Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- ☐ Coloured covers/ Couverture de couleur
- ☐ Covers damaged/ Couverture endommagée
- ☐ Covers restored and/or laminated/ Couverture restaurée et/ou pelliculée
- ☐ Cover title missing/ Le titre de couverture manque
- ☐ Coloured maps/ Cartes géographiques en couleur
- ☐ Coloured ink (i.e. other than blue or black)/ Encre de couleur (i.e. autre que bleue ou noire)
- ☐ Coloured plates and/or illustrations/ Planches et/ou illustrations en couleur
- ☑ Bound with other material/ Relié avec d'autres documents
- ☑ Tight binding may cause shadows or distortion along interior margin/ La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure
- ☐ Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/ Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

- ☐ Coloured pages/ Pages de couleur
- ☐ Pages damaged/ Pages endommagées
- ☐ Pages restored and/or laminated/ Pages restaurées et/ou pelliculées
- ☑ Pages discoloured, stained or foxed/ Pages décolorées, tachetées ou piquées
- ☐ Pages detached/ Pages détachées
- ☑ Showthrough/ Transparence
- ☑ Quality of print varies/ Qualité inégale de l'impression
- ☑ Continuous pagination/ Pagination continue
- ☐ Includes index(es)/ Comprend un (des) index

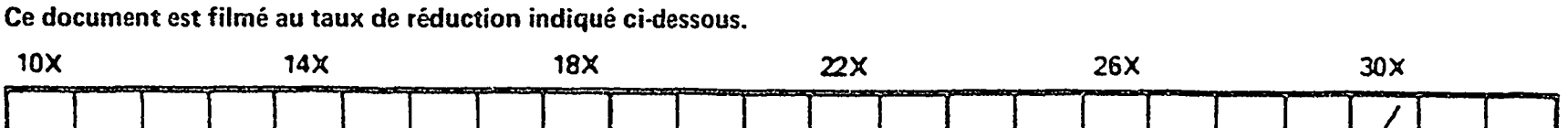
Title on header taken from:/ Le titre de l'en-tête provient:

- ☐ Title page of issue/ Page de titre de la livraison
- ☐ Caption of issue/ Titre de départ de la livraison
- ☐ Masthead/ Générique (périodiques) de la livraison

☑ Additional comments:/ Commentaires supplémentaires: Wrinkled pages may film slightly out of focus.

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X 12X 14X 16X 18X 20X 22X 24X 26X 28X 30X 32X



THE
CANADA FARMER

VOL. II. No. 10 | TORONTO, CANADA, OCTOBER 15, 1870. | NEW SERIES.

The Field.

Late Autumn Work.

The seeding of winter wheat, fall ploughing of stubbles and fallows, and gathering of the fruit and roots, having been properly attended to, there often remains a period of comparative leisure to the farmer during the latter part of autumn, which can be profitably employed in many ways.

THATCHING AND TRIMMING STACKS.—If this work is not done early in autumn, it should be at once proceeded with. It is a practice not followed in this country as much as it should be, and for want of it much of the outstanding crops, on farms where the barn room is insufficient, are seriously damaged by the late fall rains. Haystacks, especially, should be well thatched, otherwise several tons may be so much damaged by wet as to be practically worthless for fodder. It is a mistake often made to suppose that the cost of thatching is greater than the loss of what hay may become damaged by wet. There is no occasion for either expense being incurred or loss being suffered. Every farmer should learn and practice the art of thatching as part of the knowledge of his profession, and as being as great a necessity as to know how to perform any other operation on the farm. Thousands of stacks of hay are put up in the field where they are cut, in an easy, careless manner, and stand neglected till the winter is nearly over, when the hay comes out smelling with mould and dampness, and with half its value as fodder gone to the winds, simply from sheer carelessness. The stacks having been properly thatched, the next operation is to trim the sides all around so as to leave a close solid surface below the roof to the exposure of the weather. This can be done by using an old scythe blade, well sharpened, and fixed to a long straight handle. With this shave the sides of the stacks till they look smooth and solid, afterwards raking up and carrying to the barn or hayloft all the loose material shaved off. Stacks left unshaved often have a great quantity of loose stalks of hay hanging about them, which get soaked with and retain moisture after every storm, thus helping to injure the quality of the fodder for some distance into the stack.

Grain stacks seldom suffer from want of thatching, as besides being much more closely and neatly built than haystacks, they are usually threshed out as soon as the machine can be got to work, and the grain stored away in the barn, leaving only the straw to become a prey to the eccentricities of our changeable climate.

PASTURES AND MEADOWS.—These should not be allowed to be too closely fed down by stock, and as soon as they are shut up from them, the farmer should take his spade in hand and carefully go over them, breaking to pieces and scattering every little heap of cattle or horse-droppings he may see. If there is any fine well decomposed manure or compost to be had about the premises, it should be carefully scraped together, hauled out to the meadows, and scattered over the poorest spots as far as it will go. All bunches of grass that have been rejected by the stock should be cut with a sharp scythe, or bill-hook, and all roots of large perennial weeds dug out and carried to the compost heap.

DITCHES AND WATERCOURSES should all be cleared out before the heavy rains set in. Outlets must be made at such points in the meadows and fallows where the water is likely to accumulate and freeze up at the approach of winter into solid sheets of ice, should it find no means of egress. The cheapest and quickest way to do this is with the plough and scraper. In connection with this matter, we may ask if some one cannot invent a good, cheap, portable machine that will enable the work of scraping out the bulk of the earth from a ploughed ditch to be roughly, but cheaply done by horse-power, to be afterwards finished up neatly with the spade. The road scrapers in ordinary use are too wide for this purpose, where the saving of land is an object. Something that would neatly clean out the furrows at one operation in newly sown fields of grain, and yet leave no ridges of earth at the side, would also be desirable, and better than the plough for that purpose.

BARN-YARDS ought to be thoroughly cleaned out, and all the manure in them carried to the fields, either to be spread, or else composted in a large heap to be ready for application in spring. This done, the yard should be well covered with a good litter of straw, before the stock are turned into it to pass the winter season. Stables, byres, pig-styes and poultry-houses will be the better and healthier of a thorough washing and cleaning out, and a fumigation with burning sulphur to destroy insects, before the stock are to be housed in them for the winter.

FENCES should be put in good repair. This is easier and better done in the fall than during the busy and pushing season of spring. Begin with those that are in tolerable repair, needing only a few stones, a rail, or a board here and there; fix them up tight, and the stakes firm. Where rail fences are much out of repair and need re-laying, the work of pulling down the old fence and laying the bottom portion of it anew can be done now, and as soon as the first tolerable fall of snow enables a sleigh to run, the additional rails required can be drawn from the woods, the fence made to its full height, and if the ground be then frozen too hard to put in the stakes, they can be used to lock the corners, and so be ready on hand in spring as soon as the frost is out sufficiently to allow of stakes and riders being put on. On well managed farms, where the saving of land and keeping out weeds and briers from the fence corners is an object, straight fences, with the ends of the rails mortised into posts, or set between upright stakes, driven into the earth and tied together at the top with wire, on which the top rail rests, are much preferred to the ordinary zigzag style of the country, and as fewer rails are

required in proportion to the length of the fence, they are cheapest in sections where rail timber is not plentiful.

Live Stock.—As the grass begins to fail, the cattle will need a little hay every day if it is desired to keep up their condition, and have them go into winter quarters full of thrift and health. The milch cows should be well looked after, and their flow of milk kept up as long as possible in the fall by artificial food, such as hay, cured corn fodder, cabbage and turnip leaves, bran mashes, &c. There is so much trouble and so little profit connected with winter butter-making, that unless a cow is an extra good milker during winter, or calves in the fall, many farmers prefer to dry all the cows off about Christmas, so that they may keep in fair condition on good hay through the winter, and be ready to come in full fleshed, with strong healthy calves, by the time spring returns, and the roots stored away are to be fed out to them. The calves of this season should be early attended to, and brought under shelter. They are too often left out till the last, and allowed to lose all their condition before they are noticed. Those who breed stock should remember that a constant state of thrift in the young growing animal is, next to good blood, of the first importance towards making good and profitable stock.

Sheep may remain out of the yards later than other stock, and being close and industrious grazers, will often keep up in condition till snow comes, especially when not too crowded on their pasture. They will pick out the corners of fences in stubbles and fallows, the borders of woodland, and eat much that other stock rejects. If improvement in the quality of the stock is desired, every faulty ewe should now be drafted out of the flock and sent to the butcher, or put up to be fed for Christmas mutton. Select to run with the flock the very best ram that your means will allow, and do not put him with the ewes too early, unless you have every facility and comfort in the way of food and buildings, for raising early lambs.

Swine.—The sows, and their fall litters of young pigs, should be well looked after, get comfortable warm quarters and abundance of food. Some cooked roots, such as potatoes, beets, or Swedes mashed up with some crushed corn or peas, will be good towards helping the sows to keep up their milk for the young ones, which should also get gradually accustomed to being fed by giving them, separate from the sow, what little milk or buttermilk can be spared from the house. There is nothing pays so well in pig breeding as keeping the stock in a state of constant health and growing thriftiness. Be particular to see that they have clean styes and abundance of clean dry litter to keep them warm. Fattening hogs had better be slaughtered and marketed as soon as they are well fatted. There is no profit in feeding beyond the point at which they will lay on fat in a fair proportion to the value of the food consumed. Extra fat hogs of great size are not now so much in favour with packers as they once were, nor is the price so much governed by size as formerly. Medium-sized hogs of 200 pounds, of the Suffolk, Essex, or Berkshire breed, ought to command better prices from ham and bacon curers than larger hogs of the old style land-pike, or of no particular breed, command from the pork-packers. Well-bred pigs always make the sweetest pork and most delicate ham and bacon, with a better admixture of fat and lean of fine quality than is found in common hogs.

Beet Root Sugar.

No. III.

EXTRACTING SUGAR FROM DRIED BEETS.

Another system which has been most extensively adopted in districts where the plantations of beet root were necessarily at considerable distances from the great sugar manufactory, and where fuel for the purposes of evaporation was scarce, has been the slicing and drying of the roots, followed by the extraction of the sugar by means of soaking the dried matter. To such an extent has this been carried, that in 1855 there was an enormous establishment in Gallicia, which in the growth and preparation of the roots, and the extraction of sugar from the dried slices, employed no less than 3,000 hands. This factory refined all the sugar that was grown within a circle of many miles in diameter. The roots were sliced and dried at fourteen different establishments located on the farm where the roots were grown, and not less than 1,200 people were employed in the cutting up and drying of the roots. By this method the liquor from the roots, macerated in a dry state, is found to contain fifty per cent. of sugar, and is free from a great many disturbing elements which are found to affect the actual juice of the root when produced from the recent bulbs. A great saving in fuel and trouble in evaporation is thus made, and the syrup produced is far purer than when the sugar is extracted at once from the recent roots. The manufacture of the sugar can go on at any season of the year, and the resulting pulp is equally good for cattle, and is obtained in far more convenient quantities.

This is one of the directions to which we must look for the small home manufacture of sugar and syrup, and the growth of demand for the root in Canada. This plan will suit many that a more elaborate one would not. The great majority of the farm population of the Continent of North America are used to the slicing and drying of apples, and other fruits, the slicing and drying of beet root is the same thing on a larger scale. One hundred pounds of beet root when sliced and dried weighs only eighteen pounds. This dried matter consists of nearly one-half sugar, and could therefore be carried from the farm to the sugar manufactory for a considerable distance, and if well prepared, would at the manufactory always command its full value, while the return teams could bring back a full load of compressed cake for use on the farm; thus the farmer willing to do so, could secure a far greater result in manure than his own crop would give. One ton of the dried roots would be equal to nearly six tons of green roots, so that it would bear carriage well.

The way the sliced and dried roots are treated for sugar is as follows: Several vessels are provided, and all are filled with the dried roots—the deeper the vessels are the better—water is poured on them so as just to cover the roots, making additions as the roots swell; the vessels are kept closely covered. As soon as the sliced matter is thoroughly softened, the contents of the vessel are drawn off and placed aside. The contents of the next are drawn off, and the liquor poured through the first, and this is repeated until the entire liquor has been through all the vessels. This plan takes up all the sugar in the least possible quantity of water, and the result ought to be a liquor containing about forty per cent. of sugar, which is then ready for evaporation into coarse syrup for the refinery, or it may be refined by the producer for his own use.

MAKING POTASH FROM FROM THE REFUSE.

In those manufactories where cattle feeding does not pay, or where the refuse from the pressed root cannot be sold, the refuse is burned in properly constructed furnaces, and yields an ash which contains a very large amount of potash, which is manufactured into the ordinary commercial article, and sold to the users of potash. It contains, however, a large proportion of salt, and although the ashes produce nearly one-half their weight in the mixture of potash and salt, yet if the salt is not taken out by chemical means, it must greatly deteriorate the value of the potash. A very large proportion of the potash used in France and Germany is produced from this source. This is, of course, a most dreadful waste for the land, and is only mentioned to show how the resulting matter can be utilized, where such utilization is necessary or advisable.

We have all long known that the leaves of the mangel crop when ploughed in make excellent manure for the following wheat, or other grain crop, the analysis of the ashes of the leaves shows the reason of this. The ashes of the leaf of the beet root contains fully fifty per cent. of a mixture of potash and salt. In the leaves of some kind of beet the potash predominates, in other kinds the salt forms the largest proportion, but all produce at this joint rate of the two substances.

No. IV.

PRACTICABILITY AND ADVANTAGES OF THE MANUFACTURE.

The writer does not mean for a moment to say that any one reading these articles can go into the manufacture from the information here given, and make good sugar. Such is not the intention of these papers. We want to draw the attention of the Canadian farmer to the great fact, that Canada, through the means of her agriculturists, can produce all the sugar required for the consumption of the Province, and that the doing so would put the proceeds into the pockets of the farmers, instead of, as now, being sent out of the country. The farmer wants another money-producing crop, and the proposed industry will give it to him. Too much cannot, therefore, be said in favour of such a project. Many will say, "Yes, it is like all new things, very well to talk about, but it won't answer;" and they may possibly refer to the disappointments lately inflicted on the farmer, and the public generally, by the attempted growth of flax on a large scale. Sugar is not like flax. The value of flax fibre is governed by the price of cotton, and the quantity used is also governed by the improvements in the manufacture of cotton goods; but for sugar no substitute has been found. Slave labour was at one time the governing power of the production of sugar, but slave labour has now happily ceased, and even if it had not, the French and Germans have shown that free-grown beet root sugar can compete with slave-grown cane sugar, and that the use of sugar is, within itself, the cause of a constantly increasing demand. No sooner does the price of sugar fall to a rate where it can compete with malt and grain in the manufacture of beer and spirits, than the demand for sugar is so increased, as at once to clear the market of all surplus supplies, and thus again restore the price to a remunerating point. In fact, the demand for sugar may be said to be practically unlimited, and as yet it has found no substitute to compete with it.

A friend of the writer, for whose opinion on these points he has a great respect, because the friend was bred up in the country, and on a Canadian farm, has rather thrown cold water on the proposed industry, because he says, "that the generality of farmers are not, and cannot be made, manufacturers," that neither their means of information or habits of life tend in that direction, and that as a body they are incapable of dealing with a new industry like the one proposed.

