rogers 22, Wilder or Rogers 4, and Rogers Nos. 5, 14, 28, 33, 39, 40, 41, and 44, and Brown's White and Brown's Red, the two latter having originated in Brighton, the white being much like the Sweetwater.

The great majority of the replies speak of most of these varieties as doing well; one mentions the Rebecca as too tender, another says the Isabella and Catawba need protection in winter, a few say that all should be laid down and covered in winter. Mr. Werden alone says that all, except the Clinton, are too tender. The Clinton, Delaware, and Concord are frequently spoken of as being perfectly hardy.

The Delaware, Isabella, Clinton, Concord, Hartford Prolific, Allen's Hybrid and Adirondac, are mentioned as ripening their fruit every season. Mr. Dempsey says that hardy varieties like the Delaware have never been attacked by any insects or by mildew, and that he thinks the township of Ameliasburg a very favourable section for the cultivation of the vine. Mr. Thomas Brownlie says there is a small vineyard in Scarborough of about four hundred vines, chiefly Delawares.

Mr. Werden, of Pieton, says that grapes ripen there about once in three years, and that it is too cold generally.

SOILS.—Mr. Farley says that in West Hastings what is known as their Oak-hill land is fine for apples, pines or cherries, as good as can be found east of Toronto. They find that any naturally dry land is good for fruit.

Mr. Thomas Briggs, of Kingston, says the soil is generally strong clay, varying, however, in different localities—some black soil. Fruits succeed best in a loamy or sandy loam soil, with a fair mixture of clay.

Mr. Werden says that in Prince Edward county there is a great variety of soil. Trees do best in loamy soil with a limestone bot-

tom, especially in moist seasons, but in times of extreme droughts they do better on a more heavy soil. Extreme droughts prevail between Colourg and Prescott, supposed to be on a count of the clearing off of the forests, hence the necessity of planting out forest trees. His orchard is on rather high land—loamy and gravelly surface with a limestone bottom, and surrounded with a heavy belt of trees. He adds that there is an old seedling tree in that vicinity equally as good as peaches for canning or preserving, but he does not say what sort of a tree it is. He thinks that Prince Edward County yields as many barrel of cider and apples as any in the Dominion.

Mr. John Shields, of Prescott, says their region is too cold for fruit raising.

Strawberries.

To the Editor.

SIR,—Several articles have appeared in the GLOBE and other papers, regarding the crop of strawberries this season at Oakville and other places, but I do not think that any of the localities can compete with the county of Brant, in regard to yield.

Mr. J. T. Charlton, near Newport, had one and seven-eighths acres under crop this season, of which one and a half acres were Wilson's Albany Seedling, and three-eighths of an acre of other sorts, comprising New Jersey Scarlet, Green Prolific, &c.

From the Wilson his crop was 6787 quarts, and from the other sorts 360 quarts. It will be seen from this that the yield from the Wilson is by far the largest in proportion, they producing over 4,500 quarts per acre, and the other sorts (all yielding about an equal crop) only 360 quarts per acre. The Wilson also brought the same price in the market. The average price paid to Mr. Charlton for his whole crop was 9½ cents per quart.

This is the heaviest yield of strawberries yet reported, and had this season been equal to last the yield would have been one-third larger.

W. S.

Brant, Aug., 1870.

The Currant-Worm.

Having had a severe fight with the currant worm, and conquered the enemy, I send you the mode of attack. The worm made its appearance here three years ago, and has grown worse each year. Since its first appearance, previous to this year, I have tried whale-oil soap, four pounds to thirty-two gallons of water and carbolic acid; but not finding either of the above effectual as I could wish, I began to use kerosene oil till it would kill the worm. I used five pounds of whale-oil soap, and one wine quart of kerosene to twenty-five gallons of soft water. Stir the soap and kerosene till tho-

roughly mixed; add two pails of hot water; stir till the soap is dissolved, then add the balance of the water cold, when it is ready for use. Apply with a syringe with force, in bright sunshine. I do it in the middle of the forenoon. Since I have used this solution I have had few currant-worms, after three applications in bright sunshine. The sun dries the leaves, whereas, if applied in the evening, as is the custom with many, the falling dew gives the worm a chance to revive, so as to go on with its work of destruction the following day.—*Geo. Croick-shanks in Pilton's Journal of Horticulture.*

To which the editor adds:—Besides the above, we are informed that an intelligent and observant horticulturist has found a solution of copperas, in the proportion of one pound to six gallons of water, sprinkled on the leaves, a sure preventive and remedy for the currant-worm, by poisoning their food so that they die in a few hours.

Window Gardening.

Many of our readers take much pleasure in keeping a few plants in their windows, and are always glad of any hints that will help them in the pleasant task of caring for their favourites. Walter H. Bosanquet, Esq., delivered a lecture some time ago at the National Schoolroom of St. George's, Bloomsbury, on this subject, which was printed by request, and we condescend from that lecture some thoughts and suggestions which we hope will prove acceptable.

Success in window-gardening depends on constant attention being paid to a variety of small things.

Plants are active during the hours of light, and absorb from the air carbonic acid gas, which is composed of carbon and oxygen. Animals retain the oxygen and give out the carbon, hence plants feed upon that—the carbon—which is injurious to us. At night, however, plants give out carbonic acid in small quantity, hence it is undesirable that they should be in our sitting-rooms or sleeping-rooms at night. But at night plants should be, and naturally are, in a state of comparative rest; daylight having departed, the temperature falls, and the air becomes several degrees cooler. But our sitting-rooms are usually warmer at night, we draw the curtains, poke up the fire, and at least keep up the heat of the room, so that the plants are kept in a state of restless and unnatural excitement, when they ought to be at rest. The effect of all this upon them is much the same as the effect upon us of being kept up night after night, and no sleep during the day. To obviate this must be a part of your care, doing it in such a way as may be most convenient, but in some way reducing the temperature about the plants, yet not so low as to chill them, much less to freeze them.

The size of the pot should conform to the size of the plant, but usually the most convenient size is the one that measures four or

six inches across the top, inside the rim. A new pot should be placed for a few minutes in a pail of water to expel the dry air from the pores, and an old pot should be made perfectly clean inside and out. Pieces of broken crock, or charcoal or half-inch bones, should be put into the bottom of the pot, to the depth of about two inches, for drainage, and over these a little moss, or anything to prevent the soil from washing into and choking up the drainage. As for soil, any good garden loam will answer; if it be very strong clay, it might be improved by mixing with it some pure sand. A little turf piled up and allowed to rot, forms one of the best of soils for all pot plants. Put the larger and coarse pieces at the bottom, on top of the drainage, and the finer mould over them, filling the pot to within half an inch of the surface. In order that the air may have access to the roots, the surface of the soil must not be allowed to cake, but should be stirred up occasionally as deep as can be done without injury to the roots. The root should not be allowed to suffer from sudden changes of temperature, and especially should not be exposed to the direct rays of a hot sun falling on the pot. This may be prevented by placing the pot containing the plant inside a larger pot, and filling the space between the two with moss, or any other non-conducting material.

Watering needs to be carefully done. The effect of watering is two-fold; it conveys to the root certain nourishing matters contained in the water itself, and it converts into a fit state for absorption by the roots the nourishing matters which are contained in the soil; for the roots can absorb nourishment only when it is in a liquid state. The best water for plants is rain water, for it contains the largest supply of air and other matters calculated to advance the growth of a plant. If it becomes necessary to use hard water, put into it a little soda, and let it stand in the sun some time before it is used. When watering is done it should be thorough and decided, and then let alone until again required. Judgment must be used in every case, and the plants watered when they need it, and not because a certain hour of the day has arrived. Never merely wet the surface, and leave the roots below without moisture, but moisten the whole ball of earth within the pot. If you have good drainage the surplus water will run out into the saucer, which should be thrown out as soon as you have done watering, except that in very warm and dry weather a very small quantity may be allowed to remain in the saucer. The water should never be colder than the atmosphere in which the plants are living, and should be carefully poured over the surface of the soil, not over the plant. Plants need a season of rest. In this climate the winter is that season, and when at rest plants will need only just sufficient warmth and moisture to keep them alive. Plants intended for

winter growth should have a month or two of rest at the end of the summer.

At night plants should be left in the dark, and have a lower temperature than during the day; but on the return of day they should be freely exposed to the light so long as the day continues, only shading them when the sun is hot. They should stand as close to the window as may be practicable, and the pots turned every day or two, that all parts may be equally exposed to the light. There should be no scarcity of light, for this is absolutely necessary to enable the leaves to discharge their functions properly. When the plants are taking their annual rest, there is not the same need of abundance of light.

Plants also need a constant supply of fresh air, therefore the window should be open as much as possible during mild weather; yet, while they are benefitted by a liberal supply of fresh air, they are injured by being exposed to draughts. If plants are kept in warm rooms, closely shut up, they become very sensitive, and liable to suffer acutely at any sudden fall of temperature. If, on the contrary, they are frequently and freely exposed to fresh air, they become more hardy, and better able to bear sudden changes of temperature.

Another important consideration is cleanliness. The leaves of plants are perforated with thousands of small pores, the same as the human skin. Through these pores the plants breathe as it were, absorbing carbon and giving out oxygen, and through these they absorb and give out moisture. Now, if a plant be coated with dust it is quite unable to perform any of these functions. It is therefore necessary to keep the leaves of plants clean, and when they get dusty, wash them. Wash each leaf with a sponge and warm water, and if they are very dirty use a little soap, and after the washing has been completed, dip the whole of the top in clean, tepid water. But much can be done in the way of prevention, which is better than cure. They should be kept from getting dusty as much as possible. When the room is swept and dusted, the plants may be removed to another room, or a light cloth or sheet thrown over them to prevent the dust from settling on the leaves. When the air is dry and warm it is well to sprinkle the leaves with a little water; this will afford a supply of moisture to the plants. But the leaves should never be washed or sprinkled while the sun is shining directly upon them, they must be kept out of the sunshine until they are perfectly dry. There is a natural method of washing the foliage that can be often resorted to, namely, that of placing the plants out in a gentle rain, but it will not follow that because they have been out in the rain they have also been watered, for if the leaves cover the pot they will be likely to shed off the rain beyond the rim, so that the soil in the pot will have been but partially moistened.

The foregoing hints are intended to apply to the growing of all window plants, without particularizing the peculiar treatment which is applicable to any particular kind of plant. Those will be most successful who study the peculiar habits of the plants they desire to cultivate, and do not try to grow in the same window, or in the same room, plants of such opposite habits that the temperature and moisture of atmosphere best suited to one portion is wholly unsuited to another. The Camellia requires a cool and moist atmosphere, and will flourish with a northern exposure where it has little or no direct sunshine. The Rose will flourish with less moisture, but prefers a cool temperature. The Fuchsia is fond of both warmth and moisture, but does not like long exposure to the direct rays of the sun. The Coleus requires plenty of heat and moisture, and indeed prefers that the thermometer should never fall below seventy by night or day. The Geranium is probably the most easily grown of all window plants, only provided that it has abundance of light and air, and not too much heat. Since the advent of double Geraniums there is less need of multiplying kinds of plants, as with the Rose, Fuchsia, and Geranium, one can command a great variety and one of exceeding beauty, while by a careful attention to air, light and cleanliness plants may easily be kept healthy and vigorous.

Brantford Flower Show.

The Directors of the Brantford Horticultural Society held their first show this season on the 1st July, in the drill shed of that town. The exhibition was a very good one, and was well attended. The articles for exhibition were placed on three tables, each sixty feet long and six feet wide, having the flowers in the centre, and fruit and vegetables on each side. The floral table was well filled, and showed some very good plants, and although short of greenhouse plants, yet the large quantity of plants exhibited, (otherwise grown), fully made up for the loss.

Among the most noticeable of these were some fine Coleus belonging to Mr. Sanderson, who took the first and second prizes for foliage plants. The Hon. E. B. Wood was awarded the prizes for greenhouse plants and Pelargoniums. Mr. Sanderson also took the first prize for Balsams in pots. Bouquets, both hand and table, were very poor, only two or three really nice being shown, and the best in each class were awarded the second prizes. Some fine Petunias and Verbenas were shown, also Zinnias and other annuals. Of collections of annuals some very fine lots were on the table, more especially those exhibited by amateurs, among which those shown by Mrs. Veal, Mrs. Gale and Mrs. Smith, were the best. A large table bouquet of native flowers, shown by Mr. Peachie, was much admired. A collection of native flowers named was shown by Mr.

Sanderson, and included some specimens of *Lilium Canadense*, *Lilium Philadelphicum*, *Cypripedium spectabile*, *Calopogon pulchellus*, *Castilleja Coccinea*, etc. The same party also exhibited a Wardian Case, filled with native ferns, which attracted much attention. The amateurs showed some fine pot plants, most observable of which were good specimens of Gloire de Nancy Geranium, Double Petunias, Fuchsias, and a very large lot of fine Balsams, also a few large Oleanders, the largest of which, shown by Mr. Wilkes, was awarded the first prize, and was a very fine plant just coming into full flower.

The fruit table was very scanty, but had the usual show of apples and cherries, the latter very fine; the best quart was shown by Mr. W. A. Smith, named Cleveland Bigarreau. Mr. Smith also took the first prize for four varieties with Yellow Spanish, Cleveland Bigarreau, Black Eagle and Black Tartarian. Currants, red, white and black, in good show; also a few bottles of grape wine were on the table.

The vegetable department was well represented, and some very fine things were exhibited. In beans, onions, lettuce, etc., there was plenty of competition. In potatoes, Early Rose was the chief competitor, and were very fine; Breeze's King of the Earlies was also on exhibition; it is not so large a variety as the Rose, but a very fine potato. In beets there were large lots exhibited, both long and turnip. In the latter class, a new beet, called Egyptian, was shown, and awarded the first and second prizes, being very handsome, dark coloured and of fine quality. Collections of vegetables were also shown, including very large varieties of vegetables.

The Band of the Grand Trunk Railway was in attendance during the evening, and the exhibition was well patronized by the townspeople, who recognize the exhibitions of the Horticultural Society as standing institutions of the town.

This exhibition was in effect the best yet held in Brantford for a summer show; nearly every article exhibited was excellent, and would compare very favourably with any other society exhibition at same dates. There was a falling off from the number of entries made for last 1st of July, but the quality of nearly everything was very much superior to what was exhibited at that time. —Communicated.

Use of Wind-Breaks.

Belts of trees—deciduous and evergreen—will break off the wind from a large tract of land, and render the local climate comparatively mild and equable. The effects of a screen of evergreens, particularly in breaking off the wind from houses and grounds, and in modifying the cold of winter, is far greater than one supposes who has had no experience in this matter. It is said by those who have made the experiment, that the expense

of planting such trees about a house is soon covered by the saving of fuel occasioned by the shelter they afford. Such belts may not break off all the winds that blow, but they will soften their asperity, and apparently mitigate their coldness.

Experiments of this kind have been tried on sea-shores, and with success. A recent traveller speaks of a certain district in England, on the cliffs of the German Ocean, which had formerly been a bleak, sterile promontory, but is now a beautiful and productive garden. And this transformation was effected by building on the exposed sides, first a "strong, high fence of furze bundles or brushwood, and then planting inside of this a thick screen of trees." These trees consisted chiefly of the Norfolk black willow, Scotch elm, larch, and ash: and of evergreens, the *Pinus pinaster* and Scotch pine. These trees were fringed with such shrubs as the snowberry, alder and berberry.

In visiting several fruit-orchards near Cayuga Lake, last summer, we noticed that two of the very best were shielded on the north and west sides by screens of Norway spruce. A single row of these trees answered the purpose, and they were set out the same year that the orchards were planted.—The American arbor-vitæ (the common white cedar) and the hemlock spruce, would answer an excellent purpose as wind-breaks, the only objection to the latter being the difficulty of transplanting it.

But enough has been said to illustrate the importance of shelter, and to suggest some of the means by which such protection may be secured. We need it at all seasons of the year, but especially in winter. We need it for the comfort and pleasantness of our homes, for the comfort and health of our labourers and of our domestic animals, and for the complete success of our attempts to cultivate well the earth.—*Hearth and Home.*

Bark-Splitting of Apple Trees—Black Knot on Plum Trees.

To the Editor.

SIR,—My apple trees have suffered also from the splitting of the bark, mentioned in the CANADA FARMER. I have one hundred trees that have been set out three years, and one hundred that have been planted eleven years, and nearly one-third of them have the bark split. I have two hundred older trees, that are not hurt. The bark split at the time of the first freeze; when I first saw them the ground had frozen very little. The way I account for it is this, that the sap was yet up when the trees were frozen. I have worked in orchards over thirty years, and I never knew the winter set in when the trees were so green before, and I think that to be the sole cause. In my older trees the split is healing fast. Some of the youngest are split on two sides, and the bark is loose nearly all round the tree, and these are very pale-looking. Mr. Taylor, of St. Catharines,

speaks of splitting the bark with a knife; but this is quite different, the knife does not loosen the bark.

If Mr. Squelch will examine his plum trees closely in August or September, he will find a worm in the knot. I have kept mine clean by searching closely about August, and cutting the knots off and burning them. If he will leave but two or three on he will have plenty next summer.

H. H.

Pelham, July, 1870.

Peas.

T. R. Elliott writes to the *Rural New Yorker* that Carter's First Crop Pea, sown for several years at the same time with other early kinds, is always from four to six days ahead of all the rest, and is the most productive. Sutton's Ringleader he finds to come in from a week to ten days later, and to perfect its crop gradually. Tom Thumb, Little Gem, Dan. O'Rourke and Prince Albert are not as early as Carter's First Crop, and not as valuable for a second early pea as Waites' Caractacus. McLean's Advancer follows Caractacus, and, for a Wrinkled Marrow, early and good, but not profitable for market, Yorkshire Hero has proved this year more productive and profitable than Champion of England.

NOTE BY EDITOR.—The Advancer Pea is a dwarf-growing sort, and on that account preferable, requiring no bushing or support. Its quality is of the very best.

Washes for Fruit Trees.

Twice a year, at least, every fruit tree in the orchard should be washed with some liquid, strong enough to destroy the eggs and pupæ of insects, and the roots and spores of mosses and fungi. In using caustic ley for the destruction of bark lice, several persons have killed their trees, as sometimes the bark turns black and peels off after the application of this wash, and the death of the tree follows. Lime whitewash is recommended by some persons, but it is unsightly and is disapproved of by the most experienced fruit growers; soap suds are harmless, but are too mild for the purpose for which the application is required. The most suitable wash is a solution of common sal-soda in the proportions of one pound of soda to a gallon of water. Rain water is the best for this purpose. This wash will not injure the bark, but will kill the eggs or pupæ of insects, and will clear away mosses, etc. It will remove dead bark and produce a healthy surface.—*Western Rural.*

PRESERVING PLUMS FOR EXHIBITION.—A subscriber from Richmond wishes to know "which is the most effectual method of preserving early plums for fall exhibitions?" If any of our readers can give the desired information they will confer a favour.

Marantas, or Calatheas.

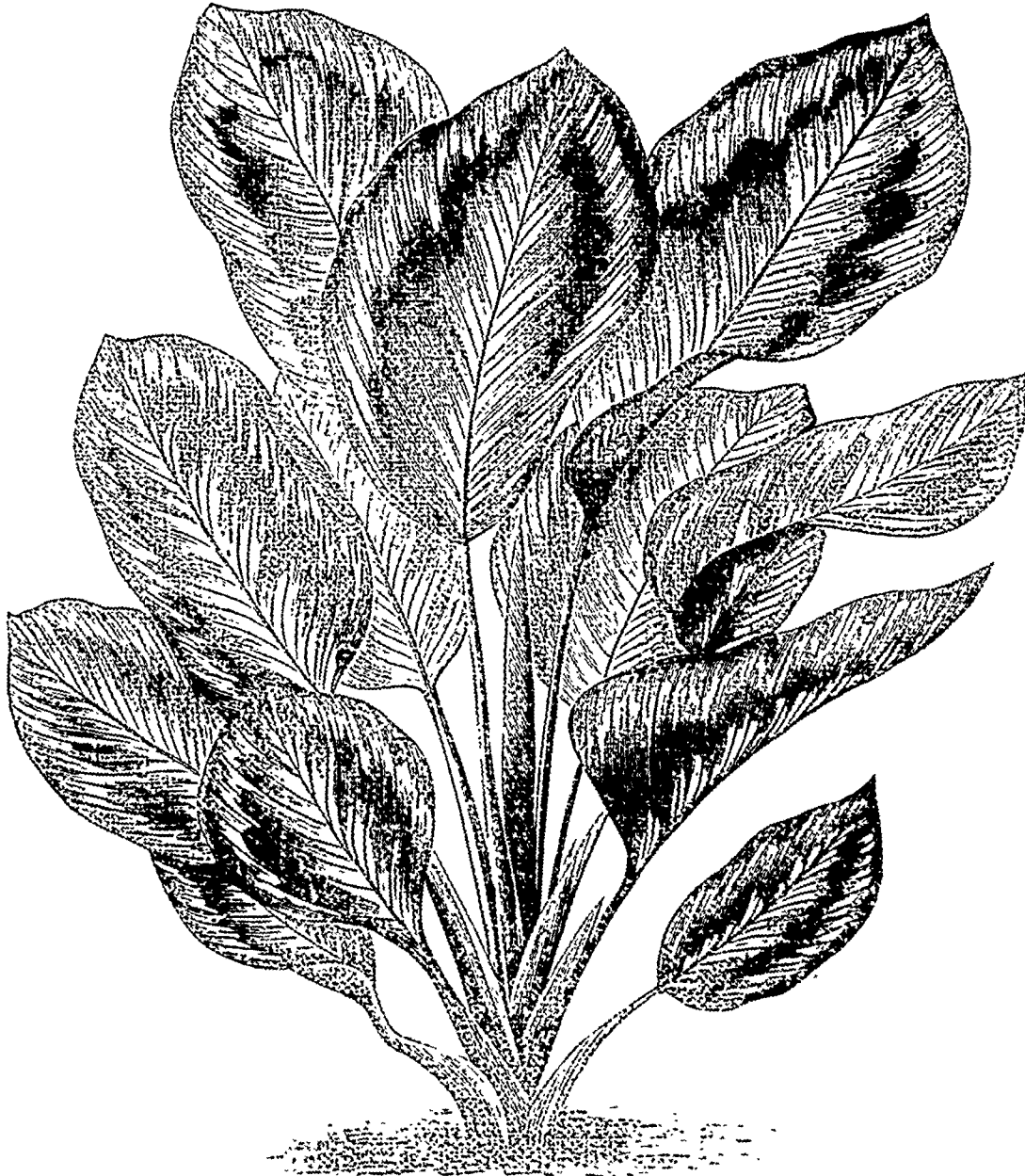
Amongst pictorial-leaved plants there are few that can compare with the beautiful species of *Maranta* which have of late years been introduced. The *Begomas* are, some of them perhaps, equally striking as to colour, but they are mostly wanting in the refinement of character which is a prominent feature in the *Marantas*. Did we say *Marantas*? Well, that is, perhaps, a moot point. Some at least

are transparent, and contrast most admirably with the purple and dark green tints of the upper and lower surface. Closely allied to it, however, in aspect, and scarcely, if at all, inferior to it in beauty, comes *M. Lindeniana*, a plant of the same character, and with similar colouring in the leaves. *M. Vanden Heekei* is a smaller-growing species of the same type, referred by some authors, as a variety, to *M. picturata*.