Granting, (for argument's sake only, for I demur to the statement), that the general run of Canadian farmers have neither the intellect nor the means to manufacture sugar from beet root, there are none so ill informed and stupid that they cannot cut the root up into slices, and dry it either in the open air, or in a kiln constructed for the purpose, and thus reduce the root to one-fifth of its bulk, so as to make it a profitable article to carry to the manufactory. But it will be said, "there are no manufactories." Granted again; but let farmers grow, and feed to their cattle, sugar beet, instead of mangels and turnips, and the manufactories will arise. Millions of capital are seeking investment, and a great industry, like the one proposed, would at once command a large proportion of it; but the capitalist cannot proceed until the sugar beet root is raised in plenty; whereas the farmer may as well raise the beet root as the mangel and turnip, and when he has done so, and thus shown the capitalist the fact that he can have any quantity of what he wants, manufactories will spring up like mushrooms, and we shall soon be exporters instead of importers of sugar.

The CANADA FARMER is a temperance publication, and advocates neither the use nor the manufacture of spirits; but, notwithstanding that, people will have fermented liquors and spirits, and all the rough grain produced by the farmer is not sufficient to make what is required; hence, millions of bushels of Indian corn are annually imported from the States, to the great loss of our farmers, who, in producing sugar beet, would produce a substitute for the corn now brought in, and the dried beet would not be a more cumbrous article to carry to market for the distiller's purpose than barley now is, and would produce a greater price per acre for the land sown, with this advantage too, that if the results of the root are applied to the land as manure, an improvement, instead of a deterioration, in producing properties, is found; whereas, grain growing occasions a serious diminution in the producing power of a farm.

NO. 5.

HOME PRODUCTION.

Since this series of articles was commenced we have ascertained that the same views have been adopted in Europe. The sugar manufacturers find that the business is now well established, and the demand so enormous for the beet root sugar, that the practice of growing the roots and manufacturing the sugar as one business is not the most profitable mode of procedure. The roots are so bulky that they will not bear carriage far, the business of growing them and of making the most of them when grown is more the business of the farmer than the manufacturer; and the course of affairs now tends to the manufacture of the crude syrup or sugar directly on the farm, and the subsequent conversion of it into refined sugar at the manufactory.

For the purpose of carrying out these views, a system has been devised whereby the farmer can, on a small scale, bring the produce of the beet root into a state fit for the refinery. The author of this plan is M. Kissel. We have sent for his publications, and all others which bear on the point of the home manufacture of the syrup, the results of which shall in due time be made known to our readers. It is possible, however, that the present war may interfere with our intentions.

Meantime, there is another and most important phase of the subject which calls for special attention, and that is the fact that the cultivation of the sugar beet, when the results of the pulp of the root and the leaves of the plant are returned to the soil, cause a considerable and constant increase of fertility, until, from the statistics of the countries in which beet root sugar is manufactured, it is now found that the increase in the growth of wheat and other cereals is exactly in equal proportion with the increase of the root. Wheat, however, makes the best alternating crop.

This is not only proved by the statistics of the country in which beet root sugar is principally made, but the fact has long since been shown that by the growth of the beet, owing to the manure necessarily applied to produce the crop, and owing to the destruction of weeds which the tillage of the plant calls for, the land used for the purpose is increasing in richness and freedom from weeds, until a far higher grade of fertility is established than existed before the root was grown.

Land does not, under proper cultivation, get "sick" of beet root, as it does of other crops. The same fields have produced heavy and increasing crops of beet root year after year for very lengthened periods. In the beet root sugar countries, the same fields are used for that crop year after year without injury. The hauling of the roots to the factory is so heavy an item, that it makes it well worth the while of the manufacturer (who is also the grower of the root) to prefer what was at one time supposed to be the chance of injury to the land by repeated cropping, to the absolute expense of hauling the root from a distance; but this supposed injury by continual cropping with beet is now found to be a fallacy; the more beets are grown, provided the refuse is returned to the land, the better the land for crops both of beets and of wheat.

BEET ROOT AS A DESTROYER OF WEEDS.

This is another great argument in favour of the growth of the root in Canada; it would be the most destructive course of cropping for weeds that could be imagined, Thus, beets being a hoed crop, would leave the land clean for spring wheat the following year, but what would be better culture for Canada would be beets, followed by a partial summer fallow, then fall wheat. The stubbles of the fall wheat being immediately ploughed and manured, would leave the land in the finest possible condition for beets again, and this course would destroy, with the greatest amount of cropping and the

least amount of labour, every class of weed most dreaded by the Canadian farmer.

Any other grain crop could be grown instead of wheat where it was found advisable, and other crops could be interpolated if required; but the rotation of beet and grain crops really gives the land the benefit not only of the manure resulting from the refuse of both these crops in the barnyard, but the additional advantage of a green crop ploughed in, for the leaves of a beet crop are fully equal to the benefit to be derived from the destruction and ploughing in of a crop of clover.

One will naturally say, however, that the beet crop as food for cattle is deteriorated by the extraction of the sugar. This does not appear to be the case. The sugar, when extracted from the crop of either beets or mangels, does not seem to be missed by the cattle; they really do better on the refuse without the sugar than with it, and those who have observed the scouring effect of beets when fed to cattle, pigs, or sheep, in an entire state, will understand that the sugar seems to be too rich for the stomachs of the animals.

IMPORTANCE OF KEEPING UP THE BEST VARIETIES.

Another great point which calls for the popularization of the growth of beet root and the manufacture of the sugar on the farm, is the improvement in the *quality* of the root, more particularly in its increased production of sugar, and decreased production of mischievous elements, such as salt, &c. If the beet root sugar were manufactured by the people, we should have hundreds of thousands of intelligent people watching for and knowing of the results obtained from the different varieties of the root. The beet is biennial, and raised from seed, and, like all other plants so raised, is subject to great alterations both in size and quality. It naturally runs into varieties, and what the gardeners call "sports," many of which are either better or worse than the original stock. This is not the case with potatoes, or other plants or trees propagated by cuttings, but all plants produced from seed vary from year to year. If, as we said before, the manufacture of sugar were a pursuit of the people, each grower would keep close watch on his fields for special varieties, and where he found them, would propagate that variety.

The great manufacturer cannot do this. His time is too valuable, and his attention too much engaged with other matters to keep a close watch on the results of special roots, although he looks out sharp enough that his general average of sugar keeps up to the mark.

Not only is it a great object to get the varieties of root with the most sugar in them, but also those that contain the least salt, and until the discovery took place of the properties of the parchment paper diaphragms, which would separate the salt from the sugar, as mentioned in a previous article, the presence of salt in too large quantities was a fatal fault.

By popular observation these and other qualities are kept close watch on. Improvements are made, and faults avoided in a hundredfold greater degree than when the manufacture and growth were carried on on a gigantic scale.

Very much has been done in this respect already, even under the present management, and where observation is necessarily limited to comparatively few points. When the manufacture of beet root sugar was commenced in France, six per cent. was a great average to obtain, and often less was the result of all that skill and capital could be brought to effect. Now, twelve per cent. of sugar is an everyday occurrence, and large factories average on their year's work ten per cent.

Great improvement has also taken place in the quantity of roots raised per acre, as well as in the richness of the individual roots in sugar. Ten tons per acre of roots was considered a large crop; now, no grower is satisfied with less than double that amount. This increase of bulk will, of course, in a great measure, account for increase of yield in the sugar, but not altogether so, for experiment and chemical analysis has shown, year after year, that varieties of the roots may be found which increase in richness of sugar, as well as in size and yield per acre, and that in a far greater degree than was originally supposed possible.

Another great point has latterly been obtained, namely, the preservation of the pulp resulting from the beet root sugar manufacture. Originally, sufficient cattle had to be kept to consume the pulp in a recent state as fast as it was produced. Now, they preserve the pulp and the pulp cakes for one and even two full years, without difficulty or injury to its feeding qualities. The advantages of this course are too apparent to require comment.

A Backwoods Farm.

LIVING IN A SHANTY.

Our first day's work on the new farm was on the 21st day of November, 1859, and during a heavy gale of snow. We had previously hired a yoke of oxen, and a squatter had formerly chopped a small portion of the land.

We lived in a neighbour's shanty, or rather small log house, but we found boarding out would soon exhaust our small cash means, and besides, the want of our own household arrangements greatly impeded our work; so on the 30th day of the above month we commenced to build a regular lumberer's shanty.

There was no fireplace in it, but the fire was lit in the centre of the single room, and bed-places or berths were formed all round by boring auger-holes into the logs, and driving pins about four feet long into them, supported at the free end by poles at right angles; boards laid on these pins, and straw mattresses on the boards, completed our dwelling; and when the wind did not blow the smoke about, but allowed it to ascend quietly through the hole in the roof, there really was quite an air of comfort about the house, especially on stormy evenings, when the contrast between the cosy interior and the dreary scene without tended much to gild our shanty with some of the attributes of home. No woman had as yet been brought on the farm, and for a cook, a young Prussian or Dutch boy had been "caught," and installed in that office. His efforts were not very successful at first, but as they were principally directed to boiling pork and potatoes, and baking shanty cake, his failures were not so very apparent. It is true that we could not induce the young untutored to wash our plates very carefully, but as the light that enlightened our shanty all came down the chimney, or hole left for the smoke, we could not so distinctly detect the deficiencies of the scullery operations.

Time went on as the chopping progressed, and we became somewhat fastidious in our food. We must have sweetcake and shortbread, and dried apple pies—and here failure stared our Dutch cook in the face. However, he improved about as fast in the culinary art as our tastes became more fastidious, and to this day (for he lives with us now, a grown man, but never since a cook) we often laugh at former failures in cooking.

We had some ludicrous episodes, and some accidents during the winter whilst chopping. Amongst others, there was a sort of play or trick that old bush hands are fond of playing off on the greener and more recent visitors. Of course, stories of wild animals and adventures, in the long winter evenings, were the order of the time; and these were especially indulged in when, as it often happened, some intending settlers called in to ask the particulars of locations, and to stop all night out of the storm. Then the fun commenced. After some wonderful stories of wild beasts had been told, and corresponding relations of prowess given, and just when all the new comers were breathless with expectation and excitement, an unearthly noise was heard outside—something between a roar, a scream, and a bark. All started to their feet, especially the emigrant visitors, and rushed out of doors—these last gentry, however, nervously following in the rear.

The noise was perfectly well known to the initiated to be produced by a piece of thin maple wood, about six inches long, and attached to a piece of deerskin, tied to a pliant springy handle, about four feet long. When this instrument is properly made, and

whirled round and round the head, it gives out a most unearthly sound, of wonderful modulation, according to the skill used, and one that may well frighten any new comer in the woods, especially one who had been well prepared beforehand from some such source as story-telling. Two or three of our men were provided with these machines, and were running hither and thither—of course out of sight—in the storm, whilst the uninitiated rushed after them with all sorts of weapons, urged on by those in advance to come quickly. The roars would be first on one side and then on another, as the wild animals were supposed to be flying before their pursuers—and many were the tumbles and rolls the visitors got in the deep show, or over stumps and logs, while endeavouring to overtake or avoid the supposed wild beast. At last it was generally the case that some one discovered the trick, and, of course, all r turned to the shanty laughing and joking the new-comers on the strange noises to be heard in Canadian back-woods, and holding great investigations over barked shins and broken or bleeding noses.

CHOPPING THE LAND.

The winter of 1860-1 was very severe; the snow lay nearly four feet deep on the level, and was solid and hard; and as we were too late in beginning to get underbrushing done, as it ought to have been, before the snow fell, we were compelled to chop away at the trees and leave the underbrushing until the following spring. This, of course, was bad management, but we could not control the elements, and therefore had to do the best we could.

We chopped that winter 120 acres of land, having hired four choppers in addition to our own strength—active, wiry little Frenchmen they were, and beautiful choppers—no better men exist, as adapted for such work, than the Lower Canadian Frenchmen. Always gay and merry, and never discontented, all they want is pork and potatoes, tea and some sweetcake shortened with pork fat (provided they are dressed by a decent cook), and a gay Frenchman will willingly go for nine months or more far into uninhabited wilds, and only look forward to returning amongst his fellow men once a year for about a month. The wonder is how such small men can chop so much, and such large trees; and many times in after years I have noticed such and such trees as having been chopped by Ba'tist or Jean. Those stumps that winter were often left six feet high, so deep was the snow when they were chopped. About this time one of our oxen was missed, and a search was instituted in all directions, but without effect. He was seen only an hour before being missed, and no track could be found where he had left the chopping. We made a circuit round our camp in the deep snow, and thought it certain by that means to find his path of exit, but to no purpose, and after a fruitless search we gave it up, wondering how it was possible that he could have got away. When the spring opened, and the snow melted, our doubts were ended. Within twenty rods of our shanty the ox had fallen, having caught his hind foot in the fork of a fallen tree, the wood of which was not more than about four inches in diameter. The foot was held fast, and the poor brute was starved and frozen to death almost close to the house. In his struggles for freedom he had chafed all the flesh from the bone.

Spring set in that year very early, and remarkably dry, during the month of May; and about the first of April we turned all hands on to cutting underbrush, wherever it was possible to get at it. The whole chopping was gone over, and all the small stuff chopped, and on the 25th of May, 1860, we set fire to the new fallow.

BURNING BRUSH.

On the 25th day of May, the day we had determined to fire the brush, we all prepared touchwood and pine slips, with matches, and every small combustible material we could obtain. The great art is to fire the whole at once, and to select a dry, hot day and "half a gale" of wind. Such a wind and such a day we had, and about 10 o'clock, when the dew was all off—a very important point—and everything hot and dry, we commenced to set fire. We passed at intervals of about fifty feet all down the windward side of the chopping, and built little fires. All were engaged at once, in order to have as tremendous a fire as possible. In about half an hour the flames began to gather strength, and truly it was a grand sight. The wood, leaves, and decayed stumps here and there being all dry, caught like touch-paper, and the wind being very high, in an inconceivably short time the whole fallow was one mass of flames fully fifty feet high, roaring like some furious volcano, and sweeping all before it. We had no neighbours, and we knew the fire would not run in the neighbouring green woods so early in the year, so we allowed the flames to have their own course and full sweep, and by evening the finest and best burn I ever saw was the consequence. All the brush was completely burned, and much of the small timber. Where the windrows of the tops were all thrown together—sometimes two hundred yards long, a solid mass of brushwood—a lane of twelve to twenty feet wide was entirely burnt up, so much so that we could and did drive waggons over and through the new fallow to collect the ashes for potash making.

This burn was of immense value to us. About one-half the timber and all the small stuff was entirely destroyed, burnt, and completely cleared away, leaving only heaps on heaps of ashes. The art of chopping land to advantage consists entirely in arranging your windrows in this manner: You first throw down some great unmanageable tree—probably an elm—and carefully chop down all the branches, causing them to lie as smoothly as possible, so as to have the brush-heap solid at the bottom. You next throw into and on to this heap all the adjoining timber, at various angles, just as they incline or otherwise towards the pile in question. Practice will enable a good chopper to do this in a wonderful manner, especially when he takes into consideration the direction of the prevailing heavy winds of the district—a very important point. Of course, in this direction the windrow must be made, and a very little inclination of the tree-top will cause the tree to go where it is wanted. If, as sometimes happens, an obstinate tree will persist in going the wrong way, and will fall away from the heap, instead of on it, it is of little consequence, as this will be in the next row, parallel, or thereabout, to the first.