Of another type, but also of exquisite

roseo-lineata, *regalis*, and *majestica*, which are marked by transverse lines of bright colour, red or white, on a green ground. Another set has green leaves with white zones, *M. virginalis* being one of the most striking, with its broad almost orbicular leaves, and white band and costa; *M. Baraquimiana* is smaller, with ovate-lanceolate leaves, and broader belts of white on each side the costa.

Still another beautiful type is represented by *M. splendida*, which has the leaves of a



MARANTA VEITCHII.

of them have been determined on good authority to be *Calatheas*, and it is assumed that many, if not all of them, are so; but, whether *Calatheas* or not, there is probably no family which has so rapidly as this filled up its ranks with distinct and beautiful forms.

The *Maranta Veitchii* (admirably figured in the accompanying illustration,) occupies, in my estimation, the first place in point of beauty, on account of the size and rich and varied colouring of its leaves, the paler portions of which

beauty, is the *M. roseo-picta*, whose rounder leaves have shorter footstalks than in the foregoing, and are most charmingly tinted with darker and paler green, and marked by a rose-coloured zone. *M. illustris* is a variety of this according to Dr. Regel's opinion, but, variety or not, it is a most ornamental plant, being barred transversely with light and dark green, and zoned with pink. Under the name of *M. ornata* (but not the *ornata* of Veitch), Dr. Regel brings together sundry beautiful forms known as *albo-lineata*,

deep bright green, with transverse yellow ground bands, looking very much as if a pale green pinnate fern had been painted on the *Maranta* leaf. Mr. Veitch's original *ornata* was of this type, only the fern portrait was dark green on a pale ground. The old *M. zebrina* is another most beautiful plant, as our exhibitions sometimes testify.

Space would, however, fail to note the many charming objects which this genus presents, and I pass on to observe that, as stove plants, they are by no means difficult

to grow. What they need is liberal treatment. In spring, when they may be divided if necessary, or taken to start on into growth, they require a brisk moist heat to be maintained about them. Later, when growth is mature, they may be used to decorate the temperate conservatory. The soil should be fibry peat and sharp silver sand, with an admixture of charcoal fragments, and at the last potting, of a little sweet fibry loam; and the drainage must be good, as they require an abundance of water while growing freely. During winter they should be at rest, and should have comparatively little moisture at the roots.—C. A. in *Gardener's Chronicle*.

Twice-fruiting Raspberries.

A correspondent, writing from Bowmanville, states that he has a yellow fruited raspberry which was "very nearly all killed by the winter," and that he is surprised to find that the canes which have grown up this season are nearly all bearing fruit, and wishes to know whether these same canes will bear fruit again next year.

Had our correspondent been able to give us the name of the variety of the yellow raspberry, we should then have known whether it was one of those which bear fruit twice the same season.

The Belle de Fontenoy, Lum's Yellow Canada, and others of this class, give a crop of fruit on the canes of last year, when not winter-killed, which ripens at the usual raspberry season, and another crop upon the canes that come up during the summer, that ripens in the autumn.

If our correspondent's variety is one of the autumn bearing sorts, then those canes which have come up from the roots this summer will ripen their present crop in the autumn, and bear another crop next season, that will ripen at midsummer. But it is quite possible that his variety is not one of those that fruit twice in a season, and that the shoots which are now showing fruit have not come up from the root, but have branched out from the cane that was injured by the winter at a point very near the ground, and below the injury. If this be the case, these branches will this year bear fruit that will ripen a little later than the ordinary season of raspberries, but will not bear fruit again next season.

We think our correspondent will be able, by examining these fruit-bearing shoots, to determine whether they spring from the canes of last year, or from the roots, and so decide whether they may be expected to bear fruit another year.

APPLE SUCKERS.—A correspondent enquires "which is the best way to prevent apple trees from growing young shoots or suckers around the roots?" Healthy apple trees do not send up such shoots, unless the soil has been removed from the collar, so as to expose some part of the root. Such shoots are the result of disease, injury, or bad treatment.

The New Roses.

"D., Deal," writes to the *Cottage Gardener* an account of the new roses of 1863 and 1869 which were exhibited at the Royal Horticultural Society's show, from which we make such extracts as will be of interest to our Canadian readers.

Thyra Hammerich is a very pretty bluish-white rose, with shell-like petals, formed somewhat in the style of Baronne Prevost, only a little more cupped.

Souvenir de Monsieur Poiteau has come very rough this season, but its colour will always insure it a welcome.

Mademoiselle Eugenie Verdier is a very pretty rose, and likely to be an acquisition.

Marquise de Mortemart is an undoubtedly good rose in a section where good roses are much wanted, bluish white.

Emilie Hansbury, a prettily shaped pale rose, and with imbricated petals.

Dupuy-Jamain, a beautiful carmine rose, well worthy of cultivation.

Victor le Bihan, beautiful, bright rosy carmine.

Monsieur Journeaux is of a very peculiar shade of colour—reddish scarlet with a purplish tinge through it—good form and large.

But to my mind, the finest flower of the season is Louis Van Houtte. It is of the shade of the old Cabbage Rose, and has also its fine perfume. In colour it is like Charles Lefebvre when it comes dark, approaching at times to that of Prince Camille de Rohan.

There is another rose, whose position is now so well established that it is not needful to say much of it, but I question if at the show there was one rose which sooner caught the eye and held captive the beholder than Duke of Edinburgh. In brilliancy of colour it is unsurpassed, while its fine habit gives it also a claim which many dark roses do not possess.

Bark-Splitting.

To the Editor.

SIR,—As my theory of bark-splitting is different from any I have noticed in the papers, permit me to present it for consideration. As far as my experience goes, spring is the only season when it is to be discovered. According to circumstances the evil may be detected earlier, or later in the season. A careful examination of the trees as the snow disappears, will probably lead to the conclusion that the injury has been done then. Who has not noticed, on a melting day, basins formed around the trees? If the evening succeeding is frosty, and circumstances favourable, a collar of ice will be formed at the bottom of the basin, and around the tree. Perhaps a cold spell sets in, and the collar tightens around the tree and the bark is injured, particularly if the growth has been vigorous the preceding year. Your correspondent's heaps of dung and mounds of earth afforded the very facilities necessary for the formation of the icy band. I am not sure

but the treading of the snow around the trees, to prevent the approach of mice, may have the same effect. One of my dwarf apples I found to be badly injured last spring, and I concluded it was destroyed; but with a vague hope that it might survive, I gathered a mound of earth around it, and with some fruit and foliage a little paler than usual, it still gives indication of vitality.

With my girdled trees—of which I had a good number—I have tried different experiments, uniting the bark above and below with scions, covering all up with a mound of earth; plastering with cow-dung and clay, adding the mound; boxing the tree and filling in with different materials, such as mud, soil and cow-dung. Some of the younger ones I simply painted, some with blue paint, and others with water lime and milk. One stately tree I removed from the garden to the orchard, forming a band of clay around the girdled part, and wrapping it around with a rope of withered grass. Strange to say, they are, without exception, alive and living-like at the present time.

Trees with split bark, I am persuaded, may be saved by scions uniting the separated parts after the injured bark has been cut off. If the operation is carefully performed, and proves successful, valuable trees may thus be preserved. I believe the addition of the mound of earth to be always important.

WALTER MILNE.

Nithbury.

More New Raspberries.

The *Rural New Yorker* gives an engraving of a new raspberry, called the Herstine, and a description of it, and of three others, the Ruby, Saunders and Elizabeth.

The Herstine is reported by the Fruit Committee of the Pennsylvania Horticultural Society to be a most abundant bearer, fruit large, crimson colour, flavour sub-acid and very good.

Ruby is reported as being an abundant bearer, fruit large, of a dark crimson colour, flavour sub-acid and excellent.

Saunders is said to be a good bearer, fruit very large, of a crimson colour, of high character, and delicious.

Elizabeth they say is a great bearer, fruit very large, crimson-scarlet, firm, of delicious flavour, and late in ripening.

These were raised from seed of the Allen raspberry, grown on plants which fruited in close proximity to the Philadelphia, and are thought to show signs of crossing between these two sorts.

The report of the committee is in too general terms to enable the reader to form any very distinct idea of the distinguishing qualities of these new raspberries. We can not tell whether they are as hardy and productive as the Philadelphia, or whether they can compare in flavour with the Col. Wilder or Brinckle's Orange, or in size and firmness with the Franconia. However, as these

plants are now offered for sale at the very low price (!) of three dollars each!! any one who is very curious to know more of these new fruits can get a plant of each for a pound note, and find out for himself.

Pansies from Seed.

The Pansy, *viola tri-color*, is deservedly a favourite with amateur, as well as professional florists, and should be more generally cultivated. It is easily grown from seed, delights in a rich and rather moist soil, which is best prepared by digging the ground deep, pulverizing it well, and making a liberal addition of well decomposed cow manure. The seed should be fresh, as its vitality is not of great duration. In out-door cultivation the seed may be sown during July and August, in rows, and quite thin, that the young plants may attain a good fall growth. At any good seed store may be obtained seed of both the English and German varieties; the latter furnishing the greater proportion of the light-coloured and fancy varieties.

After the young plants are well up, keep the ground free from weeds, well stirred, and if very dry, water thoroughly. The plants may remain in the seed-bed during winter, protected by some evergreen or other brush, and some of the waste vines from the vegetable garden. The bed should be well drained to prevent the action of frost affecting the plants injuriously. When plants are wanted for early spring blooming or sale, they are best wintered in a cold frame in rich soil. Covering the glass with mats, set them at sufficient distance apart to allow of good spring growth. As they flourish in quite cold weather the mats may be removed early in spring, when they will at once begin to grow, and come early to bloom.

For later planting they are best wintered in the original seed bed, and transplanted where desired at time of setting other bedding plants; with good cultivation they will come soon into bloom, and continue up to the hot weather of summer, if picked freely.

Very large flowers are obtained by a liberal use of fertilizers. The best, for the purpose, is obtained by filling a barrel from the cow-yard, and leaching this with rain or river water, and applying the liquor diluted to the roots of the plants. Amateurs form a cup-shaped cavity around the roots, fill with the liquid manure and cover it with soil, sprinkling the plants with fresh water afterwards to keep the foliage clean. As they will bloom but little during hot weather, unless freely watered, the large stalks may be cut off, and new shoots allowed to grow, which will become vigorous during the fall, and bloom until covered with snow; indeed, we have gathered fine bouquets of bloom during a thaw at the holidays.

As the plants come into bloom, those not showing flowers of colours clear and well defined, should at once be removed. Those

in which the colours run, or blend, so as to give them a greenish or muddy appearance, are not worth cultivation. The standard shape of the flower when the leaves are flattened on the hand, is that they should be nearly a circle, and, under good culture, as large as a silver half dollar. By placing a variety of the most desirable colours and forms in one bed, a first-class seed may be grown, and the general variety very much improved. As the seed pods burst at maturity, much care is needed to secure seed in any amount. Those who desire plants only for bedding out, can obtain a good supply by stirring the soil lightly, and allowing them to grow where dropped. A little care in selecting good form and colours, will enable the cultivator to soon possess a very desirable collection.

In this connection we may say this is the appropriate season for sowing the seeds of such biennial and perennial flowers as it is desirable to transplant early the ensuing spring for summer blooming. Always sow upon a well prepared seed bed, where they will not be affected by water during winter, and protect with brush and refuse of the garden, care being taken that the plants are not covered so as to smother or rot them.—*Rural New Yorker*.

Planting Apple Orchards.—Distance Apart.