I have seen, on our land, fallows so well chopped, and the trees so adroitly thrown on each other, that you could have—and I have many times—walked for a hundred yards, without stepping off this immense long brush-heap. Some of our men could never attain the art, while others could do pretty much as they chose with the trees. In chopping and clearing land, all you want to lighten your job one half is, in addition to good chopping, a perfectly dry time and a strong wind; and you had better wait a month or two in the spring than attempt to burn until these conditions occur. Then your work for the rest of the job is light in comparison to being without such a burn. If, on the other hand, as it often happens, you try to burn some ill-piled brush-heaps, with trees thrown every way, and the fire just runs through without consuming the brushwood, your labour is trebled at least, for the fire never runs a second time, and it is "pick and pile" brushwood and chips for weeks and months, until you are sick of it.

This happened to us in the next hundred acres we had chopped, and it cost us $9 an acre to log it, as will be related in its proper place. Of course, we gradually acquired experience, but at first we should have miserably failed but for the counsel and help of a friend of ours who visited our shanty the first winter.

CLEARING LAND—GRUBBING THE TREES.

Amongst other trials to clear land to better advantage, that of grubbing the trees once occurred to us as not only practicable, but advisable. We reasoned thus—that the stumps were a greater impediment than the roots—that if the tree could be grubbed out at once, using the tree itself as a lever to tear up any roots that might be difficult to cut off, the land would be more easily worked. We accordingly laid out two acres as a trial piece, carefully keeping an account of the time. We did not find it a successful experiment. The time it required was too great. Five trees could be cut down while one was being grubbed out. Certainly, when finished, the land looked almost

like old land—no stumps anywhere, but when you attempted to plough there was scarcely any improvement over the ordinary difficulties of working new land; and this land to this day is not more easily worked than stumpy land, so far as roots are concerned. True, the stumps are certainly not there, but the roots are not more decayed than those attached to the stumps. In fact, from some cause, I do not think they are as much so, and this point has often been a matter of wonderment and a source of much thought.

I have a theory, that the decay of stumps is to a great extent due to a perpetual attempt of the sap to continue to perform its regular functions at its appointed season, and the natural evaporation from the drying up of that part exposed to the air furnishes a certain demand. The roots, having no such demand from grubbed stumps, do not therefore become alternately wet and dry, as others ordinarily chopped do, but remain always wet. This opinion is strongly supported by the condition of some stumps under a sheep shed, that I examined and dug out a short time since. They had been covered up with manure, and all but the very top was thus kept quite wet, and had been so during nearly ten years that had elapsed since they were chopped. The top that protruded above the manure was quite decayed, but the roots were absolutely green—yes, quite green. I showed many of the smaller fibrous roots to some intelligent people who happened to be present, who were equally surprised with myself. There was no sprout whatever, nor ever had been, from this stump, as the shed was built in 1861, one year after the land was chopped, so there was time enough for decay to have affected the roots, unless some preservative action had been going on, attributed to the moisture of the manure. The kind of timber was 13-inch basswood and beech.

We cleared out our farm-yard last year, in a part that had been uncleaned for eight years, and found the stumps, so far as the roots were concerned, quite decayed, and easily jerked out by the oxen, but these had been exposed to wet and dry, sun and air, and consequently to a continual ascent and descent of sap, which probably accounts for the difference.

I had a visit the other day from a friend of more theoretical than practical knowledge, and he actually was about going on new land with the full conviction that trees can be grubbed out, and the land thus cleared, and that the advantages of this course would far overbalance the cost. Of course, I used all my experience in persuading him to think twice before doing anything of the kind, and at all events to try one acre before buying a tract of five hundred or six hundred acres with the certain conviction in his own mind that it would succeed much better than the old plan. He, however, was so bent on his own plan of operations that he left me to look at the tract in question.

Logging and Burning.

We now came to the blackest job of all, but at the same time, one which I always took great delight in, namely, the firing log-heaps. The art consists in first having a good, well and closely piled log-heap, and next in having a good breeze of wind to assist the combustion. The end of the heap is the best part to light first, provided the wind suits, as the fire more readily gets a thorough hold. The attendance on the heaps must be continued into the night, otherwise there will be some that spread out whilst burning, and then do not consume so well.

I always found more difficulty in leaving the fallow when fully alight than the wish for rest could overcome. It seemed such a pity not to keep punching away first at one heap, then at another, as the attendance thereby given so much improved the fire—and then a succession of such jolly bonfires

and I always did love a bonfire—and these were such good ones—so it always ended in my working out in the fallow, literally enjoying it, often after ten o'clock at night; and next morning, when the sun rose, and all the heaps were partly burned, and looked almost out, I almost regretted leaving them at all. However, after branding up and again punching in the outside logs, they were soon all smoking again; but the effect of the fires is far less exhilarating by day than by night. With us, we had such a quantity on fire, that I determined not to follow this course again, but to log for about three days, and if the weather proved dry, to burn and brand up this piece before firing any more. This plan gives more time to collect ashes, which, of course, must remain ungathered as long as the heaps are burning. We sometimes raked them as fast as the heaps consumed, but it took a great deal of time, and when we came to carry them there was usually fire remaining in them, which endangered the waggon box. So, on the whole, we found it better to deal with about five acres at a time, and by using hand-barrows to carry the ashes into heaps of sufficient size to make a waggon-load in a place.

We logged in this way all the summer of 1861, and our one yoke of oxen did the whole of it, and without accident, except to one which strained his foot, which laid him up for a few days; and the other was sick a while from being overfed with ground grain. A quart of melted lard poured down his throat soon restored him, and he continued to log steadily until the frost came. Of course, we drew aside the rail-cuts for fencing as we progressed, but in this respect we were careless and improvident. We thought twenty to twenty-five acre fields would be small enough for so large a farm, but it was a great mistake; they ought not to have exceeded ten or twelve acres each. And, when we found too late the inconvenience of such large fields, we also found that the rail timber from which to construct the fences to make the fields smaller was all burnt up, and we suffer from the neglect to this day. We certainly saved some first cost, as twenty-five acres do not require nearly so many rails as two twelve and a half acre fields, but it was a serious mistake notwithstanding.

Another was, we did not make "worm" enough to any of our fences. We thought to make the rails go as far as possible, consequently, the fine rails, being all hardwood, were during rainy weather as slippery as eels, and the least wind would level rods on rods of them. In fact, it was hardly possible to get over one of these unstaked and unridered fences in wet weather without throwing down several rails.

Another error was, we did not attend sufficiently to the entire burning up of the large swamp timber, such as elm, basswood, and hemlock. Many of these were ultimately left, and when the smaller timber was consumed, there was nothing to burn them up with, and they continued to cumber the fields until some stumps were ready to come out, when we succeeded in consuming these old stumbling-blocks.

Another evil is, to run over the swamp-holes and frog-ponds, leaving the fallen timber in them. We had better far have hauled it out while we were at it, and made all clean, than allow them to remain unburnt. In the one case we have productive pasture land, which can be cut for hay, and often produces the heaviest crops, whilst in the other, we have a pestilent mess, that remains year after year until grown up to willows and sedge, affording no food for cattle, and proving a regular breeding place for mosquitoes. C.

Silver Beet as a Manure Plant.

I noticed in a recent number of The Weekly Globe an account of the growth of a plant called Silver Beet, and a recommendation to plough it under as manure. I at once procured some seed to test the rapidity of its growth, and, as advised, I soaked it in warm water twenty-four hours, and sowed it in drills two feet apart, scattering the seeds along the drill at about three inches from seed to seed.

As the weather was very hot and dry, and I feared the seed might not come up, the sowing was delayed until the 18th of June, which I considered very late; the ground, however, was good, and the sowing was made immediately after the heavy rains we had at that time. The depth at which the seeds were buried was about two inches—not more—as I was advised to be most particular in that respect. The seeds did not come up very regularly, but were somewhat delayed in their germination by the hot dry weather.

It was therefore the first day of July before the plants could be seen in rows. They were hoed once, and now (Aug. 13th) they entirely cover the ground, and are twenty inches high; nothing is visible but a mass of green leaves—no doubt entirely calculated as a green crop for ploughing under. I am quite convinced that such a quantity of green leaves and fibrous roots ploughed under would afford an immense mass of the very best manure. There would not be any serious difficulty in ploughing them under although so much in quantity, as a furrow drawn deeper than usual between the rows would form a trench quite sufficient to receive the mass of green stuff, and the one following would entirely cover it all in.

Chemical analysis shows the leaves of all the beet tribe to possess the power of extracting large quantities of potash from the soil, and when in its turn it is again returned to the earth in a form that the following crop can at once assimilate, a most excellent yield may safely be relied on.

There is one great advantage in growing the Silver Beet over many others, as no fly or worm has yet shown any inclination to attack it, and the young and tender plant is allowed to grow in peace. When we come to consider that about six weeks have sufficed for the growth of a mass of green stuff, so abundant that there is some difficulty in burying it, we can hardly over-estimate the advantage it is likely to possess as a green manure crop.

In raising seed for another year, nothing more is required than to take up a few of the roots in the fall, and keep them in a dry place, or packed in dry sand quite free from frost, and plant again about the latter end of April, when a most abundant crop of seed will be the result. For many years in England I was accustomed to grow mangels as a crop to precede wheat, and although we rarely succeeded in getting the wheat sown, (after the removal of the mangels), before the very last of October, and sometimes the beginning of November, we never failed in having forty bushels of good wheat per acre. The great crop was entirely attributed to the mangel leaves being ploughed under at wheat sowing; the land was, however, of good quality. No leaves were allowed to be eaten by cattle, and thus carried off the land. All were ploughed well under after the removal of the roots. I find the roots are fibrous, not bulbs as in mangels, and are consequently not fit for food.

C.

The *Michigan Farmer* says the economy of hay caps has been demonstrated at the Michigan Agricultural College Farm this season. They are made of cotton, are four and a half feet square. Even when there was no rain it was found that hay cured under them was superior in quality to that exposed to the light and sun. They are also used on wheat.

Barn-yard Manure.

To the farmer there is no manure so valuable for general use as that made in the barn-yard, because such contains every kind of plant food which has during the previous year been removed from the soil. There is no form of investing money so profitable to him, both in the quickness of return, and the high rate of interest received, as that upon manure. It is certain that the constant application of manure will directly double his returns from his land, and the benefits of such application will be carried on from year to year, in the superior richness of that portion of each crop which will again and again be used for the nourishment of his fields.

Let the farmer beware how he runs into debt to the grocer and the tailor, how he invests his hard-earned means in shares and stocks, but he need never be afraid even to become indebted for manure. Returns from such an investment are rapid, and the rate of interest high. Let us loan our money thus to nature, and she will repay us with generosity and without fail.

The principle that the best manure is that made under cover is now generally endorsed by the most intelligent of our farmers- indeed, of agriculturists all over the civilized world.

The following table, being the result of experiments made in England, giving the composition in pounds weight of a heap of manure at four different periods, will convey to the reader an idea of the changes which took place in the composition of manure from exposure:—

	Put up. November 3rd.	After 5 months. April 30th.	After 9 months August 23rd.	After 12 months. November 14th.
Weight of manures in lbs	2838	2025	1991	1971
Water	1877.9	1336 1	1505.3	1466.5
Dry matter....	960.1	689.9	488.7	507.5
Soluble organic matters..	70 38	86 51	58 83	51.01
Soluble inorganic matters..	43.71	57 88	39 16	36.89
Insoluble organic matters	731.07	389.71	243.22	211 92
Insoluble inorganic matters	114.94	155.77	147.49	201.65
Total nitrogen	18.23	18.14	13.14	13 03
Equal to ammonia	22.14	22.02	15.96	15 75

I have heard many farmers speak of the fear they had of giving their land too much barn yard manure. No doubt, this is an error that may be committed, but from my experience, I cannot say that the fault of the Canadian farmer is often that of overfeeding, either to his land or to his stock.

I have often seen crops of wheat heavy in the straw, but light in the head, and I have in most cases traced the deficiency in the fulness of grain to the general fault of inferior seed, without perceiving that the abundance of straw was any greater than should be borne by a fair crop of wheat.

The feeding of cattle upon the farm, therefore, makes the most useful of manure, for the solid and liquid excrements that are sopped up by straw, &c., contain all those fertilizing elements that have been extracted from the actual plant, and that are in a state in which they may be returned with maximum advantage to the growing crops.

A most important point in the case of barn-yard manure is the prevention, as far as possible, of the transmission of noxious weeds to the field.

It is a great mistake to throw seeds away *by themselves*, for the birds pick them up, and again distribute them over the fields.

The manure heap may be made a means of destroying such weeds.

Let seeds be thrown in with the manure in such a manner that when the piles are made the seeds shall be well covered, the heat of manure heaps will destroy the germinating power of nearly all, and if any seeds do escape death by this process, after growing in the richness of manure they are weak and spindling, and far more easily killed than such as have been carried directly to the fields by birds.

The richer the food, the richer the manures, and this should be carefully considered in applying to different crops or to different soils.

Manure is to land what food is to the animal, and the application should be carefully regulated to suit the requirements of land under many different circumstances.

The subject of intermixing clay, peat, and such substances, with barn-yard manures, has been so well handled in your columns of late, that it would be superfluous to revive the subject. I would only say that a succession of layers of clay and a coating of clay outside the manure heap, act very beneficially, not only in preventing the escape of valuable gases, but also of that heat which will accelerate the necessary chemical combinations, will destroy the germinating power of many noxious weeds, and will hasten the reduction of the manure to that state in which it will most readily be taken up by the land to which it shall be applied.

C. E. W.

From South Australia the accounts of the crops are very favourable. The principle of a great measure of land reform has also been settled, which permits land at £1 per acre being paid for in yearly instalments of 2s. each, with favourable conditions of settlement, cultivation, and improvement. This measure is regarded as most favourable to the future interests of South Australia, placing it in a position to attract settlers equally with the other colonies.

Sowing Timothy in Autumn.

There is quite a scarcity of timothy seed this year for next year's sowing, especially in the States, consequently those who have been able to gather any will probably obtain double the price it usually sells for. But the worst of it is that many fields seeded last spring failed to take, from the want of moisture shortly after seeding time. The same may be said of clover. This could easily have been avoided where the seeding down to grass is to be done on winter wheat, by sowing the timothy seed in the fall. There is much more certainty of getting a good catch with timothy, and also orchard grass, when it is sown in the autumn, than there is in the spring seeding. Timothy is perfectly hardy, and the young plants can stand the winter as well as winter wheat. Should a spring or early summer drought occur, the plants will be well rooted, and have a sufficient hold of the soil to push forward early and rapidly, and are then much less likely to be scorched out. Clover cannot well be sown in autumn here, but if the land has been fall sown with timothy, and it is desired to have an admixture of clover in the meadow, the clover, if sown early in spring, will take better from the slight mulching it will obtain from the young timothy plants, than it had no protection from the hot sun in May and June.

Wheat Midge in England.

To the Editor.

Sir,—The fears entertained in England of the appearance of that scourge of which we have had so fatal an experience, are, I fear, but too well founded In the latter end of July I was asked by a farmer in Gloucestershire to examine his wheat, which had assumed a sickly colour and shrivelled form. On examination I found the midge (*Cecydoma tritici*) very generally spread over the field. It is to be hoped that, should this pest become such a scourge as it has been in America, the farmers of old England will take a lesson from our young experience, and treat the midge to a general dose of coarse wheat.

C. E. W.

Ancaster, Sept. 3rd, 1870.

Insect Depredations.—If I were to estimate the average loss per annum of the farmers of this country from insects at one hundred millions of dollars, I should doubtless be far below the mark. The loss of fruit alone by the devastations of insects, within a radius of fifty miles from this city, must amount in value to millions. In my neighbourhood the peach once flourished, but flourishes no more, and cherries have been all but annihilated. Apples were till lately our most profitable and perhaps our most important product, but the worms take half our average crop, and sadly damage what they do not utterly destroy. Plums we have ceased to grow or expect; our pears are generally stung and often blighted; even the currant has at last its fruit-destroying worm. We must fight our paltry adversaries more efficiently, or allow them to drive us wholly from the field.—*Horace Greeley.*

Stock Department.

Housing Stock in Winter.

There can be no question that in such a rigorous and changeable climate as ours, shelter for stock during six months of the year, from the 1st November to the 1st May, is absolutely essential to insure their thrift and healthiness.

In arranging the yards and buildings, however, to that end, there are some important points that seem to be too generally overlooked by our farmers. One of these is the dividing and locating them so as to arrange that the different classes of stock do not intermix, to the injury of one another. If horses are bred on the farm, the colts need a good yard for exercise, with comfortable close sheds fitted with feeding racks, to run into at nights and stormy days. The young cattle need a separate yard and sheds with racks to themselves, where they will have room to move about, and not be kept in continual fear of the old cows and oxen, which should be kept separately in their stalls. Sheep should never be among other stock, but have large yards with good sheds open to the south, if open at all. In any case, buildings that are used for young stock or sheep must be constructed as to allow of good ventilation at all times when necessary.

Another point often neglected is the supplying light to animals that are kept in close confinement most of the time. We have frequently observed that horses kept in dark stables are always more subject to shying when they are driven out, than those that have well lighted stables. One can easily conceive that a horse brought out from a dark stable into the bright glare of a winter sunshine is partially blinded, and, in fact, we believe much of the blindness common among horses is caused by constant sudden exposure to light every time they are taken out of their stables. Nature has given light as one of her blessings conducive to health, all creatures having the organ of sight largely developed, and to deprive any of them of the means of exercising that faculty is sure to result disastrously in some form or other. It is noticeable how much less shying there is among horses in the summer than in winter, which is probably due to their being more out of their stables during that season, and even when in their stalls, the doors are left open during the day time.

Still another point is that of constant cleanliness, both inside and out of their shelters. We believe much of the diseases prevalent amongst stock in winter can be traced to the want of cleanliness and pure air. Every yard and shed should be kept well covered with clean straw, and every stable and byre so arranged that the stalls and floors can be readily cleaned out, and the animals kept from accumulating filth on their bodies. What else could be expected than a general unhealthiness and want of thrift in animals, that are living in an atmosphere that is constantly impregnated with bad odours and impurities. Let the stables and byres be well dried during the day, when it is not excessively cold or blowing snow drifts, by leaving doors and windows open for several hours In the case of animals being fed up for the butcher, it may not be objectionable to keep them in partial darkness, in order to induce them to lie down and keep in a state of rest as much as possible; but with all others there should be a good supply of light allowed during the greater portion of the day, and if the cows can be turned out of their byres by themselves, for a few hours each fine day, they will enjoy better health.

Lastly, we too often see that the amount of space allowed for winter quarters to stock is altogether too small for their comfort yard room, especially, is often very much cramped and confined, as if the land on a farm was of as great value as that in a city. It is better to have yards of good size, and, after clearing them of the winter's accumulation of manure in spring, plant them with cabbages, beets, mangels, or carrots, reserving only the stable yard for summer use.

The amount of stall room allowed is also often far too small, and the animals are crowded together in such a manner as to make them feel anything but comfortable. The idea of carpenters and builders, who generally put up the stalls, seems to be to make them all of one uniform size, the dimensions of which are dictated by some arbitrary rule or caprice, whatever it may be called. They do not seem to think the size of the stalls should vary, so as to accomodate different sized animals, but that, like the bed of Procrustes, the same space should fit all comers. It seems to be overlooked that the stalls or spaces set apart for each beast may just as well be either all of such a size as to accommodate comfortably the largest ox, or be graduated in size in order to economize space, and yet each give comfortable space for the animal to occupy it, according as it is large or small. The more ease and comfort the stock can obtain when tied up in their stalls, the more contented they will be, and the better they will thrive.

Mr. Duncan's Stock Sale.—An extensive sale of valuable animals, chiefly Shorthorns, took place recently at Towanda, Illinois, on the farm of Mr. Duncan. The sale, says the *Prairie Farmer*, attracted one of the largest assemblages that has ever been gathered on a similar occasion in the West. Ten bulls were sold, including the celebrated sire of the herd, Minister, (a portrait of whom appeared in the Canada Farmer), who was purchased by Mr. Wilson, of Kansas, for the sum of $1,760. The other bulls fetched sums varying from $370 to $700. One cow sold for $1,500; two others for over $1,000, and the remainder at prices from $100 to $700. The total sum realized for twenty-seven head was $15,500. A fine lot of hogs were also sold, and brought from $60 to $187 per head.

Mellendean Leicesters.

We have repeatedly given a short account of the annual sale of rams at Kelso; and in another column will be found a brief notice of the last, which took place on the 9th of September. This sale, from small beginnings, has attained to the most important place of ram sales in Scotland.

Prominent amongst the competitors at this sale for the past thirty years have been the Mellendean Leicesters, being part of a breed of sheep which are somewhat of a distinct type, now called "Border Leicesters," for which the neighbourhood of Kelso and the valley of the Tweed have long been famous, and of which our engraving, from a photograph by Gray, gives two very beautiful specimens. The Mellendean flock was owned by the late Thomas Stark, who had a keen eye for fine shapely animals, and whose flock, from the small foundation of ten good breeding ewes, has gradually progressed through every stage of improvement up to its present state.

At the sale at Kelso, on the 10th September, 1869, the Mellendean sheep, forty in number, brought the highest average of 1751 offered, that average being £16 9s. 4d. sterling, and one sheep bringing £109 sterling. The average of the Mellendean sheep for the year 1868 was about £7 above 1869, when the total number at sale was also larger than in 1869. At the Kelso sale competition amongst breeders is very keen, and it requires all that science, skill, and a liberal expenditure can do to keep pace with others, or retain the prominence already gained. In these respects the Mellendean sheep are well looked after. Some of their leading features are their lustrous fine curly wool, so much in request by manufacturers of the finest woollen fabrics, their soft and mellow handling, which bespeaks them kindly feeders, pure white heads and sprightly eyes, well-set ears and strong muscular necks, splendid breasts, clean short shanks and standing wide on their pins, lengthy bodies and well-sprung ribs, and the whole frame indicating a grand carcass for both mutton and wool. Many of these features are distinguishable from our engraving, though the sheep themselves should be seen to be judged of properly. This flock, indeed, is so highly appreciated that not only the rams are in high request, but the draught ewes of the flock are eagerly purchased by breeders wishing to improve their own stock.

Any of our readers taking an interest in such matters, that may happen to be in Scotland about the time of the Kelso sale, say about Sept. 10th or 15th of each year, would do well to make a point to be present at it and judge for themselves of the Border Leicesters; and if in the neighbourhood at any other time, we are assured by the liberal proprietor, will be welcome to see the Mellendean flock, the shepherd taking much pride in showing them to strangers. He talks to his pets like children, and has a separate yarn to tell about each, even his dog hob-nobbing with them on friendly terms. The locality, too, has many attractions in natural beauty, and is associated with much that is chivalric in song and story.

MELLENDEAN LEICESTER RAMS.

Fattening Cattle.

The unusually short supply, and consequently high price, of beef during the past year, owing mainly to the demands of distant markets, and comparatively cheap means of transportation to them now offered through the competition among lines of railway concentrating towards the great centres of commerce and manufacture, render the feeding of cattle for the purposes of the butcher a much more profitable operation to the farmer than it has hitherto been. He no longer needs to depend on his neighbours, or a small local

demand, for the disposal of what his farm can furnish in the way of flesh meat, but will find men who make it their business to act as factors between the producer and consumer at all times, going through the country, or attending local fairs, ready to buy up at fair prices every head of live stock they can find in a condition suitable for the butcher.

The age at which cattle can be profitably fattened will depend much upon their breeding, and the manner in which they have been reared. Steers or heifers, having from half to three-fourths Shorthorn or Hereford blood in them, and that have been kept in a thrifty growing condition from calfhood, are usually sufficiently advanced to be put up to fatten when from thirty to thirty-six months old. Pure-bred animals of Shorthorn or Hereford blood may be profitably fattened at an earlier age. A cross of one-half to three-quarter Devon blood on common stock makes an animal that can go into the stalls at two years old, if it has been kept in good growing condition. Common native cattle can rarely be profitably fed for the butcher till they are four years old. If cattle are put up to fatten before their growth has sufficiently advanced, so as to bring them near their full capacity of laying up substance, much of the food given them, instead of going to make them fat, will be wasted in adding bone and muscle, which could have been obtained more cheaply by giving them time to complete their development on ordinary keep. Besides, the effort to fatten an animal when in an immature state can only result in producing meat of a very inferior quality, and commanding a much less price than if the same animal had been kept on longer until its frame had become solid and well knit together, its muscles developed to their full capacity, and its stomach capable of digesting and assimilating a larger amount of food than is actually required to sustain the ordinary growth and wear and tear of life, without derangement of its vitality.

There are every year great numbers of young cattle sold to the butcher, or slaughtered by farmers, and their carcases brought to market at the close of the grass season, when they are in a state of development that renders their flesh of an intermediate quality between veal and beef, without the tenderness of the one or the rich juiciness of the other, but as flavourless and worthless as any flesh can well be. It is sheer folly to sacrifice such animals for the sake of the paltry saving of a few months' food, when by keeping them over one winter more they would bring nearly double their present value, and be fit to make into beef that is full of rich savoury juices.

Stall feeding cattle, judiciously conducted, presents to the grain grower the most efficient, cheap, and desirable method of keeping up the fertility of his farm, and the most profitable means of disposing of his surplus hay, roots, and coarse grains. The manure made from such cattle, were it all the profit derived from the process, would be amply sufficient to repay the farmer for his trouble; while the hay and grain so consumed would sell in the shape of beef for a higher price than if it had been taken to market; for it must be borne in mind that in turning roots, hay, and grain into meat, we get the price that they would bring in a higher and more distant market, without the risk and expense of transportation to it, while the same articles, hay and roots especially, would be governed as to price by the local demand of the immediate neighbourhood where they were grown, which is often very low. The greatest demand, and consequently highest prices for beef, now extend over a much longer period of the year than formerly, the facilities for transportation by rail rendering it possible at all times to furnish a constant supply of fresh meat to distant markets, when formerly much of the summer consumption was restricted to meat slaughtered in late autumn, and salted down for future use. This has in a measure rendered the winter fattening of cattle, in order to supply a spring and summer demand, much more certain to yield a profit than formerly, and greatly increased the demand for meat, now that it can be so readily supplied at all seasons in a fresh state. In a future article we may discuss the matter further, and give the best methods of profitably feeding cattle for the butcher.

Selecting Stock Rams.

In order to breed sheep successfully and profitably, much depends on the judgment used in selecting the rams to be used in the flock. It should be the aim of every farmer to endeavour to raise the standard of the stock on his farm, in an even and gradual manner, by using male animals of as much higher a degree of excellence each year as his means will afford He must also keep in view a certain object in breeding. If he is so situated that he can profitably raise sheep solely for the purpose of turning into mutton, he will find his profit in using Leicester or Southdown rams of pure blood to put to common ewes. If wool is his object, he will find the use of Cotswold rams best attain the end in view, as that class of wool not only commands the highest price, but is also more certain to be of uniform quality, and to yield a high average of weight of fleece throughout a flock.

We will suppose a farmer has a flock of ordinary common grade sheep, and desires to improve them. He can begin the first year by using a ram lamb or two, costing from $10 to $15 each. This will carry him through two seasons, by which time the ewe lambs of the first season will be gimmers, ready to take the ram. He should then get one of higher quality, say a shearling or two, costing $20 to $30 each. Two seasons after this he needs one of still higher quality, and of as good size as can be had, costing, we will say, $50. After this he should change his rams every year, giving a good price to get a first-class animal from some well-known and reliable ram breeder. In all cases it is particularly advisable not to use as stock-getters in his own flock any of the male animals bred in it. All the ram lambs in the flock not intended to be sold off as lambs to the butcher should be castrated, and raised as wethers until such time as the flock has reached the highest degree of excellence it is capable of attaining, when the ram lambs, if then good, may be kept for sale as breeding rams, and will probably bring good prices.

It is a poor policy to continue breeding and feeding sheep that will realize but from $3 to $5 each from the butcher, when by a little extra outlay in the way of procuring male animals as stock-getters that will raise the standard of the flock, he can obtain from $6 to $10 each for what he has to sell, and in a year or two more, by perseverance, the flock can be raised to such a high standard as to readily command from $12 to $18 or $20 each for what can be fed up for the Christmas or spring markets, or sold as breeding stock. It costs no more to feed such animals so as to keep them in good growing store condition than it does those of inferior quality. The great aim should be to obtain animals that combine good size and form with early maturity and aptitude to fatten, and in the case of wool growing, the animals that can carry the largest fleeces of the true quality of the breed are the most profitable to keep.

Stallions for Common Labour.

There are very few geldings in France. The reason is, the stallions are not unmanageable, vicious, and dangerous as work horses, but docile, obedient, easily managed, and intelligent. There is nothing in the nature of things to prevent our having the advantage of the greater toughness, strength, spirit, fearlessness, safety, (in being less liable to take fright), freedom from disease, and longer serviceableness of the stallion over the gelding, were it not that we and our ancestors have so abused the temper of the horse, that his progeny exhibit, among the unaltered males, vicious and treacherous tempers, such as make them unsafe and unreliable as work horses, even under the kindest and most uniform treatment.

The English thorough-breds, unexcelled for spirit, endurance, fleetness, and wind, are the most vicious of all horses. They came from the gentle, docile, affectionate Arab, and it is only the training and abuse of the English stableboys and grooms, we verily believe, which have thus, in the course of generations, ruined the temper of the most noble of the breeds of horses. Its blood is infused through all our common stock, and to it we owe most of the characteristics for which we value our horses. Where thorough-breds have been bred for generations under

different treatment, as under the handling of the negro grooms and riders of the Southern States, their tempers improve, and extraordinary exhibitions of vice are rare, even among stallions. The habit of using stallions is followed a good deal by French Canadians, who send to this country so many of the so-called "Canuck" horses. These horses are small, close-knit, and powerful, and when entire, tough beyond comparison. Wherever we meet with them, they are praised for easy keeping qualities, great endurance, and freedom from ordinary ills, and are seldom complained of as vicious. Do we not, in our ordinary treatment, sacrifice a great part of the usefulness and serviceableness of the horse, in rendering him more tractable, more liable to disease, and less intelligent and spirited? Is it not worth while to make the experiment oftener of rearing stallions for labour, though it require more patience, gentleness, and kindness, on the part of those who handle them, and repeated floggings, administered with a will, to any stable boys who dare to pinch or tickle, or to ruffle their tempers? —*American Agriculturist.*

Kelso Ram Sales.