Mr. F. R. Elliott, of Ohio, is one of the ablest horticulturists of the day, and his thoughts upon any matter, especially relative to fruits and fruit culture, are well worthy of a careful consideration. In a recent number of the *Rural New Yorker* is an article from his pen, entitled "Dwarf Apple Trees," in the course of which he seems to be thinking aloud on the question of distance apart most desirable for an orchard of standard apple trees, and as his thoughts are not mere day-dreams based on nothing, but the calm reasonings that spring from experience, and his conclusions such as have been forced upon his convictions against the bias of inherited example and general practice, we lay them before our readers, remarking only that the force of his suggestions is rather augmented than diminished by the difference of climate between Ohio and Ontario:—

I set out in life with the orchards of my father as my early study, and there the trees were forty feet apart. I read author after author, each of whom carried their teaching in true rotation, and as I now view it, based only upon the wants of the apple tree when it reaches its full maturity. Thought and reference to the different habits in growth, their upright or spreading forms, have never, or rarely, been touched upon; nor has the comparative value of shade of the soil, as an ameliorating item conditional with the health of the tree,

been duly considered by advisers as to the distance at which to plant trees; and even at this day, I read articles saying:—"Plant your apple trees thirty-five to forty feet apart." Now, I have no action to take with such advisers; it is their view, and is worth what it is worth; to many, it is correct and wise; to me it is the reverse.

In 1850 I commenced a specimen orchard of apple trees, and planted them twenty feet apart, a distance which all my friends said would require at least every other tree to be removed in ten years. The trees did well, for I gave them good care. Then the property passed from my hands, but it has been well cared for, and I have had opportunity to watch its growth, and now twenty years have passed, and the trees do not shade more than one-half of the surface of the ground. In the production of other crops it has been of no value, as in working the orchard the roots, &c., gave more trouble than the value of any crop obtained. Had I planted those trees ten feet, or even eight feet apart, and cultivated for them alone until the trees were too large for cultivation, and then mulched, I am satisfied that I, or whoever was the owner, would have gained thereby, for the space, in the time, would not have been more than fully occupied, and had the trees been kept headed back, say by pruning in July, the crop would have been annual and profitable, while the other half or two-thirds of the land could have been used for other crops, free from the annoyance of working among trees.

In 1863 I set out another orchard of standard apples, each sixteen feet apart, and at the same time I set the same number of dwarfs on the Doucain stock, each six by five feet. The results are that on the former I have gathered say two to three bushels of fruit, and on the latter fifteen to twenty; but now my dwarfs are loaded, while my standard orchard has perhaps two bushels for the year.

Taking all things into account, estimating the soils of our Western prairie or new lands, the extremes of heat and cold of our climates, the severe storms of wind to which we are subject, &c., I am free to confess that at this time I am an advocate of closer planting than has heretofore been generally practised or advised. I am satisfied I see a gain in protection and shade from the first. I see a gain in the crop for ten years, considering the extent of land and the value of culture used, by planting eight feet instead of thirty feet or even twenty feet apart. I see a health and vigour, a less liability to injury and decay from severe action of sun or storms, in the thickly planted orchard as compared with that to which we must look forward thirty years for its maturity, and I am disposed to think we have paid too little attention to a stock on which to work choice sorts, that when grown will bring them early into bearing, and once in bearing help to prevent our having to thin them out, if inadvertently we have planted a little too closely.

Our Vines and Vine Trellis

Last spring, the old fence against which our vines were trained was blown down. It had been erected fifteen or twenty years, the posts had become much decayed, and the boards scarcely less so. I was not sorry to see it overthrown by a heavy south-west wind, but how to mend the loss became our next care, and many plans pro and con were mooted and in turn rejected. Finally, the plan of posts and wire was substituted for a fence to train the vines on. The distance was about 160 or 170 feet.

One day in early spring, when time did not press for other things, I procured some pieces of scantling and small round cedar posts, and set them about fourteen feet apart and 3½ feet deep, having first planed them smooth and finished them in a slightly manner. I put the first post deeply and strongly into the earth, and as it had to bear the pull of the wires, I placed across it, at the surface of the earth, but buried below it, a piece of scantling two feet long. This was required to afford resistance to the pull of the wires. Each post projected 4½ feet above the earth, and was bored at intervals of one foot, with four half-inch auger holes, and then all being put in level and of an even height, they presented a very neat and pretty appearance. I next obtained 650 feet of wire, about as large as a wheat straw at the ear, and passed it through the holes in the posts, after taking a turn round the first one.

You will see that there was thus formed a straight, handsome wire fence to train the vines on, but the wires were slack, and I was so pleased with their appearance, so far, that I determined to have them tight and straight as a fiddle-string. I therefore braced the last post as I had the first, with the piece of scantling, and taking the projecting end of the wire where it passed through the last post, winding it around a stick, and setting my feet firmly against the post, I was enabled to put a heavy strain on the wire, so much so as to make it as straight as an arrow and as tight as possible from end to end. A dexterous twist around the post, without letting back in the least, securely fastened the end, and this was repeated with each wire, and I had as handsome a trellis as one could wish. We trained the vines part one way and part another, and wove them around the wires, fastening them where refractory and refusing to lie close, with twine.

It is now August, and we have a handsome hedge of vines, trimmed here and there to keep it within bounds, which forms a beautiful boundary, and at the same time affords abundance of grapes. We find the Hartford Prolific, Concord, and Delaware, succeed admirably with us. We manure them most abundantly, of which more by and by, when we see the result.

Last year was one of great hardship for vines. Few about here had any grapes ripen, and I saw numbers of vines whose fruit was green and shrivelled when the frost came, whilst ours were as abundant as ever, and ripened to perfection. We attributed it to the manure used; and if it answers as well this year as formerly, I shall certainly ventilate the plan through your columns.

NOTE BY MR. EDMOND. A. will do well to loosen his wires at the approach of winter, lest the contraction of the wires by cold either loosen the posts or snap the wires.

Fruit Growers' Association of Ontario.

The autumn general meeting of this Association will be held in the Town Hall, St. Catharines, on Thursday, the 22nd day of September, 1870, at 11 o'clock, A.M.

Members are requested to bring with them samples of such fruit as may be in season, especially of grapes, pears, plums, and crab apples, for comparison. It is expected that there will be a fine show of grapes in particular, especially if members will all contribute what they can. Those who cannot come to the meeting may send samples by express to the Secretary.

The following subjects are suggested for discussion:—

THE GRAPV VINE.—1. Best methods of pruning and training. 2. Best method of grafting. 3. Best method of manuring. 4. Winter protection. 5. Destruction of insects. 6. Earliest varieties.

PEAR TREES.—1. Their cultivation. 2. Pruning. 3. Manuring.

CRAB APPLES. The best sorts, and their economic uses.

Members are requested to read or cause to be read to the meeting papers or short essays on any branch of fruit culture, especially any facts of interest that have come to their knowledge, or fallen to their experience.

Members will please report at the same time on the growth of the Eumelan grape.

By order.

D. W. BEADLE,
Secretary.

St. Catharines, Sept. 6, 1870.

FRUIT IN NEW YORK CITY.—There seems to have been an over-supply of fruit in the New York market. The *Rural New Yorker* says that on Tuesday, July 26th, many of the finest Lawton blackberries ever raised were left to spoil for want of buyers, though offered at four to six cents per quart. Raspberries were sold by the car-load at four cents per quart. Apples, too, have been largely in excess of the demand. Selling at \$2 to \$3 per barrel.

Our Garden.

"Our Garden"—How much there is in these two words, so much of home and its attractions, good for father, mother, children and all. But to have a garden worthy of the name, we must not expect only to work with a plough and team for about three days in spring, and do no more all the remaining part of the year. A mere vegetable patch is not worthy of the name of "Our garden." What I mean by a garden is some lawn, plenty of deciduous trees, and some evergreens in their proper place, good orchard trees, and vines, with a plentiful portion appropriated for vegetables and small fruits. This garden will require work and attention, and if of any extent, no doubt the time required will sometimes be ill spared, but the garden is such an ornament and luxury that all are ready to put a hand to its decoration. Odd hours are continually occurring, in which much may be done. Then the vegetables are such an addition to house-keeping; often and often there has been wanted in the country something for dinner and tea besides just pork and potatoes, bread and butter. A good garden has always something to be found in it for such a purpose; peas, beans, cauliflower, tomatoes, rhubarb, radishes, squash, cabbage, onions, beets, etc.; all these things are most useful, and they will repay the time, care and trouble of raising them. Not to mention flowers, fruits of all kinds, gooseberries, currants, apples, pears, blackberries, raspberries, all are to be had in abundance for just the trouble of planting, manuring, and keeping free from weeds; and what an addition to housekeeping these form.

Often in cities, and particularly in their environs, do we see an acre, and sometimes much more of meadow land, around two sides of a nice house, with trees scattered about, every little depression made something of, and forming a great attraction by its neatness alone; and such a meadow on a more extensive scale, with such trees, is within the reach of every farmer in the land. There is absolutely no expense whatever attending it after planting, as sheep will crop the grass without injury to the trees, and mowing is quite unnecessary. You may depend on it, to bring up a family with such an addition to their home, is to give the first strong inducement to the girls or boys to possess such a home of their own, and they will ultimately have one. Their minds are set towards it, and having always been used to it, will not readily dispense with such. Bear this in mind, fathers and mothers, and if you desire your children's welfare, and that they should like home, devote two or three acres about your homestead to meadow, trees, garden and walks, and a drive up to the house through them.

C.

NOTE.—When will our well-to-do farmers act upon such suggestions as these, and make each home, to the members of each family, the prettiest spot on earth, and our Canadian home the most beautiful and attractive country of this Continent.

comfort of clean painted floors, she will never again be content with the old, dirty, unpainted boards. In wet weather there must be some mud carried in on the boots, and this is easily removed from a painted floor, by a little cold water. Soap or lye must on no account whatever be used—they totally destroy the paint, and all washes off. Do not forget; never use it, as your floor, if painted, will be ruined. The alkali at once combines with the oil of the paint, and the whole washes off like ordinary clay. I do not yet despair of inducing my wife to allow me to try again.

I was travelling in Tecumseth township some time last year, and took dinner at a house about four miles from Bradford. The kitchen floor was painted, and always had been, and the cracks were all puttied up tight, so that it looked like one board. I asked the lady of the house how she managed it, and from her I derived some very valuable information. She had every floor in her house painted; her husband had done them, and renewed worn parts each spring. She had met with an accident, an injury to the spine, which prevented any bending, so it was manifestly impossible to scrub, and painting was resorted to as a remedy, and a delightful one it proved. A little cold water and a patent mop-stick would remove all dirt quickly, and ten times as fast as a floor could be scrubbed. Some friends of mine, who liked the appearance of the grain of the wood, and yet determined to prevent greasy spots showing, oiled the floor well with raw linseed oil, put on quite hot, and two or three coats were used; but one coat, very thickly applied, provided the oil is very hot, will answer very well, and perhaps better, and as it penetrates into the wood an eighth to a quarter of an inch, it will not wear off like paint, and is equally easily washed. But in heating the oil, recollect never to heat it on a stove, unless it be far away from the house, for there would be great risk of fire from the oil flowing over. Build a small fire away from the house; allow no children about it, and test the heat of the oil with a feather from time to time. If it gets too hot it will burn a feather, and of course spoil your brush, but a little cotton mop is much better to use, and will not injure by heat.

Remember, oil will reach a great heat, far above boiling water, or at all events sufficient to scorch a feather, at which high temperature it would prove dreadfully destructive if an accident were to occur; so be careful if you conclude to use it. I used it for some tables, and it far exceeds paint, as nothing will wear it off.

C.

CEMENT FOR SEALING UP FRUIT.—Take of rosin and brick dust a sufficient quantity; after melting the one, stir in the other. Be careful and not put in too much rosin, or the cement will not hold, and see that the brick dust is finely powdered.

Farm Gongs.