The Kelso *Chronicle* says that the sheep show and ram sales at Kelso took place on the 9th of September, and secured, as usual, a large attendance of spectators and buyers. Some of the prize animals were purchased for Canada. The Mertoun lot of Lord Polworth once more obtained the first place, the highest price realized being £100—a very high figure, but less by £9 than the top price for the Mellendean lot last year. The highest average this year was £22 14s., against £16 9s. last year. Miss Stark's Mellendeans were late in being put up, a circumstance which, no doubt, reduced the competition and the prices, but notwithstanding, they excited a keen rivalry amongst the bidders, and obtained the second highest average. The total number of entries was 1737.

What it Takes to Soil a Cow.—Desiring to know just how much saving there is in soiling, and having an excellent piece of clover, in its best estate, just coming into blossom, we measured forty square rods and commenced feeding it to seven cows and four horses; it fed them liberally, fifteen days. The two succeeding years we tried the same experiment, the animals differing somewhat, but with the same result—in each case we found forty square rods equal to the summer feeding of a cow. But these crops of clover were very heavy, and could not always be equalled; yet allowing for contingencies, we came to estimate one-half acre of land in good condition, in clover, as adequate to summering a cow; thus making soiling equal to from four to six times the space in pasture. We tried afterwards much larger experiments—soiling thirty-five cattle and horses, and using some land in much poorer culture, but we found the saving, comparatively, quite as encouraging. We selected one hundred acres barely sufficient to have pastured this number of animals—ten of it in clover, oats, and sowed corn; we fed them from the 20th day of May to the 1st day of December. We had a surplus of sixty-five tons of hay, after feeding these animals six months and ten days, which sold in the barn for $972. It required six hours' labour per day to soil them, which amounted in those cheap times to $65. One hundred loads of manure were saved in fine condition, worth, at least, $50 more than the droppings of these animals in pasture. The expense of cutting and housing the sixty-five tons of hay was $1 50 per ton, or $97 50, which added to the labour of soiling makes $162 50, leaving $859 50 as the net gain of this soiling experiment.—*Live Stock Journal.*

Stock and Crops for Farms.—"A Northern Farmer," in the *Mark Lane Express*, gives his opinion on this subject as follows: "In this paper much stress has been laid on the necessity of keeping a heavy stock constantly on the farm, yet some care must be exercised to provide a proportionate amount of food, and to have it for every season, otherwise, instead of profit, the year's transactions will end in loss. The farmer who is overstocked, is always in trouble; in spring he must stock the pastures too early for the want of house food, and in autumn he must permit the cattle to remain in the fields until, through exposure to bad weather and insufficiency of food, they become greatly reduced in condition. If to avoid this he begins early on his stock of roots and hay, he is run out, very probably, in March, the very season when the lengthening day and the chilly cutting winds cause increased consumption, and a struggle of some kind must be made to hold them over on purchased food until something can be picked up on the pastures. The full supply of food tells on every animal, but of course more noticeably on those whose produce is being daily turned into cash. The widely-distended bag of a well-fed cow as she comes from the pastures to be milked, and the sense of relief which she unmistakably shows when the process is completed, is both a source of gratification and of profit, and is in wide contrast to the limp, half-empty appearance of the udder when the cows are in bare pastures, and have to roam about continually in quest of food. No amount of care or good management on the part of mistress or maid can make up for this oversight on the part of the master, and when, on making up the year's receipts, he finds the amount to be little over half what it reasonably might have been, he can only blame himself for his shortsightedness in keeping more cattle than the food he had provided was able to sustain. Breeding ewes tell also very forcibly by the return which they give, whether they have been liberally fed or not—any deficiency in food telling at once on the milk, and the lamb in consequence ceases to grow, and becomes stunted and profitless.

Veterinary Department.

Nephritis, or Inflammation of the Kidneys in Horses.

Although the kidneys act very powerfully in horses, fortunately they are not so liable to acute inflammation as some other organs. The causes of this ailment are varied. Among them may be mentioned prolonged and severe work, or the abuse of diuretic medicines, as in giving large doses of rosin and saltpetre, which is often done with the intention of improving the condition. Continued irritation has an injurious effect, weakening those highly sensitive organs, and rendering them liable to disease. Another common cause is the eating of hay that has been improperly made, and certain grasses that possess diuretic properties. It may also be produced from injury, as in connection with a sprain of the psoas muscles, or in saddle horses from carrying heavy and continued weight. It also occurs in connection with some diseases of the respiratory organs, which have a tendency to arrest generally the various secretions of the body, and it is occasionally induced by the application of cantharidine blisters over a large surface of the body. The active principle becomes absorbed and over-stimulates the kidneys.

The symptoms of nephritis are more or less fever, according to the severity of the attack. The pulse is quickened, the coat is staring, and the surface of the body changes suddenly from hot to cold, the belly is somewhat tucked up, and pressure over the loins causes the horse to cringe downwards; he walks with a stiffness of the hind-quarters, and will also lie down and roll, but not so violently as in a case of inflammation of the bowels. Now and again he will place himself in a position as if desirous to urinate, and strain violently, and when urine is passed, it is invariably very high-coloured, and frequently tinged with blood. This is more particularly the case when the inflammatory action is produced by the presence of some calcareous matter in the kidneys. In severe cases the horse turns his head to the flanks, indicating clearly the seat of his suffering.

In the treatment of this disease, the excretions of the bowels and skin should be excited so as to relieve the kidneys. A good plan is to apply over the body a large blanket wrung out of hot water. A moderate dose of purgative medicine should be given, say a pint of linseed oil combined with one drachm of calomel. Injections of tepid water are also beneficial by exciting the action of the bowels, and also in acting as fomentations to the inflamed parts. When the pain is very severe, a dose of two scruples of opium with one scruple of calomel has a tendency to relieve the pain. A mustard plaster over the loins is also bene-

ficial. Nitre and rosin should not be given in this complaint, as these medicines increase the irritation. The horse should be encouraged to take mucilaginous drinks, as linseed tea, hay tea, &c., and be fed sparingly on mashes of bran or on certain kinds of green food, as grass and lucerne, when it can be conveniently procured.

Strangles.

This is a disease peculiar to the young of the equine species. It usually attacks the colt about the period of dentition. There is an appearance of general bad health; the colt appears to be out of sorts; he is not so playful as was his wont, gulps his water and fails in his feed. His coat stares, and in a word, he has a dumpish appearance. Very soon a swelling shows itself under the jaw, and at the same time a creamy discharge takes place from the nostrils. This swelling can be distinguished from that which occurs in glanders, by its uniformity. In glanders the swelling is of a nodular character, and generally at one side, with a tendency to adhere to the jaw or to some of the surrounding membranes. The discharge is usually only from one nostril, and in the nostrils there are deep angry ulcers, with rugged overhanging edges.

There is another form of strangles called *bastard strangles*. In this form there is no discharge of nasal gleet; the swelling may appear on any of the groups of lymphatic glands; it may even settle on some of the internal organs, lungs, mesentery or brain. Every endeavour should be used to make it break externally. Sometimes, in genuine strangles, if there has not been a free discharge externally, it goes in and settles on the brain.

I had an opportunity of examining the brain of a horse which had died from this cause, and found that there were two or three large abscesses on the *cerebrum*, and two on the *cerebellum*. The animal had got what the owner called "over the distemper," although not thriving as well as he ought. At length he became delirious, and finally died in a state of coma.

The treatment for strangles is very simple Medicine, in most cases, does more harm than good. Keep the colt in a comfortable loose box, give the most nourishing food possible boiled barley for example; steam the nostrils well. This may be done best by cutting the bottom out of an old sack and then drawing it over a horse-bucket; then put a boiling hot bran mash in the bucket, and place the colt's head in the bag. A large bran or linseed poultice should be put under the jaw, or wherever the swelling appears. The poultice cloth should be a sheet, to cover the entire head, with holes cut for the nose and ears, and tied at the back of the ears

Sometimes the colt is in danger of immediate death from dyspnœa, then tracheotomy should be performed: this cannot be done without the assistance of the veterinary surgeon.

This disease is contagious, empiries to the contrary notwithstanding.

In ordinary cases, with the above treatment, the colt will be as well as ever in three weeks.

A. M. C.

The Dairy.

Why Winter Butter is Poor.

The month of June, all things considered, is regarded as the best month in the year for manufacturing butter. This is due to a combination of circumstances. Drought seldom commences so early in the season; accordingly both feed and water are abundant. The grasses which are the natural food of cattle are then in a state to furnish not only the most food, but that of the best quality for producing rich milk. The insects which are so troublesome later in the season have not made their appearance in large numbers. The air is not tainted with bad odours as it is later in the season. The temperature is very favourable to the rising of cream, neither so warm as to cause the milk to sour quickly, nor so cold as to prevent the separation of the oil globules.

Another season very favourable to the production of good butter is the early fall. At this season we ordinarily have rains that bring up the grasses to something like the plenteousness they gave us in the spring. Many of the insects so plenty in midsummer have disappeared, and the temperature throughout the day is more uniform.

When winter arrives, however, the quantity of the butter is greatly lessened, and its quality is much inferior. In truth, the chemical composition of the butter is considerably changed. The ingredients are different, not in kind but in quality. Oleine, which is the softer fat in butter, is much more plentiful in summer butter than in that made in winter. The colour of winter butter is also different from that made in summer. The former is almost white, while the latter is golden

The unfavourable condition and appearance of winter butter are partly owing to causes that we cannot control, and partly to causes that we can, in a measure, obviate. Dry food will produce less oleine than fresh green food. We, however, can prevent a very great diminution of this fat, by cutting our grasses earlier, and curing them so that they will retain all their natural juices and their aromatic qualities. We can prevent the lessening of the quantity of milk to the extent that usually happens by keeping our cows as well supplied with food and drink as they are in summer, when they can feed at will, and can procure water whenever they wish. Giving cows food and drink only after long intervals of fasting has a most injurious effect on the secretion of milk.

The light colour of butter in winter is, doubtless, due to two causes. The oleine is of a darker colour than the other ingredients of the butter, and the more scanty it is, the paler will be the colour. The chief cause, however, of winter butter being so light coloured, is due to the cream becoming bleached before the butter is churned. Cream has its richest colour when it first rises to the surface, and if it is churned in that condition the butter will be yellow. If it remains, however, exposed to the light, particularly if the temperature change, the rich yellow colour disappears, and it will be found to be impossible to produce golden butter from white cream.

Let any one try the experiment of taking some yellow cream with a little milk below, and let this remain for two days or more in a glass vessel, and mark the changes that take place in the colour. At first the line between the cream and milk is very distinctly marked, but after a little, the cream has become bleached to such an extent that it cannot be distinguished from the milk in colour. Winter butter is white, then, because the cream is ordinarily kept too long before it is churned. It is very hard to obviate this difficulty in small dairies, particularly when the cows are so poorly provided for that their milk becomes very scanty. It is, doubtless, better, even if the supply of cream be small, to churn as often as we do in summer, using a churn proportionally smaller.

Winter butter has a poorer flavour than grass butter, from a variety of causes. The food the cows eat is devoid of the agreeable taste common to the grasses while growing or in blossom. Besides this, the milk is too often kept in a room the atmosphere of which is foul from the odours arising from cooking. The milk, at such times, acts the part of a disinfectant, and carries the stench of th kitchen into the cream pot, and from thence into the butter jar.

Good butter can be, and often is, made in winter, but it is only done by having all the circumstances surrounding the cows—the milk room and churning as nearly as possible like those in summer. The cows must be fed on food rich in sugar, and never be stinted in amount. The milk must be set in a room the air of which is pure, and the temperature of which does not greatly vary. And lastly, the cream should be churned when it is not above 24 hours old. - *Prairie Farmer.*

Grinding Cheese Curds.

The process of grinding curds seems to be coming gradually into vogue. One day last week we visited Dr. L. Wight's factory, at Whitesboro, to witness the operation of grinding by the use of a small oscillating engine, which does pumping, churning, etc. The curds are first treated after the American Cheddar method, by running off the whey just as it begins to acidify, and allowing the curd to drain and air while the acid is developing. It is then taken out in large chunks, put into the sink, run under the curd mill and ground, or rather picked to pieces, salted, and immediately put to press. If allowed to

get too cold, it is difficult to make the cheese face. The curd mill or picker tears the curd to pieces as fast as one can conviently feed it.

By this process, a good deal of stirring is saved, no strainers or racks are needed, and the salting is done with more certainty and evenness. There is not so much danger of getting the curd too sour, and a few moments' delay is not of so much consequence as it is when the curd lies in the whey. It seems to be certain that a firmer cheese is secured. The gas which makes open cheese either escapes or does not generate, and hence a tainted or floating curd makes a cheese that stands perfectly true on the arriges without the least sign of "huffing."

That there is any real improvement in the quality of the cheese we are not prepared to say. The indications of tainted milk are still perceptible in the flavour, and cooling the curd retards putrefactive action, which will sooner or later show itself, especially if the cheese be subjected to excessive heat in the rail-car, on shipboard, or in the storehouse. Still, the advantages of the Cheddar process, and of grinding a tainted curd, are apparent; but we concur in the opinion of Dr. Wight that, if the milk is all right, the old method is as good as any, so far as the quality of the cheese is concerned.—*Utica Herald.*

SULPHUR AS A DEODORIZER.—The *Maine Farmer* says:—"One night a sort of domestic animal, known as a skunk, took up his abode in the back entry of a house, and being disturbed by the cat, emitted a most disagreeable odour—as he is always sure to do when he is at a all suspicious that his rights are being invaded. The dairy being in the neighbourhood of where the conflict took place, it became infected with the noxious odour, when our friend, in his haste to cleanse the premises, burnt some sulphur in the room. The effect was magical, as it completely neutralized all the foul smell."

CORN LEAF FODDER.—It has long been the habit in the South, where hay is scarce and poorer than here, to rely largely on cured corn leaves for wintering all kinds of stock. These leaves are stripped from the corn, the talks being left in the field till winter. The *Arkansas Farmer* tells how it should be done: "As soon as the shuck ripens, begin to strip the blades. Do not put the fodder on the ground, leaving it until evening to bind. The method of tying in small bundles as it is stripped, and hanging on the stalks to dry, is best. When about three-fourths cured, gather and throw in good-sized close heaps, late in the evening, and let it go through a heating process during the night; next day throw open the heaps—the heat will dissipate the remaining moisture, cure the fodder sooner, and give it, at the same time, a tenderness and flavour much relished by the stock. Spare no pains to cure it well—if mouldy and dusty, it may prove more than worthless."

Horticulture.

EDITOR—D. W. BEADLE,

CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

The Fruit Growers' Association of Ontario.

This Association held its regular autumn meeting in St. Catharines on Thursday the 22nd Sept., 1870. There was a very full attendance of members, and a very fine display of fruit. The collection of grapes was very extensive, embracing a great number of varieties, and many of the newer sorts, including the Eumelan, which latter sort was exhibited by Mr. John Brown, of Thorold, and Messrs Coleman and Merritt, of Geneva, N. Y.

The meeting was called to order by the President. The minutes of last meeting were read and the following Committees appointed:—

Committee on apples and pears—Messrs. Dougall, Morse, and Bennett.

Committee on grapes—Messrs. Read, Taylor, and A. M. Smith.

Committee on other fruits—Messrs. Mills, R. M. Ball, and Saunders,

Committee on wines—Messrs. Farrell, Logie, and White.

Committee on seedling fruit—Messrs. Cross, Arnold, and Halton.

The discussion of the best method of pruning and training the grape vine was then entered upon.