Calling on a friend during one of my wanderings through the north-western part of the County of Perth, I saw an excellent farmer's gong. It was made by taking an inch-and-quarter round bar of English iron, bent into the form of the accompanying diagram, and suspended by the loop in the centre. The length of each arm was about four feet, and when struck with a hammer, produced a ringing, clear sound, easily heard a full mile, and with the wind nearly two miles. This particular shape seems to be the best adapted for the production of sound; without actual experience no one would believe how very loud and clear it was. You will notice that the ends are turned round into a circle of about four inches diameter, and are gradually brought to a point, the iron towards the end being about half an inch in diameter, and the extremity rounded similar to the end of the finger.

This gong was found exceedingly useful, and a regular code of written signals was used, and a copy was always kept hung up close to the gong, so that any one wishing to call for meals struck in accordance; if the proprietor was wanted by a visitor, another series of blows was used; if fire or accident occurred, which required instant attendance, the gong was struck rapidly and forcibly with an iron hammer, in a way quite different from ordinary requirements. Fire did once occur, and it then became every one's duty to run rapidly towards the homestead. These signals being written down and explained, worked to admiration at the time of the fire: the gong certainly saved the house. All were out but the mother when the accident occurred, who, with her little baby, a week old, happened to be the only inmates, and from her recent illness was quite unable to climb the roof and extinguish the flames; but she could beat the gong, and did so, and the unusual signal for fire aroused all within hearing, who hastened to the house, and the fire was easily extinguished. But for the gong the homestead would have been burned to the ground.

The great difference between the sound of the blows produced by an iron hammer and wooden maul was used to especially distinguish the emergency of the case—the sound produced by the wood being heard as far, but not nearly so shrill and sharp.

The cost of such a gong would be trifling, and it would last generations. It ought not to be allowed to become rusted, and a little grease would effectually protect it from oxidation. In bending the circle for the eye, care must be taken not to allow any portion of the bent parts to touch. A small piece of wire will do to hang it to; rope will not answer so well. Common English iron is best, being much more resonant; in fact, the best iron will not answer, as its parts are formed more by lamination, instead of, as in English

iron, being crystalline in its formation. The cost of the iron bar will be about \$1, and the workmanship about another, and the convenience will amply repay the outlay.

C.

Saddles to Chimneys.

It may be of some use to those building to have a hint on the above very simple expedient to prevent the leaking that usually accompanies the building of chimneys in the roofs of dwelling houses. For the ordinary protection against such trouble, there is what is called flashing, made of tin, zinc or galvanized iron, that lines the gutter immediately behind the chimney. This flashing usually extends somewhere about four to six inches up the side of the chimney, and a similar distance underneath the shingles. Now, it is perfectly clear that during a thaw, and when slush snow lies deep against the chimneys, and the heat of the roof, derived from fires underneath, liquefies the substratum of such snow, it must rise until the force of the column is sufficient to push the mass out of the angle of the chimney formed by the roof, and, meantime, a stream of melted snow is forced back over the flashing, and the rooms below are, of course, inundated, and much mischief often arises.

Now, the remedy is easy and simple. It is to construct a second small roof, called a "saddle," behind each chimney, which being at opposite angles with the main roof, splits the slush snow as it slides down, causing each half to slip past the chimney, and so down to the edge. Much mischief is thus often saved, and at very small expense.

C.

Cider Making.

Those who have orchards of choice grafted fruit will find it more profitable to sell their fruit than make it into cider. But there are still great numbers of farmers, who have old orchards, the fruit of which is of little value except to manufacture into cider.

Like all other undertakings, that of cider making can be well or ill performed, and the profitable result of the process will greatly depend on the care and skill used in manufacture.

The process is usually a very simple one, and the introduction of portable cider mills has so greatly facilitated it that much more care and personal supervision can now be devoted by orchardists to the manufacture of cider from such fruit as may be of small value otherwise.

The first requisite to obtain a good article of cider is to have the fruit fairly ripe, and carefully picked over to reject all decaying and wormy apples. They are then put in heaps for some days to sweat a little, which will improve the flavour. The more sweet apples there are among the fruit used the better will be the cider, and it is always advisable to reject any that are excessively

Agricultural Intelligence.

The Provincial Exhibition.

The Provincial Exhibition buildings have been undergoing large repairs. We are glad to say that the works are in such an advanced state that Mr. Grand, the architect, expected to hand the buildings over to the City Council by the beginning of September.

A new poultry shed, 176 feet by 26 feet, containing 380 coops, has been built on the west end of the grounds.

A new stable, 162 x 30, designed to accommodate 54 horses, has been erected on the north side of the grounds; and three other buildings which have been altered will furnish accommodation for 128 more horses.

On the north side of the ground, just east of the stables, four new buildings have been built for sheep. Two of them are 240 feet long each; the third is 150 feet long; and the length of the fourth is 130 feet. These, with two old buildings that have been altered, contain 290 pens.

On the south side of the road the whole of the old hog pens have been reconstructed. A new building, 180 feet long, containing 60 pens, one 90 feet long containing 30 pens, and one 192 feet long containing 64 pens, have been built. Altogether there will be 216 hog pens.

The three buildings which during the occupation of the Crystal Palace by the 13th Hussars were used as horse stables, have been converted into cattle sheds; and two new cattle sheds have been erected. One of these buildings is 162 feet, and the other 210 feet long. Altogether they contain 192 pens, 30 of which have been specially constructed for bulls.

Two forage barns, 36 x 24 feet each, have been built, one on the north side of the road in front of the horse stables, and the other on the south side in the vicinity of the cattle sheds.

A new shed for implements has been built on the south side of the road, just west of the cattle sheds. Its dimensions are 200 x 25.

For a horse ring, a portion of the ground has been fenced off in the shape of an oblong 400 feet long and 250 wide, with rounded corners. Six cattle rings have also been staked off.

In the Crystal Palace a new gallery rail has been put up; the floors and large doors at the four entrances have been repaired, and the tin work on the roof has been completed. The latter is to receive a coat of Canadian cement roofing. The fountain is being reconstructed in the centre of the hall, and pipes for supplying it with water will be connected with the cistern of the Lunatic Asylum. The carpenter's work has all been completed in the picture gallery, and this portion of the building is all ready to be coloured.

sour or bitter, and mix in a fair proportion of sweet ones, if they can be had. The apples, when ready to use, are ground up into pulp. This done, the pulp is placed in the cider press, and the juice gradually squeezed out. The pressing must be applied carefully. The cider will be better and of a richer colour if the apples stand for a few hours after being ground or crushed, before applying the pressure to obtain their juice. The great advantage of slow and gradual pressure is that it makes the juice run pure and clear. It is best that the apples should not get mellow before being crushed, as they lose some of their strength and soundness by being allowed to ripen overmuch. It is of the greatest importance to be very careful that no water is allowed to be added in any way during the process of cider-making—the smallest quantity, especially of rain water, will spoil its keeping qualities. Therefore, all the operations must be performed under cover; that no rain may fall on the pomace while it is being pressed. Some grind up the pomace, and press it a second time, but the juice then obtained is generally acrid and gritty, and will spoil that obtained by the first pressing, if added to it. If this second pressing is done, the juice should be saved in separate casks, to be sold as inferior cider.

The casks to be used must be perfectly clean and sweet, and filled quite full, so that when fermentation begins, the froth can discharge at the bung. When the first fermentation abates, cover the bung close with something that can be lifted by the air that escapes during the after-fermentation. In a week, rack off the cider carefully into another clean cask, letting it run only so long as it comes out clear. In ten days more rack it off again, and in fifteen days give it a final racking off. When racked off clear the first time, the cask is to be quite filled, bunged tight, and stored away in a deep dry, frost proof cellar, there to remain till used.

Perfectly clean, sweet barrels, must be used each time of racking. By attending particularly to the racking process, there will be no occasion for using any artificial substances for fining or clarifying the cider, as it will keep perfectly sound for a long time.

Earth Closets.

A correspondent from Rothsay writes for information as to the construction of earth closets, and wishes to know where he may procure them, and their cost.

The principle on which the apparatus is based is so simple that no complicated or expensive construction is necessary. All that is essential is a supply of dry pulverized earth. This may readily be procured, especially at this season of the year. The soil should be sifted, and, if necessary, spread out in the sun to dry, then stored under

cover in any convenient place. A supply of this dry earth may be kept at hand in a box in a closet, by the side of the commode, or wherever it is required; and with an ordinary scoop, about a pint should be thrown over the feces after each use. A pan or drawer, with a few inches of earth at the bottom, is the only receptacle required, and this can be emptied as often as necessary. For out-door privies, the surface of the earth itself forms a sufficient and a very fit receptacle, and the accumulation may be removed as often as required with a shovel and wheelbarrow. If properly managed, there is absolutely no unpleasant odour.

Though such homely appliances answer the purpose, still, where it can be afforded, some of the more elaborate contrivances, which embody the same principle, but save trouble in the using, are very convenient in the house, and especially in the sick room. There are various patents and different manufacturers claiming public patronage. An English company, under the name of the original inventor, "Moule's Earth Closet Company," have their representatives in this country, and Messrs. Cleverdon & Coombe, of Adelaide Street, Toronto, are their authorised agents for Ontario. This firm supply a very neat-looking earth commode, cased in cherry or other ornamental wood, for \$27, or they will furnish the working part—all that is essential—without case, for \$12 or \$15.

So satisfied are we of the advantages of the dry earth system in an economic and sanitary point of view, that we expect to see its adoption become general; and would especially press the subject on the attention of those who have the management of public institutions, such as prisons, hospitals, factories, schools, and the like. Some trouble may be experienced in cities in procuring the requisite supply of suitable soil; but in the country and at farm-houses, no such impediment is presented, and the plan is not only the most efficacious, but the least troublesome that can be adopted. It should be practised by farmers without exception.

A CHEAP FILTER.—The *Manufacturer and Builder* gives the following directions for a simple filter to purify cistern water: Place on the perforated bottom of a box a piece of flannel, and on this some coarsely powdered charcoal, then some coarse river sand, and cover the whole with sandstone broken into small pieces.

REMEDY FOR ROACHES.—A correspondent in the *Country Gentleman* says that the use of powdered borax where roaches most do congregate is a complete disturber of their visits. The scattering of this sweet, clean and harmless white powder on the shelves, around hot water pipes, sinks, etc., is so repugnant to them, that they at once retire from the field. You, good housekeepers, who have such a horror of these pests, will be glad to learn this.

The hall for fruit and flowers has only to receive a coat of whitewash, which will be put on immediately. That portion of the building which it is designed to use for the exhibition of roots, &c.—the old riding school—has been put in proper condition. The inside of the Crystal Palace is not to be painted.

North of the Crystal Palace a ladies' saloon and reception room have been erected.

The fences around and the entrance gates have been thoroughly repaired; a new roof has been put on the building in which the offices are situated, and that and the out-buildings are being painted and plastered.

Royal Society's Show.

This exhibition opened at Oxford on the 11th July, with the trial of implements in the yard, viz: fixed steam-engines, mills, cutters, crushers and dairy utensils. It promised to be one of the best the Society has ever had, as well as the most extensive. The 406 stands for implements would accommodate about 2000 loads. At Manchester there were 384 stands. The 2,976 feet of shedding for cattle, 2,232 for sheep and pigs, is considerably in excess of the provision made at Manchester; but the 213 boxes for horses show a falling off, the number last year being 384. The stock-yard opened a week later, on Monday, the 18th July, and the show of both implements and stock remained open until the evening of Friday, the 22nd.

In the stock department, though the show of horses was smaller than usual, the classes in cattle, sheep and pigs were well filled, and considerably in excess of the numbers at the Manchester show last year. In the Short-horn classes so large was the show that two sets of judges, one for males, another for females, were required in order to get through the awards in time. In sheep there was a large and fine show of Downs, of which Oxford Downs and Shropshire Downs were most numerous. In the pig classes there was but one recognized breed as a class, the Berkshires; the other classes being large and small white breeds; and the same of black breeds.

In Short-horns the display is said to have been a capital one, but the absence of any of Mr. Booth's stock was noticeable and commented upon. In Aged bulls C. W. Brierly, of Manchester, took 1st with "Bolivar," (25649), an Irish bred bull, that stood first at Manchester last year as a two year old. The 2nd prize fell to C. R. Saunders, Penrith, for Edgar (19689.) This animal stood in the same position at Manchester last year in the aged class. The third prize fell to T. E. Pawlett of Beeston, for "Baron Killerby."

In the two year old class, the 1st went to R. Bruce, Forres, Scotland, for "Scotman," (27435) an animal that stood first at the Highland Agricultural show last year. The 2nd fell to Col. Towneley for "Baron Hubback,"

(25569), the reserve bull of last year in the yearling class. J. Wright, Penrith, took 3rd with "Man's Estate." In the yearling class Lady Pigot, of Branches Park, took 1st, Mr. Linton, of York, 2nd; and Lord Braybrooke 3rd. There were a large number of entries in this class, and much dissatisfaction expressed at the awards. The bull calf class was a very promising one, Mr. Dudding of Panton taking 1st prize, and Mr. Stratton of Burderop 2nd. In the aged cow class G. Game took 1st, Lady Pigot 2nd, J. How, Brompton, 3rd. In the two year old class Mr. D. McIntosh, of Havering Park, took 1st with a very noticeably fine animal, Lady Knightly 2nd.; H. Dudding 2nd, J. How 3rd. The 3 year old class was a very moderate one, the 1st falling to J. A. Mumford, Thaine; 2nd to R. Eastwood Thorneyholme, 3rd to R. Stratton, Burderop. In heifer calves Col. Towneley got 1st, R. Marsh, Offley House, 2nd.

The Herefords were well represented, and Her Majesty the Queen succeeded in taking two prizes and a reserve. 1st for two year old bull, 2nd for aged bull, and a reserve highly commended in the cow class.

The Devons were very fine though not numerous. W. Farthing, J. H. Buller and Viscount Falmouth being the principal prize winners in this class.

The Oxford Prize Farm.

The *Agricultural Gazette* gives an interesting account of a visit to the farm of Mrs. Millington, to whom was awarded, by the Royal Agricultural Society of England, the first prize of £100 for the best managed farm in a specified district about Oxford, where the late exhibition was held. The following particulars of the course adopted will be interesting:—

"The rotation is as follows:—1st, roots, principally Swedes and turnips; 2nd, barley; 3rd, seeds; 4th, two-thirds wheat and one-third barley, including a portion of vetches. Catch crops are seldom sown, and the vetches occupy any portion of the seed land not thought to be in good enough condition to bear a corn crop. Vetches, therefore, on the farm, follow seeds, and are again followed by roots, and this brings any land out of condition into a good state. The rotation is also slightly deviated from by ploughing up some of the seed land early for mustard, afterwards to be followed, like the remaining seed land, with wheat: and the result is said to be two quarters more wheat than after seeds at once ploughed for the wheat crop. Glancing at each crop in rotation, we find that the cultivation for roots embraces one (deep as possible) three-horse furrow in the autumn, followed by steam cultivation in the spring. Up to last year, when Fowler's tackle was employed, Smith's cultivator had been in use. The land is afterwards worked with Coleman's cultivator,

and the roots are sown with four cwt, of Hale's superphosphate, put in with water on the flat. Two-thirds of the turnip crop are eaten on the land with cake and corn, and one-third is drawn off for the cattle. No farmyard manure is ever applied to the root crop, but all is devoted to the seed land, and is now being spread over the land as a preparation for wheat, according to Lincolnshire usage. No top-dressings are used; all is put under the soil. Still, oil-cake in the form of sheep-dung is top-dressed on the land, and the condition of the farm must be well supported by the £1,000 to £1,200 worth of cake annually spent on the farm. There is also an expenditure of about £300 per annum in the form of superphosphate, no other purchased manure being imported.

"There is a flock of 400 Lincoln ewes maintained, and all tegs are either fattened or find their way into the flock. Ewes, culls, theaves and lambs constitute a standing flock of 950 sheep, and the clip is estimated at from two to three fleeces per toad. The lambs remain till late with their mothers, as above stated, and the first summer the management appears to be anything but forcing.

"Twenty-five calves are usually weaned every spring upon linseed gruel, and with the assistance of two cows. These cattle are kept until they are three years old, and are then disposed of at from £16 to £18 each. The stores receive from 2 to 5 pounds of linseed cake per day, according to their age, with a restricted amount of roots."

The Wheat Midge in England.

The subjoined extract from a recent English paper bears too plain evidence that the midge is doing mischief in some of the wheat fields of Yorkshire. This pest has of late years been but little known in any portion of the British Islands, nor indeed on the continent of Europe, to anything like the extent, duration or intensity, with which many Canadian and American farmers have unfortunately been too familiar. It would appear that the attack in the cases referred to is of a nature to awaken serious apprehensions:—

"A very serious matter to the Yorkshire farmer, and, indeed, to the country at large, has been detected within the last few days in some parts of Yorkshire. Some of the wheat crops were noticed to be prematurely changing colour, and upon examination it was found that the husks had no kernel, or that, where the kernel yet remained, it was fed upon by numbers of very small yellow maggots, which completely destroy it. In a field near Malton the pest has so overrun the crop that it is scarcely possible to find an uninjured ear of wheat. The forwardest crops are those most flyblown, and in most of the cases the centre rows of wheat in the ear are destroyed. Some of the merchants and farmers, since the discovery was made, have examined crops in various localities, and only in one case, so far—a spring-sown late crop, now in flower—have the caterpillars been absent. It is feared this pest is very widespread, and must seriously affect the yield. Some farmers remember a similar visitation some years ago during a dry, hot summer as at present."

Mr. Cochrane's Importations.

Bell's Messenger says:—Mr. Cochrane, of Canada, has been buying largely at Wetherby and Warlaby. In 1868, when he bought Duchess 97 for 1,000 guineas, he prevailed on Capt. Gunter to let him have another of the family before long. In the spring of the present year he wrote to ask for Duchess 103, which happened to be calved when he was at Wetherby in 1868. This animal Captain Gunter undertook to sell him when he came over. On the 6th July he arrived at Wetherby Grange; and on the 7th, Duchess 103 and Duchess 101 were bought by him for 2,500 guineas. The price of the "promised" one Mr. Cochrane considered was to be the same as that given for Duchess 97, so that the sum paid for Duchess 101 was 1,500 guineas. The *bona fide* sale money for the two is £2,625. Duchess 101 is a red with the usual white on the flank. She was calved in January, 1868, and is by Fourth Duke of Thorndale from Duchess 84. Duchess 103 (the promised one) is a rich roan, calved in August, 1868, and is by Fourth Duke of Thorndale, from Duchess 92, the dam of Duchess 97. These heifers are about four months in calf to Eighth Duke of York, the bull sold in the spring to Messrs. Allen, Tunnicliffe & Bell. At Warlaby, Mr. Cochrane possessed himself, at the cost of 1,500 guineas, of Lady Grateful, the own sister of Lady Fragrant, and, in the opinion of some competent judges, the best Booth cow alive. He also bought Mabel by General Hopewell, and a bull calf, a few months old (Royal Commander, by Commander-in-Chief, from Prudence) for 900 guineas.

Mr. Cochrane's purchases in Yorkshire were not confined to Wetherby and Warlaby. He dealt also at Killerby Hall, buying there Mr. John Booth's Lady of the Lake, a grand red and white cow of November, 1862, for which he gave 500 guineas; Queen of Beauty, red and white, of April 1868, and Fairy Gem, roan, calved in May, 1869. This heifer is twin to Fairy Pearl, which continues in the Killerby herd. The price of Queen of Beauty and Fairy Gem was 500 guineas. The three animals selected by Mr. Cochrane from Mr. John Booth's stock are from his He Cuba family, a very prolific and fine tribe. Lady of the Lake was by Knight Errant (18154), Queen of Beauty by the same bull, from Queen of the Glen by Velasco (15143); and Fairy Gem was by K. C. B. (26492), the son of Knight Errant and Soldier's Dream by Windsor (14013). Mr. Cochrane also bought at Killerby the roan heifer Millmer by Brigade Major (21312), from Lady Percy, bred by Mr. Serjeantson, of Camphill. At Braithwaite he secured a roan bull, and a three-year-old roan heifer of very great merit; the former, calved on the 2nd of September, 1869, Booth's Marksman, by Booth's Kinsman (25658), from Vernal Star by the Sutler (23061); the latter, Rosa Louisa, by Royal

Booth (22772), from Rosa Sybilla by Baron Booth (21212), grandam Rosa Wreath by Windsor (14013), great-grandam Rose Garland by Baron Warlaby (7813). She is in calf to Regal Booth (27262), the Vesper bull sold a short time ago to Mr. Crosbie, of Arl-fert Abbey, Tralee.

Besides the animals mentioned in the preceding article as sold to Mr. Cochrane, Mr. John Booth sold, to Mr. Miller, of Canada, Gaety, a roan heifer calved in 1867, and got by Brigade Major, from Lady Georgina by Knight Errant; and Madame Booth, a roan calved in July 1867, and got by the same bull, from Vanity by Velasco. Mr. Beattie, moreover, purchased for exportation to Canada, Charas, a red and white heifer of April 1868, by Brigade Major, from Virtuo by Velasco.

The *Agricultural Gazette* furnishes the following additional particulars concerning Mr. Cochrane's recent Short-horn and other purchases:—

An interesting catalogue has been published by Mr. Thornton, of the cattle and other domestic animals purchased by Mr. Cochrane, of Hillhurst, Compton, Montreal. We have already noticed the Wetherby, Warlaby, Killerby, and Braithwaite purchases, but besides these, heifers were selected from the herds of Mr. G. S. Poljanbe, of Osberton Hall; Mr. Barnes, Westland, Moynalty, Ireland; Rev. J. Storer, Helidon, Davantry; Messrs. Dudding, Pantou, and Messrs. G. Garne, of Chipping Norton; J. Christy, of Boynton Hall; R. Plummer, Carlton Hushwaite; W. R. Bromet, Tadcaster, Atherton Chapel House; J. Logan, Newport; D. R. Davies, T. T. Drake, Beattie of Annan, Barclay of Knevil, and Aylmer of West Dereham. Mr. Thornton further informs us that besides these Shorthorns the exportation of 1870 contained a number of first class sheep and black and white pigs. The sheep comprised the first prize pen of Cotswold ewes at the recent Oxford meeting, bought of Mr. J. Gillett, of Minster Lovell; and fourteen Cotswold ewes and five rams from Mr. H. Coles' stock, also successful at Oxford. A number of pure-bred Berkshire pigs were purchased at Her Majesty's farm, Windsor Castle. Seven pure-bred Berkshires were obtained from Mr. Heber Humfrey; several from Mr. Geo. Griggs, winner of the first prize for boars at Oxford; and four from Mr. Wm. Smith, of Bibury. The white pigs were purchased from Mr. J. T. Robinson, Mr. Aylmer, of West Dereham, and Mr. Atherton. There were also exported two pure-bred Alderney heifers and their calves, purchased immediately after their arrival in England; and a superior-hunting bay mare, four years old, bred by Mr. J. Beattie, Annan, got by Laughing Stock, out of Nanny, by Nimrod, well known in the Cumberland Hunt.

Estimates of the present wheat crop in California fall 2,000,000 cents short of last year.

Automatic Grain Binding.