Mr. Y. KEATING, of Jordan, stated that he trained his vines on the arbour system. His vines did not cover the top of the arbour trellis as yet, and therefore he allowed the vines to fruit on the perpendicular part of the trellis; but as soon as the vines are able to cover the top he intended to prune off the branches from the perpendicular part of the trellis and confine the fruit and foliage to the top or horizontal part. He has about an acre and a half planted with the Delaware, of which one acre is trellised. He pruned in March and April, and has three canes to each vine, but has not practised trimmer pruning, but is of the opinion that a little pinching in during the summer would be serviceable. The vine now exhibited by Mr. Keating and covered with ripe fruit has been planted six years. He manured his vineyard two years ago by ploughing under clover, and last spring applied a dressing of well-rotted barnyard manure. His soil is sandy loam, the soil about eight inches deep, with a hard, yellow sandy subsoil, having a hard pan two and a half feet below the surface, and clay from eight to nine feet down.

JOHN W. BALL, of Niagara, trains his vines on the arbor trellis plan, no foliage allowed on the sides of the trellis, the vines are trained up the sides of the posts to the top of the trellis, and the sides are open all around, so that he can drive under the trellis in every direction and cultivate with the horse every part of the vineyard. The posts are seven feet long, not planted in the ground, but set upon a flat stone placed under the foot of each post. The horizontal bars are nailed on to the top of the post, so that the whole weight of the top rests on the ends of posts, and braces run from the posts to the horizontal bars Made in this way, there is no rotting off of posts, nor strain upon a nail, nor blowing down by the wind, nor heaving out of place by the frost. His soil is a clay loam about a foot deep, with a retentive clay sub soil, well under-drained Has manured them with leached ashes. His vines are planted twelve feet apart each way. Of course, his vines get no winter protection.

W. H. READ, of Port Dalhousie, said that he pruned both in the fall and spring, mostly in the fall because it was more convenient to do it then. He varies his pruning according to the habit of the vine; those of very strong growth and vigourous habit requiring to be left with longer shoots than those of a slower habit of growth. He has never seen any evil to result from fall pruning. Some of his vines are trained to stakes, others to upright trellises; has not tried the arbour trellis, thinks the best ripened grapes are those near the ground, because they get the radiated heat of the earth. His soil is a sandy loam, about eighteen inches deep, with a hard-pan subsoil, located on the south shore of Lake Ontario. He thoroughly manured the ground with barn-yard manure when he planted the vines ten years ago, but has not given them any manure since. High manuring may produce larger grapes, but poorer in quality.

JAS. TAYLOR, of St. Catharines, prunes his vines in the fall and finds that they do not get injured by the winter in consequence He has more leisure to prune in the fall, and therefore prefers to do it then is also satisfied that grape vines are not benefitted by high manuring, and has abandoned the practice of manuring them except by a mulch of barn-yard litter over the roots. His soil is a limestone gravel, naturally porous and well drained. Some of his vines are on a side hill, with a western exposure. He has also given up the practice of summer pruning, having become convinced that much summer pruning is injurious, and now contents himself with merely pinching in the ends of shoots that seem to require it

The meeting adjourned until 2:30 P. M.

AFTERNOON SESSION

The PRESIDENT called the meeting to order, and called upon Mr. Haskins, of Hamilton, who remarked that he preferred the arbor system of training and Spring pruning, especially for the free growing sorts, such as the Clinton and its confreres. He uses as fertilizers leached ashes and bone dust and stable manure. He mixes two tons of bone dust with four tons of ashes and four tons of gypsum or plaster, and applies it to five acres of vines. He finds that many varieties kill back badly in the winter if fall pruned, and therefore he prefers the spring. He has nine-and-a-half acres of grape vines in cultivation, planted two years ago last spring. The vines are showing a little fruit this year. The sorts are mostly Rogers' hybrids, with a good many Delaware and Clinton, with about twenty other sorts for experiment. Is much pleased with the Iona, Delaware, and Rogers No 4. Thinks the Creveling one of the very best of wine grapes, but the bunches are very imperfect, because the berries do not set well, but are too scattering. The soil is sandy loam, with clay bottom, well underdrained.

Mr. BABCOCK, of Lockport, New York, said that vine cultivators in the United States were now beginning to prune larger and train higher. They have heretofore been in the habit of cutting off too much of the vine at the winter pruning. If the vine sets too much fruit they thin it out, either by cutting out the branches or by cutting off the entire branch, fruit and all They usually cultivate on upright trellis, composed of three wires, fastening the vines to the wires with willow twigs or rye-straw. There is a new wire contrivance for fastening the wire to the trellis known as Underhill's patent wire back. They have a machine for tightening the wires of the trellis.

Here several members described different contrivances for tightening and slackening the wires of the trellis, the most simple of all seemed to be one described by Mr. Barnes, of Hamilton, but we forbear attempting to give a descrip ion, hoping to obtain from Mr Barnes a full description with illustrative drawings.

The meeting now proceeded to the consideration of the best methods of grafting the vine.

W. H MILLS, of Hamilton, said he had not been successful in grafting a vine that was already established growing in the soil, but when he dug the vine up and then grafted it and planted it out again, he had met with very good success.

W. H. READ, of Port Dalhousie, said that he had grafted in the fall and then carefully protected the grafts from the frost. In this way forty-five percent. had done well.

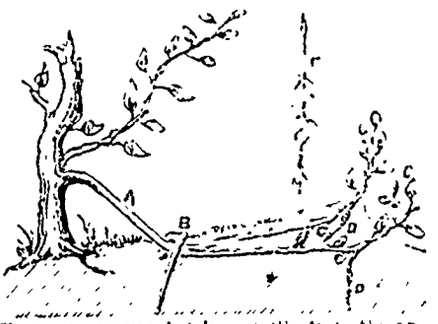
C. ARNOLD, of Paris, had succeeded well in the same way. it was not necessary to have the bark of the scion and stock fit together, as in grafting the apple, but they grew just as well when inserted in the middle of the stock.

Mr. BROOKING, of Ancaster, planted out some old vines, thirteen in number, and then grafted them. Of these twelve grew. This was done in April, and the crown where the graft was inserted was covered with earth, leaving one head of the scion at the surface of the ground

Mr DOUGALL, of Windsor, had tried grafting the vine, but always failed

HUGH SMITH, of Sarnia, exhibited to the meeting some samples of a method which was a combination of layering and grafting. The branch of a tree or shrub is bent down so as to admit of the twigs being readily layered; the twigs are then tongued on the underside as for layering. A piece of root of the same

species is cut about six inches long, pointed like a wedge at the upper end and inserted in the slit made in the twig, the bark of each being fitted exactly on at least one side, and fastened to its place by tying with basswood bark or cotton yarn, and then the root is inserted in the ground, with enough of twig to keep the point of union moist below the surface of the ground



The accompanying sketch may illustrate the process. *a* is a branch bent down to the ground *b* is a hooked peg to hold the branch in place. *c c* are the twigs slit on the under side *d d* are pieces of root inserted into the twigs at the slit made on the under side *e* shows the wedge form of the root at the end to be inserted in the slit.

Mr. SMITH stated that he did not suppose that this method would be generally useful, but that it would be found to be of service in the propagation of those trees, plants and shrubs that are difficult of propagation by the ordinary methods

President BURNET, of Hamilton, had cut his grape scions in the fall and kept them in a cool place, where they remained in a dormant state until the vines were in full leaf in June: then he inserted a scion of two or three buds long in a branch of a growing vine, in the usual manner of cleft grafting, fastened the graft by tying, and then buried the place of union in the soil sufficiently deep to keep it moist; and, in order the more certainly to secure this, he covered the place of union, before burying, with a thick coating of cow-dung. In this manner he had been very successful.

The best method of manuring the vine was here taken up.

Mr. ARNOLD, of Paris, would use very little manure, and never use coarse or highly nitrogenous manures.

Mr. MILLS, of Hamilton, would manure according to the requirements of the variety. Some varieties, of the Delaware, required high culture and would never yield their best results in poor soil; others, as the Diana, required no manuring, but yielded their finest crops and ripened them best in a poor soil abounding in lime

Dr. CROSS, of St. Catharines, manures only those varieties which are slow growers.

Mr. FARRELL, of Cayuga, would manure according to the habit of growth of the variety.

Mr BENNETT, of Brantford, thought that vines succeeded best in the natural soil; at least he would not manure highly.

Mr. READ, of Port Dalhousie, uses leaf mould, cow dung and ashes.

Mr. TAYLOR, of St. Catharines, top dresses with coarse stable manure, more as a mulch than otherwise.

Rev. Mr. CAMPBELL, of Niagara, has an old Isabella vine growing in grass in the lawn, which fruits abundantly, and ripens its fruit well.

Mr. MILLS also had an Isabella that had stood for seven years in sod that bore fine fruit and ripened its fruit.

Dr. CROSS, of St. Catharines, cultivates the ground between his vines, and never failed to ripen the Isabella except in 1869; and when there are no severe September frosts his Catawbas ripen. He prunes on the renewal system, and finds the Isabella and Catawba grow finer fruit and ripen it better on young canes.

On the subject of winter protection of grape vines,

Mr. SAUNDERS, of London, said that he was of the opinion that a grape vine which required winter protection was not worth having He had found most of our varieties sufficiently hardy without any winter protection, though his Diana had been killed to the ground.

Mr. READ, of Port Dalhousie, protects by a light covering of pure soil or earth. Other coverings are apt to afford a shelter for mice.

Mr. ARNOLD, of Paris, finds few varieties that succeed without winter protection. He thinks branches of evergreens the best winter protection that can be used. Inquiry was made as to the hardihood of his seedlings, to which he replied that he had supposed that they were all hardy, but that of late the white variety seemed to be tender Brant, Canada, and Cornucopia were tolerably hardy.

Mr. PATTARD, of Niagara, protected only those of foreign origin, as the Sweet Water, Zinfindal, &c.

Mr FARRELL, of Cayuga used formerly to protect all his grape vines in the winter, but had gradually abandoned the practice and now only protected newly planted vines during the first winter

Mr BENNETT, of Brantford, had been in the habit of protecting his vines every winter and has uniformly had good crops, but last winter he left his vines exposed, and they were badly winter killed He thought it quite possible that having been heretofore protected they were now less able to withstand the winter than if they had never been protected, and hence the injury last winter to even old canes some inches thick.

Mr ARNOLD of Paris suggested that vines can be too much covered, especially with soil, for if buried the wood of the vine is kept too moist and the buds rot

On the subject of insects on the vine.

Mr BENNETT, of Brantford, remarked that he had been remarkably exempt the only insect he had seen was one that had punctured the berries of the Diana

Mr. MILLS, of Hamilton, had been very much troubled with the vine thrips, but could not suggest any mode of getting rid of them

Mr. DOUGALL, of Windsor, had noticed that the thrips injured only the thin leaved sorts such as the Delaware and Clinton, but was unable to injure the thick leaved varieties, such as the Concord &c He had been very much afflicted with a worm in the berry of the grape, probably the same as the insect in the Diana mentioned by Mr. Bennett

Mr. SAUNDERS, of London, mentioned that the thrips could be very much lessened by having a man pass through the vineyard bearing a lighted torch, while another went with him and shook the vines; the thrips, disturbed from their hiding places under the leaves, flew into the blaze and perished. The flea-beetle could be easily killed in the larva state, and it only required proper attention to keep this pest in subjection.

Members mentioned the varieties of grapes which they had found, on the whole, to be the earliest. The four sorts which were mentioned by nearly all the members were the following, viz: Hartford Prolific, Adirondack, Massasoit (Rogers No. 3), and Creveling

Mr. W. H. READ, of Port Dalhousie, stated that he had some seedling grapes which ripened in August, and which he fully expected would prove to be perfectly hardy, and ripen earlier than any of those that had been named.

The meeting then took up the subject of Pear trees, their cultivation, manuring and pruning.

Judge LOGIE, of Hamilton, did not give his pear trees any special cultivation, he supplied them liberally with ashes and an occasional top dressing of manure, had experienced a little blight, and some spotting and cracking of fruit.

Mr. JAS. TAYLOR, of St. Catharines, had not found the cultivation of pear trees very satisfactory; has lost a good many trees -betimes very little. His soil is a gravelly loam; trees are dwarfs, some have thrown out roots above the quince stock and become standards.

JAS DOUGALL, of Windsor, has a heavy loam and a strong clay loam; had tried 350 different sorts on the quince stock. Some of these grew finely, many would not grow at all. Had learned that some sorts were not suited to the quince stock and should never be grown as dwarfs, such as the Bartlett, Seckel, Doyenne d'Ete, &c; on the other hand the Beurre d'Anjou, Duchess d'Angouleme, Ananas d'Ete, &c., would thrive well as dwarfs. He would plant a pear orchard of Standards and dwarfs together, setting the Standards thirty feet apart each way, and put dwarf trees between them so that the trees would stand fifteen feet apart each way. Has no blight. Angiers quinces are the only suitable stock for dwarf pear trees In cold latitudes strong shoots should be pruned back to the ripe wood, early enough to heal over before winter.

A. STAIGHT, of Watford, had found the pear tree to be generally healthy and prosper best in clay soil, they should not be too highly manured, especially with raw manures. He named the Flemish Beauty as one of the most hardy and desirable varieties.

THOS. KEYES, of Grantham, preferred the Standard pear trees, especially of the Bartlett and Flemish Beauty varieties. Dwarf pear trees need good culture.

Mr. ARNOLD, of Paris, said that all young trees should receive good culture.

Mr. SAUNDERS, of London, had just visited two distinguished cultivators in the United States who advocated and practiced opposite systems of pear culture. One adopts the system of no pruning — the other prunes considerably. He thought that if results were a just exhibit of the effect of the two methods, the man who pruned his trees had the advantage decidedly. This was Mr. Quinn, whose pear orchard is near Newark, New Jersey He plants only dwarf trees, at one year old, setting the point where the bud was inserted six inches below the surface, trains the branches low, and plants only a few sorts He gets from $12 to $16 per barrel in New York for the Duchess d'Angouleme from $12 to $14 per barrel for the Seckel; $20 per barrel for Rhenish Beauty for the Bartlett $10 per barrel, and for the Beurre Bargeau $25 per barrel He does his pruning in the spring, about the 15th of March, and cuts the strong growers well back.

Mr MORSE, of Smithville thinks that while the pear should have liberal culture, yet the trees can be injured by too liberal application of barn yard manure. He uses leached and unleached ashes with good results, and has never yet failed of having a good crop of pears

The session having continued until nearly ten o'clock, p.m., at which time many of the members were obliged to leave for the train the Association adjourned, to meet in Toronto at the annual meeting, to be held on Tuesday evening, the 4th of October.

Some samples of fruit that were sent by express and intended for exhibition at the meeting, failed to arrive in time: among these a branch of an apple tree which bears small Russet apples, and large smooth apples resembling the Vandevere. This was sent by D. Hammond, Sheridan, P. O., who writes thus, "I also send for your investigation a limb bearing two kinds of fruit I have shown it to different persons, and told others of it, but none can account for it in any way You will see what variety the fruit is of, the large apple being the kind it bears, the russet being the mystery. If the Association can explain in any way the cause of its bearing the russet without human agency, which it certainly does, you will confer a favour. I send this last as a fact of interest that has fallen to my experience, as requested in the circular."

The several committees appointed to report on the different fruits exhibited handed in their reports, but there was not time to read them to the meeting.

Many reports have been received by the Secretary of the growth of the Eumelan Vine Nearly all state that it has made a good growth and ripened its wood well: two or three state that the leaves were attacked with mildew, in which cases, of course, the wood has not been well ripened.

Members who have not sent in their report on the growth of the Eumelan Vine, received by them from the Association, are requested to do so without delay.

The subject for discussion at the meeting on the 4th Oct will be the benefits of fruit culture as connected with the farming interests of the Province.

Vine Culture in Australia.

To the Editor.

SIR,—In a recent issue, I read some remarks on Vine Culture, and thinking I might interest, if not benefit, those who have planted the grape in Canada, I purpose giving a description of the propagation and culture of the vine as practised in South Australia, in which Province I resided upwards of twenty-five years, and am perfectly acquainted with every mode of treating the vine in that colony—whose vineyards have spread over many thousand acres, the produce of which is largely and favourably known in the Indian and London markets.

The mode of preparing the ground for a vineyard is first to free it from all stumps and obstructions; and two ploughs and bullock teams are employed, one with four bullocks, and one eight. The team of four, attached to an ordinary plough, strikes out a furrow right and left, the same as the ordinary way of forming the crown of the land, driving the plough along the two first furrows again so as to break the ground to eight inches in depth, which is easily kept after once a start has been made. The second plough, worked by eight bullocks, is a skeleton plough, very strongly built, having no mould-board, is of extra depth from sole to beam, and has a strong double-winged share. This follows in the furrow of the first plough,

and stirs the soil to the total depth of eighteen inches, which is considered sufficient. This method enables the operator to trench-plough half an acre per day, taking into account the clearing of stone, and other delays, and when the trenching is completed, cross-harrowing with a heavy implement is done, and the surface brought down fine to prepare it for planting. Vineyards planted by farmers for their own use vary from five to twelve acres, which gives them sufficient of a wholesome beverage to last from year to year, and all proprietors of five acres of vines and over, are allowed, under liberal regulations, to distil the spirit from the lees or other refuse, and use it to fortify wines deficient in alcohol, but this applies more to the wines made in mountain districts, as the wines of the plains contain from twenty-five to thirty per cent. of natural spirit. Where wine-making is the object, vineyards vary from twenty to one hundred and fifty acres.

PLANTING.—The ground being ready, and the season arrived, such varieties are selected as the taste or experience of the owner dictates, and cuttings of well-ripened wood are selected, (always avoiding the latter growth), and as the ground has been worked to a depth of eighteen inches, the cutting should be twenty-one inches, being sunk to the bottom of the trenched land, and leaving two eyes above ground. The cutting is cut square off at the base of the lower eye, and as some varieties are prone to throw up suckers, it is disbudded between the lower and two top eyes.

The cuttings are let down to their places with a cross-handled iron bar, and the soil filled in tightly round the cutting in order that the rains may descend freely to the foot of the cutting and start it.

The number of plants per acre is regulated by the variety to be planted; it being necessary to keep strong and weak wooded varieties apart. Black Portugal, Frontignac, Shiroz, Mataro, Verdilho, Grenache, Madeira, White Muscat, and the Sherry grapes, are planted six feet apart each way; giving 1,225 plants to the acre. Stronger wooded varieties (table grapes) are planted eight feet apart each way, while Tokay, Carignan, Carbonel Savignon, and some Rhenish varieties, are planted four feet apart in the row, and six feet between the rows. The most successful modes of treatment for the plains is that of treating the vine as currant trees are in England. The plant rises on a stem not exceeding a foot in height, and is kept open in the centre, taking care to balance the plant in its external limbs, and in pruning the young wood is cut back to two eyes, carefully removing all decaying spurs, which convey rot to the heart of the plant and soon throw it out of health, and rag the fruit at crop time. The vines are not allowed to rise more than three feet, as succession wood is left, and the older limbs displaced. The plants are kept as symmetrical as possible, to ensure the cleaning of the land, and admit of perfect ventilation for maturing the crop. All ground wood is cut away, and the stem kept clear, as the shoots thrown off below full-bearing limbs rob the crop of its weight, and impoverish the fruit. For hill cultivation, the succession cutting is practised, i. e., wood of the last season's growth is laid in for bearing, and trained to the trellis, which is formed by posts being let in every thirty feet, and No. 4 wire passed through them, and tightly strained, never letting the bearing wood rise higher than thirty inches. The best young wood is laid in for the next season's crop, and all superfluous growth and laterals are displaced. It is customary to plant the vines running north and south, as the crop is best shaded from the meridian sun, and more equally ripened. The first method I have described has the advantage as to expense, as no staking or trellising is required, and is more easily worked.

The cost, per acre, of planting is, trenching, 30s,. per acre; cuttings and planting do., including repairs of ploughs, harrows, etc., £3 10s.; total £5 per acre. It is very necessary to keep the ground free from weeds, as no vineyard is productive which is allowed to get foul.

In planting a vineyard, sloping and well-drained land should be selected, as grapes grown on swampy land are ill-flavoured, and subject to late frosts often destroying the crop. If the cuttings have been properly prepared and planted, very few failures take place, not more than ten per cent., and as the vine is very impatient of removal, it is better the cutting should be planted where it is to remain. The first season, cut the wood back to one eye, two eyes the second season, and so on till your plant has risen high enough for the stem, then let it have three limbs, forming as nearly as possible an equilateral triangle, from which the future head is formed. Be careful not to over-wood your plant, as you would only produce weak and barren growth. In the fifth year the vines should average eight pounds per plant; many varieties, such as Black Portugal and Grenache, give much more. The cost of ploughing, harrowing, pruning and cleaning cuttings, hoeing, through the season, is £3 per acre for a seven year old vineyard. I know of vineyards in South Australia, which, under good management, yield 800 gallons of wine per acre, which, at 2s. 6d. per gallon, give an income of £100 per acre, minus the ploughing, pruning, gathering, crushing and cellarage, for which together say £10 per acre, leaving £90 net. With more delicate varieties the produce per acre is not more than half; but the value of the wine is double, so the same result is arrived at.

Let not the Canadians be discouraged in vine culture, for I am sure, under careful treatment, good returns can be had. On a late visit to Niagara, I was pleased to see how luxuriant the wild vine grew close to the falls, and I gathered and ate some wild black grapes there which were far from being unpalatable. It occurred to me if a collection of cuttings from different varieties of the wild vine were made, which, by marking the plants now, could be easily done, (by noticing the difference in foliage), and properly cultivated, more useful varieties would be brought into bearing than by introducing foreign sorts, and I know raising the plants by cuttings, as I have described, will make bearing plants quite two years earlier than raising plants by separate eyes.

I trust that I have made myself sufficiently explicit to create an interest in vine culture in Ontario. I have only attempted to describe out-door treatment; but am fully conversant with that of the hot-house, and also of the manufacture and treatment of wines. Should any of your correspondents desire information in my power to impart, I shall with pleasure convey it, but would like to see some of the vineyards about Toronto.

EDWARD GILES.

23 Nassau St., Toronto.

On Grapes.

THE CHEAP CONSTRUCTION OF GLASS HOUSES.

Of course, it is well known to most of your readers that the varieties of grapes cultivated in the open air are those styled native grapes. These are principally crosses or hybrids between the wild grapes of America and the cultivated varieties of other countries, whilst those grown under glass are called foreign varieties. These latter require, in our short summer, the assistance of a glass protection, in order to equalize the heat of night and day, and to prolong the hot season by keeping out the late spring frosts, and those which ruthlessly destroy vegetation early in the autumn.

It is superfluous to state that it would not pay to grow in-door kinds if they were not vastly superior to those grown in the open air. The wholesale price of foreign grapes in Montreal is fifty cents per pound; the retail from one dollar twenty-five to seventy-cents—generally one dollar. The out-door kinds retail at from twelve and a half to thirty-seven and a half cents. I am told in Rochester they may be bought by the waggon load at five cents per pound in their season.

Glass houses are chiefly formed on two plans, either as a lean-to, with a south or southerly aspect, against some building already erected, or a double-pitched roof in an open space, or with the northern end attached to a house, fence, or other suitable place. The lean-to is certainly the most economical of glass; but in all the structures I have seen of this kind, the row of vines planted next the building to which the glass house is attached is of a very inferior growth to the one trained immediately along the glass. I would therefore most strongly

recommend parties about constructing, if they wish the greatest degree of excellence, to build on the double-pitched roof plan. A house sixteen feet long by ten feet wide may be built by sinking cedar posts five feet deep, so that there may be no danger of their being moved by frost, in two rows ten feet apart, eight feet apart in the rows. Up these nail down firmly, for plates, sixteen feet long scantling, three by four inches. The plates may be three or four inches above the surface of the soil. The rafters should be twelve and a half feet long, and placed four feet apart on the plate. It will be found a good plan, after putting up the first rafter, to nail the two first sashes lightly on before they are glazed, one on each side of the house. By this means the position of the second rafter will be obtained. The sash should come even with the centre of the second rafter. When you have this rafter in its place the lower end must be spiked down, and a strip temporarily nailed across the top, to keep that straight also. Sashes six feet by four can be procured at the mills here for one dollar each, and for the size of house mentioned sixteen will be required. These sashes must be five panes wide, of 8 by 10 glass. Besides these, there will be required a glass door for the south end, and two side sashes, and a three-cornered top sash. To glaze these it will take twenty-five pounds of putty and seven boxes of glass. This quantity, if not much broken, will leave half a box over for repairs. As the roof will be of a very steep pitch, it will be found best not to lap the glass in glazing, but to put it end to end in the sash, embedding the panes in soft putty. After they have been laid in the sash, which should have been previously primed with the best white lead and boiled oil, and a very little turpentine, they should be bradded in with two-eighth inch shoe-brads, to be obtained at the hardware store. The glazing can then be proceeded with. After it is finished, the glass should be shored up from the lower end, and a brad driven in to keep the glass from sliding down, and another coat of paint given over the wood and putty.

The rafters may be made by ripping down through the centre a twelve inch wide two inch thirteen feet plank, and as the sashes will be made of inch and three-quarter stuff, strips of that thickness, and two inches wide, must be nailed on the upper six feet of the rafters. The lower sash will be put on first, so as to project a little below the plate, and the upper sash should lap two inches over the lower sash. Care should be taken to have the foot of the rafter on a line with the outside of the plate The rafters and plates should be planed smooth, and all knots covered with a composition called "knotting," to be obtained from the druggist, and then a good coat of white paint given before they are put in their places

The bed for the vines should be principally made of sod off an old pasture, previously thrown into a heap. This may be turned over two or three times in the course of a month or two previous to its being put into the excavation made for it. A few barrels of ashes, ground bones, oyster-shells, and a load or two of well-rotted manure, may be advantagesously added. The pit should be two and a half or three feet deep, and if the subsoil is at all inclined to be wet, the bottom should be concreted with mortar and gravel, or stone chips made by the cutters. These being for the most part flat, are easily worked in. A couple of feet of the floor should be plastered an inch deep, the stone then laid firmly on the mortar and smoothed over with another coat of plaster, and so on until the whole is completed. It is imperative that the concrete should have a slope of five or six inches in the sixteen feet to one corner, where a drain must be made to carry off the water. It is well to have three inches of loose stones, or a couple of rows of drain tiles, laid on the concreting, or a drain laid along the floor of loose bricks led out at the lower corner.

The wires for training the vines on should be put in vertically, fastened with small staples at the bottom, and run over a ridge-board at the top of the house, nailed under the rafters. These wires may again be stiffened in the centre by having a narrow piece of inch board, with saw cuts in it for the wires to pass through, nailed underneath the rafters six feet from the ground. After planting the vines it will be found of the greatest advantage if an inch of hen manure can be obtained to cover the surface of the vine bed; this will be washed into the light porous soil and have a most beneficial effect on the young vines. Down the centre of the house a foot-path should be laid of splints two inches wide and fourteen feet long, nailed at intervals of two feet across pieces of scantling two feet long, as it is of consequence that the soil should lie as light as possible in the border, and must on no account be walked upon. At the same time, this kind of walk lets the light, air, and water through to the roots. Two of the top sashes, one at each side, should be made to slide down. Each of these sashes should have an iron bar attached firmly to itself, about one-third from the top end. This bar may be cut from an inch wide half-round bar, and holes should be drilled through it so as to allow of its being screwed to each bar of the sash with good stout screws. The centre of the bar should be rounded a little, as the cord used for holding the sash, when lowered, will be attached to it. The bar should not be so long as to touch the rafters, otherwise it will interfere with the sliding of the sash. The sashes being heavy, it is best to have on those which slide four small iron rollers, to be obtained at the hardware store, let into the sash eight inches from each corner. These will run on the rafter, and assist materially, in raising and lowering them, to regulate the temperature of the house. A rope is tied to the iron bar, and run through a screw pulley attached to the top of the house, and from thence brought down and attached to a cleet nailed to a rafter. This rope can then be shortened or lengthened as required. The rope being firmly attached, the sash is let down from the outside, being kept in its place when pushed up by a piece of wood two feet long, made to work on a screw driven through its lower end, and attached to the frame of the next sash to the one the sliding sash comes down over.

A vinery of this description, having an area of 12 by 32 feet of glass, can be built, by the party doing most of the work himself, for $63. A neighbour of mine constructed one with the aid of an architect, and letting out the work by tender, the area of which is very little greater, and the work on it simpler, it being a lean-to roof. It cost him two hundred and twenty-five dollars, and is not yet painted!

Mine can be extended from year to year at any time, which is another great advantage I possess. I give below my figures :—

For concreting two loads of stone, 25c. per load	$0 50
Three bushels of lime, 25c	75
Man for mixing mortar and concreting	1 50
Man and horse half a day, hauling sods	1 00
Two loads of manure, 25c	50
Sixteen sashes, $1	16 00
Glass door and three end sashes	6 00
Seven boxes glass, $2 12½	14 87
Knotting, 15c. Hinges, 10c.	25
Eight small rollers for sash	25
Lock, 65c. Sash cord, 25c	90
Two screw pulleys	16
Two iron sash bars, 25c	50
Scantling and boards	5 00
Seven pounds galvanized wire, 10c.	70
Man to glaze sashes	6 00
Sprigs for glazing	17
Nine vines, 50c	4 50
75 pounds of putty, 4c	3 00
	$62 55

P. E. B.

Ottawa, Sept. 7th, 1870.

Profit of Grape Culture.

Mr. C. L. Hoag, of Lockport, N. Y., has been engaged in the cultivation of the grape vine for many years. He is well known to the writer, not only as a very successful cultivator, but as a gentleman of careful observation, whose statements are not made without ample foundation, and who would most scrupulously avoid everything that could possibly mislead.

At a meeting of the Western New York Horticultural Society, Mr. Hoag, speaking on the subject of crops and sales of grapes, made some statements which were most bewilderingly reported—a very common occurrence. To correct the impression these errors of the reporters might occasion, Mr. Hoag writes to the *Rural New Yorker* a very interesting letter, from which we give our readers some of the items.

He states that, after twenty years' experience, he has found the grape more profitable than any other fruit grown in that section, but does not advise cultivators to attempt the grape except in localities where the grape succeeds, and on land well adapted to the grape, and that requires no underdraining His Iona vines, planted ten feet by six, 726 vines to the acre, produced the fourth year, 1868, from ten to fourteen pounds per vine, the fruit having been

weighed when gathered. This crop was sold for thirty cents per pound, the offer made by the Hammondsport Wine Company of twenty cents per pound having been declined. But, taking the crop at ten pounds to the vine, and the price at twenty cents per pound, the result would be $1,450 per acre.