The *Chicago Republican* gives the following account of the successful trial of a new machine invented by Mr. S. D. Carpenter, of Fond du Lac, Wisconsin, for binding as well as cutting grain:—

"The machine was purposely put to work on all kinds of ground, rough and smooth, hilly and level, to thoroughly test its adaptation to general use upon any kind of surface. It was also tried on standing grain, and in its worst as well as best forms—on tangled, lodged, grassy, weedy, clean and upright—long and short, thick and thin, green and over ripe. The trials were made on the farms of Mr. Sewell, Mr. Thompson, A. J. Birdsall, Mr. Gould, Peter Allard, and E. H. Galloway—gentlemen well known in that section, and whose places all lie within four or five miles of the city. The testimony of those who witnessed the trial is straight and direct that it nowhere failed to do its work—cutting and turning off thousands of perfectly tied bundles, and always in perfect shape where the straw was long enough to give place for the band. Out of 2,900 bundles, it is estimated that not over eight or ten would need rebinding, and this was so short that it was difficult to get the cutter far below the heads.

"One or two small accidents happened during the experiments, but were speedily repaired. It is not possible in a new and untried machine to calculate all the points of greatest strain, until they are demonstrated on trial. None of the discovered defects had anything to do with the principle of the binder, and were mere deficiencies in the strength of one or two parts. Three acres were cut in two hours and a half, without a bundle being missed, and it was believed that, in an ordinarily clear and level field, a span of horses would easily cut and bind eight or ten acres daily, and probably more."

With the addition of an automatic binder, which sooner or later we believe will be accomplished, the labour of harvesting will be reduced to the minimum, and proprietors will be comparatively independent of the extra and expensive help now required in gathering the fruits of the field.

The milk fever is proving quite fatal to the cows in some portions of Portage county, Ohio.

DRAINAGE OF SWAMP LANDS.—Contracts for the drainage of swamp lands in the Province, under the Act passed during the last session of the Provincial Legislature, have been awarded as follows:—In the Township of Grey, County of Huron, George Blain, Malton, \$5,945 92; Township of Brooke, County of Lambton, same person, \$22,467 99; Township of Mosa, County of Middlesex, Grant & Yorke, Toronto, \$9,670; Township of Dunwich, County of Elgin, John A. Philpott, Iona, \$9,018 64; Township of Raleigh, County of Kent, John Elliott, Brantford, \$30,325; East Tilbury, same person, \$24,200.

Agricultural Exhibitions for 1870.

CANADA.

QUEBEC.....	Montreal.....	Sept 13-16
Peterborough (Hort.)	Peterborough.....	Sept. 14.
Dundas.....	Morrisburg.....	Sept. 11-15-16
OTTAWA.....	Ottawa.....	Sept 21-23
MIDDLESEX, West.....	Strathroy.....	Sept 21.
Galt (Horticultural)	Galt	Sept. 22.
Tuckersmith.....	Seaforth	Sept. 22-23
Blandford & Wilmot.....	Hamburg	Sept 23.
Pilkington.....	Elora.....	Sept. 23.
Goderich(Horticultural).Goderich.....	Goderich.....	Sept. 23.
Hay.....	Zurich.....	Sept. 23.
Biddulph.....	Granton.....	Sept 23.
Dereham.....	Tilsburgh.....	Sept. 26-27
YORK, North.....	.....	Sept. 27-28
WATERLOO South.....	Ayr.....	Sept. 27-28.
E. MIDDLESEX & LONDON.....	London.....	Sept. 27-29
HERON, North.....	Clinton.....	Sept. 27-28
Muskoka Union.....	Bracebridge	Sept. 27.
Eramosa.....	Centre Inn.....	Sept. 27.
Turnberry.....	Belmore.....	Sept. 27.
PEEL.....	Brampton.....	Sept. 28-29
Minto.....	Harriston.....	Sept. 28.
Nottawasaga.....	Nottawa.....	Sept. 28.
Howick.....	Wrocyer.....	Sept. 28
Roxborough.....	Moose Creek.....	Sept. 28.
Williamsburgh.....	Bouck's Hill.....	Sept. 28.
Smith.....	Bridgenorth.....	Sept. 28
Sudenham.....	Dunedin.....	Sept. 28.
Minto.....	Harriston.....	Sept. 28.
HERON, South	Exeter	Sept. 29-30
GREY.....	Owen Sound.....	Sept. 29
VICTORIA, South.....	Lindsay.....	Sept. 29.
WELLINGTON, Centre.....	Fergus.....	Sept. 29-30.
GREY South.....	Durham	Sept 29.
Keppel.....	Hepworth.....	Sept 29.
Hillier.....	Wellington.....	Sept 29
Clifford.....	Clifford	Sept. 29.
Niagara.....	Niagara	Sept 29.
Uxbridge.....	Uxbridge.....	Sept. 29-30
Mara and Rama .....	.....	Sept 29.
Blacvale and Wingham.....	.....	Sept. 30.
Fenelon	Fenelon Falls.....	Sept. 30.
Trafalgar.....	Oakville.....	Sept 30.
Blenheim.....	Drumbo	Sept 30
Saltfleet & Bimbrook.....	Bimbrook	Sept. 30.
Owen Sound(Hort.).....	Owen Sound	Sept. 30.
Morden	Morden	Sept. 30
PETERBOROUGH, West.....	Peterborough.....	Sept. 30-Oct. 1
Elma & Wallace.....	Listowel.....	Sept. 30
Nassagaweya.....	Biltonville.....	Sept. 30.
Fullarton.....	.....	Sept 30.
KENT	Chatham.....	Sept. 30, Oct. 1.
Mariposa.....	Oakwood	Oct. 1.
HASTINGS, North.....	Woodstock.....	Oct. 3-4
OXFORD, North.....	Woodstock.....	Oct. 3-4.
PROVINCIAL.....	Toronto.....	Oct. 3-7.
Wellesley.....	Wellesley.....	Oct. 3.
NEW BRUNSWICK.....	Frederickton.....	Oct. 1-7.
Howard.....	Budgetown	Oct. 4
Arran.....	Tara.....	Oct. 5
Brace	Underwood.....	Oct. 5.
Proton.....	Cedarville.....	Oct. 6.
BRUCE, North.....	Paisley.....	Oct 7
West Zorra .....	.....	Oct. 7.
Brook	Sunderland.....	Oct. 7.
NORTH HUMBLED, East	Warkworth.....	Oct. 10-11
PETERBOROUGH, East	Norwood.....	Oct. 10-11.
HALTON.....	Milton.....	Oct. 10-11.
BRUCE, South	Walkerton.....	Oct. 11-12
OXFORD, South.....	Otterville.....	Oct. 11-12
PERTH, South	St Mary's.....	Oct. 11-12
ONTARIO, South	Whitby.....	Oct. 11-12
LEARN, North.....	Pais.....	Oct. 11-12
WELLAND	Welland.....	Oct. 11-12.
WATERLOO, North.....	Berlin.....	Oct. 11-12.
WELLINGTON, North.....	Arthur	Oct. 11
YORK, East.....	Markham.....	Oct. 11-12
Simcoe.....	Simcoe.....	Oct. 11.
Barton & Glanford	Glanford.....	Oct. 11.
Fuslinch.....	Aberfoyle.....	Oct. 11.

Verulam.....	Bobcaygeon.....	Oct. 11.
Normanby.....	Ayton.....	Oct. 11.
Oxford.....	Duart.....	Oct. 11.
Harwich.....	Blenhelm	Oct. 11.
Chatham.....	Wallaceburg.....	Oct. 11.
East Wawanosh.....	.....	Oct. 11.
West Williams.....	Pack Hill.....	Oct. 11.
Elma.....	Elma.....	Oct. 11.
Hibbert.....	Hibbert	Oct. 11.
VICTORIA, North.....	Cambray.....	Oct. 12
BOTHWELL	Thamesville.....	Oct. 12.
HALDIMAND.....	Grafton.....	Oct. 12.
HASTINGS, West	Belleville	Oct. 12-13
WESTWORTH & HAMILTON	Hamilton.....	Oct. 12-13
MIDDLESEX North.....	Alsa Craig.....	Oct. 12-13.
Arran	Tara.....	Oct. 12.
Walpole.....	Stage Road.....	Oct. 12.
Blyth.....	.....	Oct. 12.
Tilbury.....	Valetta.....	Oct. 12.
ONTARIO North.....	Prince Albert.....	Oct. 13-14.
DURHAM, West.....	Bowmanville.....	Oct. 13-14
NORFOLK.....	Simcoe.....	Oct. 13.
PERTH, North.....	Stratford.....	Oct. 13-14.
ADDINGTON.....	Addington	Oct. 13.
Erin.....	Erin	Oct. 13.
Derby.....	Kilsyth.....	Oct. 13.
Walsingham.....	Walsingham Centre.....	Oct. 13
Thorah.....	Reaverton	Oct. 13.
Lambton.....	Sarnia.....	Oct. 13-14
Grimshy.....	Grimshy	Oct. 13.
Kinloss.....	Lucknow	Oct. 13.
Artemisia.....	Flesherton.....	Oct. 13.
Kinloss.....	.....	Oct. 13.
MONCK.....	Wellandport	Oct. 14.
Windham	Windham Centre.....	Oct. 14.
Esquesing.....	Georgetown.....	Oct. 14.
Toronto (Township).....	Streetsville.....	Oct. 14.
Melancthon.....	Masonville.....	Oct. 14
Aldborough.....	Rodney.....	Oct. 14.
Mono.....	Orangeville	Oct. 14.
Willoughby.....	Chippawa.....	Oct. 14.
South Monaghan.....	Bloomfield.....	Oct. 14.
Murray.....	Trenton.....	Oct. 14-15.
Camden	Centerville	Oct. 15.
Woodhouse.....	.....	Oct. 15.
South Monaghan	Railleboro.....	Oct. 15.
NORTHUMBERLAND, West	Cobourg.....	Oct. 15-19
LINCOLN.....	St. Catharines.....	Oct. 15-19.
DURHAM, East	Millbrook	Oct. 15-19.
LENOX	Napanee	Oct. 15-19
Caledon	Charleston	Oct. 15-19.
Beverley	Beckton	Oct. 15.
HALDIMAND.....	Cayuga.....	Oct. 20-21
Cartwright	Williamsburg	Oct. 21
Clarke	Newcastle	Oct. 20-21.
Hope.....	Hope.....	Oct. 25-26.
Darlington.....	.....	Oct. 27-28
Proton.....	Cedarville	Oct. 29.

UNITED STATES.

Vermont.....	Burlington.....	Sept. 6-9.
New England.....	Manchester N.H.....	Sept. 6-9.
American Institute.....	New York City.....	Sept. 7-No. 2
Ohio.....	Springfield.....	Sept. 12-16
Iowa.....	Keokuk.....	Sept. 12-16
Michigan.....	Jackson.....	Sept. 20.
Illinois.....	Decatur	Sept. 20-Oct. 1
Wisconsin.....	Milwaukee.....	Sept. 27-30.
Woollen Exposition.....	Cincinnati.....	Sept. 21 Oct. 15
New York.....	Utica	Sept. 27-30.
Northern Ohio.....	Cleveland	Oct. 4-7.
Kentucky	Henderson.....	Oct. 4-7.
North Carolina.....	Raleigh.....	Oct. 15-21
Georgia.....	Atlanta	Oct. 19-26.

The Japanese begin to fear that California will obtain the bulk of the trade in silk-worm eggs. In one Japanese city, Yokohama, the trade amounts to \$500,000 annually. But it seems that a very destructive parasite has attacked the worms in that country, and it is feared, instead of exporting eggs, it will soon be necessary to import eggs from California to Japan.

The cranberry crop of Cape Cod was much injured by the May frosts. The damage is estimated at not less than \$150,000.

The *Ohio Farmer* says that 100,000 pounds of cheese are sometimes shipped in one day from Wellington, Lorrain county, in that state.

A sale of Percheron horses lately took place at West Roxbury, Mass., by the Society for the promotion of Agriculture. Eight animals were sold, two stallions and six mares and fillies - for which the aggregate amount realized was \$3,630.

The *St. Catharines' Journal* says the peach crop in that section this year is a complete failure, so complete, indeed, that it is questionable if there will be one thousand bushels to sell. Mr. S. J. J. Brown, one of the largest producers in the district, last year sold over 300 bushels, and this year he cannot fill an order from London for seven baskets. The reports from all parts of the Peninsula is that there will be no peaches.

BEEF SUGAR MAKING IN ILLINOIS.—The *Chicago Tribune* gives rather a gloomy account of the prospects of the Germania Sugar Beet Company, whose works are located at Chatsworth, Ill. The writer had just visited the farm, where out of 330 acres in beets this year, 130 are a failure on account of the drought, cut-worm and other causes, leaving 200 acres still standing, but of this area, only 70 acres are very promising. The farm comprises 2,400 acres, one-half of it being in Indian corn, and is managed with great care and skill by the superintendent, Mr Periam. The 200 acres of beets, for example, are quite free of weeds, which is saying a great deal for such an area in that country. The management of the Company appears to have been less judicious. Many of the farm implements were imported from Germany at great expense, and have little merit for the saving of labor. The local authorities are also blamed for ungenerous and unjust taxation.

From a carefully made up report of the crops of Minnesota, it is ascertained that the wheat crop will only average 14 to 15 bushels to the acre, being 12 per cent. below the average for several years past. The falling off is owing to the drought and unequal distribution of summer rain. The area sown is about the same as last year, namely: Little over a million acres. Owing to the low price of wheat farmers have generally put less land in wheat than formerly. The wheat product of the State will probably reach 15 million bushels, against 18 millions last year. The diminished quantity is, however, compensated by the fact that nearly the whole crop of this year will grade number one. Barley is good, the crop having matured before the recent drought. Oats have suffered more than any other grain, and are light. There is a meagre crop, yielding scarcely 20 bushels to the acre. The corn crop is very large and satisfactory. A largely increased area was planted, and the season has been favourable to its growth.

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For further particulars apply to J. W. ACRES, Member Ontario Poultry Association, Box 143 Paris, Ontario. v2-9-11

THE MORETON LODGE
COTSWOLDS.

Eleventh Annual Sale.

MR W. S. G. KNOWLES has received instructions from Fred. Wm. Stone, Esq., to sell by Public Auction, without reserve, on

Wednesday, 21st Sept., 1870,

At Moreton Lodge, Guelph, Ontario, Canada, about

- 40 Cotswold Rams and Ram Lambs.
- 60 Cotswold Ewes, one shear & over.
- 10 Southdown Rams.
- 10 Southdown Ewes.

Luncheon at noon. Sale to commence at 1 o'clock.

Guelph is a first-class station on the Grand Trunk Railway, and Trains leaving Suspension Bridge, on Great Western, at 7 a. m., 12:20 p. m., and 5 p. m., reach Guelph respectively at 11:45 a. m., 4:30 p. m., and 9:45 p. m.; and Train leaving Detroit at 8 a. m. arrives at 4:30 p. m. v2-9-11

THE
"LITTLE GIANT"
THRESHER

AND—
SEPARATOR,
(FOR A FARMER'S OWN USE),

MADE AT THE
Stratford Agricultural Works,

IS CAPABLE OF

Threshing from 200 to 300 bushels of Wheat,
or 400 to 500 bushels of oats per day.

IT THRESHES CLEAN.

And is not liable to throw grain over, having a peculiarly constructed shoe. It has

No Canvas, Elevators or Sieves,

Which in other machines are a continual source of annoyance. The Thresher is simple,

CAN BE WORKED BY ANYONE.

And can be driven with four or six horses. It takes up but little room on the barn floor, and

IS EASILY MOVED ABOUT,

Being placed on wheels. No machine made by me has given such universal satisfaction. It is the best Threshing Machine for a farmer's own use (or even three or four farmers in partnership), while the price places it within the reach of almost everyone.

Price of Thresher alone - - - \$105
Price of Thresher, with Horse-power Band
Wheel or Jack and Belting, \$155 or \$190

Send for a descriptive circular.

JOSEPH SHARMAN,
v2-9-11 Stratford, Ont.

WINDSOR NURSERIES.

Pear Trees for Fall Planting.

ALL judges acknowledge that Pear Trees grown at **WINDSOR NURSERIES** are the best and hardest on this Continent.

They are grown on heavy clay loam most suitable for the pear, as witnessed by the gigantic old French Pear Trees growing along the Detroit River. Pear Trees grown on light, sandy soil, of which most Nurseries are composed, are not so thrifty when transplanted.

The present stock of three-year old Dwarf and Standard Pears is the finest ever grown in these Nurseries, and can be confidently recommended as unsurpassable anywhere.

Fall Planting is best for Pear Trees, if only done early enough, as they can be safely lifted a fortnight or three weeks earlier than Apple or most other fruit trees; their young wood maturing earlier, the leaves can be easily removed without injury before lifting, which is absolutely necessary in early fall planting.

Orders for pears should therefore be sent in September, or first week in October (and separate from orders for other trees, which cannot be lifted so early), to allow the trees to be planted by the middle of October. The farther north, the earlier they require to be planted. The stock of four to six years old, bearing Dwarf Pear Trees, is very large and fine.

Catalogues sent free on application.
Trees packed carefully so as to carry any distance safely.

JAMES DOUGALL,
Windsor, 15th August, 1870. v2-9-11

THOROUGH-BRED STOCK FOR SALE.

100 HEAD SHORT-HORNS, male and female, of all ages, including some fine Bull Calves, **HERRFORDS, DEVONS AND Ayrshires, LEICESTER, COTSWOLD AND SOUTHDOWN PURE,** including some fine Rams and Ram Lambs; **BERKSHIRE AND SUFFOLK Pigs.** Address
v2-9-21 J. MACKELCAN, Yorkville P.O., Ont.

Waltham Watches.

THESE celebrated watches have now fairly won the first position with discriminating watch buyers in Canada, because they are known to be more accurate, more durable and cheaper than any others.

When watches are made on a large scale, as at Waltham, it is true economy to have the best and latest improvements in the art, and it is for this reason that the genuine Waltham Watch greatly surpasses any English Watch which can be had at anything like corresponding price.

The Canadian market is crowded with Swiss Watches bearing names very nearly the same as the trade marks on genuine Waltham Watches.

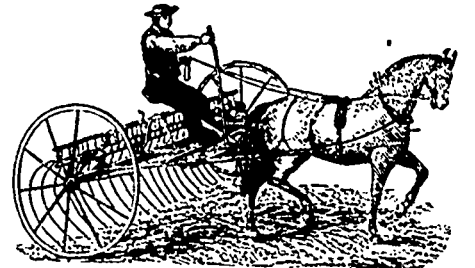
To avoid imposition, buyers should demand a certificate of genuineness in every case.

For sale by all leading jewellers in Canada. v2-9-11

GREAT SHEEP FARE AND RAM SELL,
AT GALT, ONT., OCT. 14, 1870.

THIS is the first of a series of Annual Fairs after the plan of the celebrated Sheep Fair at Kelso, Scotland, and as it is extensively advertised in U. S. and Canada, Sheep breeders will find it a most advantageous market for the disposal of their surplus stock and their Rams and Ram Lambs. v2-9-11

VINEGAR, HOW MADE FROM CIDER, Wine, Molasses or Sorghum, in 10 hours, without using drugs. For circular address F. I. SAGE, Vinegar Maker, Cromwell, Ct. v2-9-121



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.

Responsible Agents Wanted in every County. J. JAMES SOUTAR & CO., Foundry and Agricultural Warehouse, Chatham, Ont. v2-1-11.

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, I 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-oiling 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. v2-5-11.

FOR SALE,

SIX high bred, Young Short-Horn Bulls, one by an Imported Crown Prince of Athelstan (21,512), 5,457, the others by the Imported Pure Blood Bull, "Knight of St. George," (26,544), 8,472.

D. CHRISTIE, Paris P. O., Ont. v2-5-11.

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 living 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 Stg. per acre. Farm hands 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. Moylan, Dublin; Charles Roy, 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. Wells, Ottawa; Jas. Macpherson, Kingston; L. Stafford, Quebec; J. J. Daley, Montreal; E. Clay, Halifax, Nova Scotia; Robert Shives, St. John, and J. G. G. Layton, 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.

v2-2-12a.

BRAHMA FOWLS.

THE largest and finest in the world. Bred from the original Burnham importations from China, and same stock as those sent by Mr. B. to Her Majesty Queen Victoria, which have taken first prizes at all the Fairs, both in England and America, wherever shown. For price and particulars send stamp, and address
v2-9-11* P. O. Box 131 Melrose, Mass.

Markets.

Toronto Markets.

"CANADA FARMER" Office, Sept. 12th, 1870.

FLOUR AND MEAL.

Prices of Breadstuffs generally have tended downwards, in consequence, probably, of the extraordinary course of events in France. Large stocks are consequently held over, and, for the present, prices rule below what is warranted by the actual condition of supply and demand. The following are the latest quotations:—

Flour—Superfine, \$5 to \$5.10; Spring Wheat, \$5 to \$5.20; Fancy \$5.30 to \$5.40; Extra, \$5.50 to \$5.75.
Oatmeal—\$4.50 to \$4.60.
Cornmeal—\$5.00.
Bran—\$9.50 to \$10.

GRAIN.

There is but little doing in Wheat, owing to the present uncertain state of the Market. Barley is realizing good prices, with an upward tendency. In other grains the market is quiet.

Wheat—Soules', \$1.15 to \$1.20; Treadwell, \$1.10 to \$1.15; Spring, \$1 to \$1.05.
Barley—Bright, 75c. to 88c., Inferior, 55c.
Oats—38c. to 40c.
Peas—68c. to 70c.
Rye—62c. to 65c.

HAY AND STRAW.

Hay has been in good supply, ranging in price from \$10 to \$13.
Straw—In fair supply, at \$6 to \$8.

PROVISIONS.

Trade is moderately active for the season, and stocks rather light.
Live Hogs—\$7.
Pork—Mess, \$28 to \$29.
Bacon—12c. to 13c.
Hams—18c. to 20c.
Lard—12c. to 14c.
Cheese—New, 11½c. to 12½c.; Old, 13½c. to 14½c.; Reesor's Stillton, 18c.; Royal Arms, 17c.
Butter—18c. to 19c. In rolls, retail, 27c. to 28c.
Eggs—13c. to 15c. per dozen.
Dried Apples—6c. to 7c.
Hops—10c. to 15c.
Salt—Goderich, \$1.50 to \$1.60; American, \$1.75; Liverpool, per bag, 75c.

CATTLE MARKET.

There has been a large supply for this season of the year. The following are Toronto prices, dressed weight.
Beeves—From \$5 to \$8.
Sheep—From \$3 to \$5.
Calves—From \$4 to \$7.
Lambs—From \$2 to \$3.25.

HIDES AND SKINS.

Hides—7c. to 8½c.
Calfskins—11c. to 12½c.
Lambskins—60c.
Wool—25c. to 30c.
New York.—Flour—Receipts, 10,000 bbls; sales, 8,000 bbls. at \$4.80 to \$5.05 for superfine State and Western; \$5.15 to \$5.80 for common to choice extra State; \$5 to \$5.75 for common to choice extra Western. Eye Flour, Quiet. Wheat, dull; receipts, 126,000 bush.; sales, 48,000 bush. at \$1.07 to \$1.09 for No. 2 Spring; \$1.25 to \$1.28 for winter red and amber western; \$1.40 for white western. Rye, Dull; receipts, 20,000 bush. Corn, Dull and lower; receipts, 69,000 bush.; sales, 41,000 bush. at 80c to 82c. Barley, Dull. Oats, Lower; receipts, 77,000 bush; sales, 29,000 bush. at 46c to 48c for Western; 47c to 61c for Ohio and State.

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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.