Mr. L. H. Babcock, President of the Niagara County (N.Y.) Agricultural Society, has a vineyard of Delaware vines which produced five tons per acre.

Mr. J. Craine, of Lockport, stated that his vineyard of the Wilder Grape (Rogers' No. 4) produced 9,000 pounds per acre, and the fruit was sold for twenty-five cents per pound in New York City.

Mr. N. Ringueberg, also of Lockport, stated to Mr. Hoag that his Delaware vineyard of two acres, planted two years, produced last year 1,500 pounds of well-ripened fruit per acre.

But none of these gentlemen approve of heavy cropping of vines, either young or old. Three tons per acre, as an average each year, is considered quite enough for well established vineyards. All of the vineyards above referred to are growing in open fields, fully exposed, not in gardens with the usual surroundings.

He does not expect as high prices for grapes in the future, but does not expect to sell good, well ripened, selected grapes for less than ten cents per pound during the next ten years, and believes that where grapes succeed they can be grown at three cents per pound with as much profit as wheat at two dollars per bushel.

Mr. De Long, of California, tells Mr. Hoag that grapes can be grown there at a cent and a half per pound with as much profit as wheat at $2 per bushel.

Strawberry Growing for Profit.

The *Horticulturist* for August expresses the opinion that the profits of strawberry culture have been greatly exaggerated, and estimates the average cost of growing, picking, and marketing strawberries at seven cents per quart, so that all the producer gets is what he may be able to realize over that sum. This estimate may be a little more than the cost to the Canadian grower, but we have become convinced from actual experience that the grower is reaping but a very small return for his risk and labour when he gets less than ten cents per quart.

It is a very easy matter to have the small fruit business overdone, as the history of that business for the last two years amply demonstrates. Before long we shall find it settling down in the hands of men of experience and skill. Men without these qualifications have rushed into the business, and have found that there were difficulties they did not anticipate—that the golden harvest did not fall into their lap. But some things have been learned by the failure of the ignorant and over-sanguine, and wise men will profit by them. Among other things, it has been ascertained that the largest crops are grown on clay soil, well drained and well manured, and that light soil cannot compete with it. It has also been ascertained that much depends upon the condition in which fruit comes to market, and that it pays in the long run to send only choice fruit in neat packages. And last, but by no means least, that it is of the utmost importance to cultivate only so much as can be cultivated, gathered and marketed in the best style.

What is a Flower?

Flowers are merely leaves, so arranged as to protect the vital organs within them, and coloured so as to attract insects to scatter the fertilizing pollen, and to reflect and absorb the light and heat of the sun for ripening the seed.

We see the whole gradual process of the change of the common leaf in all the parts of a flower, most beautifully displayed in the flower of the common white pond lily. The outermost circle of petals is greenish, approaching the herbaceous texture and colour of the calyx; the next circles are purer and more succulent, and the innermost ones are snowy white, entirely cellular, and begin to show rudiments of an anther at their points. Gradually the petals become smaller and narrower, while the anthers on their summits become more distinct, until at length the usual thread-like filaments, and golden dusty anthers of perfect stamens appear in the heart of the flower.—*The Gardener.*

Setting out Orchards in Autumn.

Notwithstanding all that has been said against the practice of planting apple trees in the fall, and the many statements given of failures of such trees to grow, I am still inclined to think the practice a good one, and certain to succeed in all cases where the soil is in a favourable condition, the trees healthy and vigorous, and the work of planting thoroughly well done. As is generally the case, those who fail through any cause (and in nine cases out of ten the cause is their own carelessness) are sure to cry out and condemn the practice, while those who are careful and succeed make no noise about the matter.

Three requisites are necessary to ensure success in the work of planting out orchards in the fall of the year:—

1st. The trees to be planted out should not be removed from where they grow in the nursery rows until their present season's growth of wood has become ripened and firm. Many agents are in such a hurry to begin their deliveries of trees that they persuade the nurseryman to take them up in the fall at an earlier date than he could conscientiously recommend. Such trees, full of sap arrested in its course by untimely removal, are very apt to get badly frozen during the winter, in patches all over the tree, from the roots to the top.

2nd. The ground to be planted as an orchard must be thoroughly well prepared, and if not already underdrained, must be ridged and furrowed in such a way as to ensure that no water shall remain on the surface anywhere near the trees, to be frozen if a sudden cold snap should come later in the fall.

3rd. The trees, after being well and carefully planted out, should have a small mound of earth about six inches to a foot high, drawn up round their stems, with the double object in view of preventing the trees being heaved by the frost through access by water around the collar of the tree where the newly-placed earth will wash down, and of keeping away mice from barking the tree, as when a mound of earth is round it, every wind that blows will drift away the snow, leaving the spot too much exposed for mice to harbour in. If the orchardist intend planting largely, it will be well for him to go himself to the nursery and see to their being properly removed from the rows where they are growing at the right time. In no case accept trees that have been taken out of the rows and heeled in on the ground, as there is no telling how early they may have been dug out. No trees should be dug until the season is far advanced or the frost has been sufficiently severe to stop the circulation of sap so as to allow the young wood to ripen and become solid. Be particular to get only such varieties as you think will succeed and prove profitable in your section, and have them so labelled that you may know each sort when dividing them out for planting. No honest nurseryman will try to substitute one kind for another that is desired, unless the orchardist consents to it.—

J. M.

The Seed Crop of 1870.

Messrs. William Bryce & Co., seed merchants, London and Glasgow, state in their Price Current of this autumn that the quality of the seeds generally appears satisfactory, and they are inclined to thing, judging from their own observation, that the showers of August have greatly alleviated the evil effects of the drought of the spring and early summer.

Peas and beans are considerably below the average, early varieties having suffered most. Turnips are very deficient, and it is generally expected that prices must rule high throughout the season. Cabbages are good, but short in quantity. Mangolds and carrots are a light crop. Other seeds show a fair average.

The Gladiolus in Poor Soil.

Being a great admirer of that beautiful flower, the Gladiolus, I beg to state, in support of the opinion of some growers, that this flower does exceedingly well with me in very poor soil, very little better than brick rubbish, and the atmosphere is not very good, the place being only one mile from London Bridge. I mention these facts for the encouragement of those who may think soil and situation may not suit this flower.

I have had spikes equal to those I saw this season at the Crystal Palace; they have been admired by experienced gardeners.—William Edwards, Bermondsey.

Hamilton Horticultural Society.

The Fall Exhibition of this Society was held in Hamilton, on the 15th September. The tables were well filled with a fine display, especially of fruit and vegetables, and there was every evidence that the members take an interest and just pride in their Society. We had not time to take a special note of the many entries, nor of those articles to which prizes were awarded, having been hurried away before the judges had completed their work. One collection of new seedling potatoes we noticed, which were exhibited by Mr. John Freed, raised from seed saved last autumn from the Early Rose, fertilized with the Buckeye, which were of very fine appearance, and many of them very large.

Brantford Horticultural Society.

This Society held its autumn exhibition on the 13th September. It was the best which the Society has had. The number of entries was 780, and the display was very fine. The citizens of Brantford manifested their appreciation by a large attendance.

The success which has attended these Societies is gratifying to every friend of horticulture, and there is no reason why every town in Ontario may not have a successful Horticultural Society, except it be the supineness of the horticulturists themselves.

What is Fruit?

Fruit, in all its astonishing variety of texture, colour, and shape, is a modified leaf.

In the peach, the stone is the upper skin of a leaf, hardened so as to protect the kernel or seed; the pulp is the cellular tissue of a leaf, expanded and endowed with nutritive properties for the sustenance of the embryo plant; and the beautiful downy skin on the outside is the lower cuticle of the leaf, with the sun-bloom upon it, the hollow line on one side of the fruit marking the union between the two edges of the leaf.

In the Orange, the juicy lips enclosing the seeds are the different sections of the leaf developed in an extraordinary manner, while through the transparent skin of a ripe gooseberry the ramifications of the leaf-veins are distinctly seen.—*The Gardener.*

Lawn Grass Seed.

Mr. William Saunders, in the *Horticulturist* for July, says that he finds the following mixture to produce the most perfect permanent lawn, viz:—

One bushel Red Top, *Agrostis vulgaris.*
Two bushels June Grass, *Poa pratensis.*
One quart Timothy, *Phleum pratense.*
Two pounds White Clover, *Trifolium repens.*

These quantities are to be mixed and sown on one acre of land, the soil having been first thoroughly prepared.

Evergreens in the Orchard.

F. R. Elliott writes to the *Horticulturist* that many years ago he recommended the plan of planting here and there, irregularly but discriminately, *among* the apple, pear, or other fruit trees, more or less of Norway Spruce, White Pine, Scotch Pine, and other evergreens. Since that time he has repeatedly mentioned the subject, and called attention to the superiority of this plan over the one usually recommended, that of planting *a belt* of evergreens. His arguments are clear, and the wonder is that this plan has not been more generally advocated. He urges that the trees will not occupy any more space than when planted in a belt, and would exert their ameliorating influence throughout the whole of the orchard, instead of protecting only a breadth of say 100 feet. He says he has repeatedly witnessed the beneficial effect of contiguous evergreens in the bloom and fruiting of pears, apples and peaches, and calls attention again to this plan, from having again seen their protective influence in a plot of dwarf pear trees.

The Best Show Pelargoniums.

Attraction, Foster—Soft rosy lilac, novel and good.

Bonnie Charlie, Hoyle—Rosy crimson, with black top petals.

Charles Turner, Hoyle—Orange scarlet, rich dark upper petals, a grand flower of extra fine quality.

Claribel, Hoyle—A charming light variety, pure white, with a bright carmine spot on the top petals.

Corsair, Foster—Bright purple, with top petals, a novel and fine flower.

Conflagration, Foster—Rich crimson, with black blotch on top petals.

Diadem, Hoyle—Rosy purple, with deep shading, rich dark top petals.

Emily, Hoyle—Delicate rose, large and fine.

Empress, Foster—Rose, with maroon spot on top petals.

Envoy, Hoyle—Warm rose, with shaded dark top petals.

Example, Hoyle—A grand flower, rich deep crimson rose, black top petals.

Heir-loom, Hoyle—Rich orange rose, with large black blotch on top petals.

Hermit, Black—White, with large reddish maroon spot on top petals.

Lady of the Lake, Foster—Orange rose, very dark maroon top petals, a fine but rather late blooming variety.

Lilacina, Black—A pleasing pale lilac, coloured flower, not of the best form, but charming for its line of colour.

Maid of Honour, Foster—Light rosy pink, with small dark blotch on top petals.

Marion, Foster—A noble flower, rose, with dark maroon top petals.

Mary Hoyle, Hoyle—A beautiful flower, warm orange rose, small dark blotch on top petals, lit up with bright orange.

Queen of Roses, Beck—Lively purple, shaded with rose, new in colour, very attractive and fine.

Regina Formosa, Beck—Rose, dark top petals.

Royal Albert, Hoyle—Warm rose lower petals, large dark blotch on top petals, a large and very fine flower.

Sœur de Charite, Foster—Lower petals, rich painted orange, black top petals, a fine and striking flower.

Sunbeam, Hoyle—Rose lower petals, dark top petals, remarkably fine blooming.

Troubadour, Foster—Lively orange pink, dark spot on upper petals, a fine and striking flower.

William Hoyle, Hoyle—A very dark variety, lower petals warm rose, tinted with orange and red, very fine and novel in character.

Covering Grass Seeds.

A correspondent of the *Farmer* (Scottish) gives the results of some experiments by himself and a neighbour, showing that, in ordinary field culture, the prevailing opinion among farmers that the nearer the surface clover and grass seeds can be sown and covered, the better chance they have of succeeding, is contrary to actual experience.

His neighbour sowed a ridge of his clover seed along with the grain in the plough furrow, and found the clover to be much better on this ridge than on any part of the rest of the field sown in the ordinary way after the grain had been sown, and covered with light seed harrows. He sowed several plots of 100 seeds each in his garden, covering them at various depths, and found the proportion to grow to be as follows with rye grass:—

Plot 1.	Sown on surface,		6	out of 100	grew.
" 2.	Covered 1 inch....		50	"	"
" 3.	"	2 "	69	"	"
" 4.	"	3 "	47	"	"
" 5.	"	4 "	1	"	"
" 6.	"	5 "	0	"	"

With Red Clover it resulted in

Plot 1.	Sown on surface.		35	out of 100	grew.
" 2.	Covered	½ inch.	40	"	"
" 3.	"	1 "	25	"	"
" 4.	"	1½ "	38	"	"
" 5.	"	2 "	5	"	"
" 6.	"	3 "	2	"	"
" 7.	"	4 "	0	"	"

The conclusion he comes to is that mixed grass seeds should be well harrowed in, while clover does not require so heavy a covering, a half to one inch being sufficient.

Flemish Beauty.—A remarkably fine specimen of the Flemish Beauty pear was sent to our office by Mr. W. B. Phipps, one of the most successful amateur horticulturists in this city, and who would stimulate his fellow-labourers in the same field if his name appeared often amongst the exhibitors at our horticultural shows. The pear weighed 17½ ounces, and measured in its longer circumference 13¼ inches, and 12 inches in the other.

Entomology.

The Onward March of the Colorado Potato Beetle.

A WORD TO CANADIANS.

Last July, while spending a few days in Ontario, we ascertained that this most destructive insect had just invaded the Dominion at two different points, namely, near Point Edward, at the extreme south of Lake Huron, and opposite Detroit, near Windsor, at the southwestern corner of Lake St. Clair. These are precisely the two points at which we should naturally expect to first meet with it on the Canadian border; for all such beetles as fly into either of the lakes from the Michigan side would naturally be drifted to these points. As we know from experience, many insects that are either quite rare, or entirely unknown on the western side of Lake Michigan, are frequently washed up along the lake shore at Chicago; and these are so often alive and in good condition, and so often in great numbers, that the lake shore is considered excellent collecting ground by entomologists. In like manner grasshoppers are often washed up on the shores of Salt Lake, in Utah, in such countless numbers that the stench from their decomposing bodies pollutes the atmosphere for miles around. We have not the least doubt, therefore, in view of these facts, that the Colorado Potato Beetle could survive a sufficient length of time to be drifted alive to Point Edward, if driven into Lake Huron anywhere within twenty or thirty miles of that place, or if beaten down anywhere within the same distance while attempting to cross the lake.

How truly is Mr. Walsh's prophecy being fulfilled, that the northern columns of this great army would spread far more rapidly than the lagging southern columns.

Now, what will our Canadian brethren do? Will they stand by and listlessly see this pernicious insect spread over their territory like a devouring flame, as it has done over the Western and Central States; or will they make some determined and united effort to prevent such a catastrophe? Of one thing our friends across the border may rest assured—they have not here a sham and braggart Fenian army to deal with, but an army which knows no retreat, and whose members, though of small and insignificant stature, will fully make up in number what they lack in size.

When we calculate the immense loss, amounting to millions of dollars, which this insect has cost the Western States during the past nine or ten years—when we contrast the healthful and thrifty aspect of the potato fields in Ontario and in those States to which this potato plague has not yet spread, with the sickly, denuded, or Paris-green-besmeared fields at home—but above all when we reflect that, nothing preventing, it will infest the whole of Ontario within, perhaps, the next two, and at farthest within the next three, years we feel that it is high time to make some effort to prevent its onward march through Ontario, if ever such an effort is to be made. The warnings and instructions given by the agricultural press, and through our own columns, will avail but little, as they reach the few only. It may be, and doubtless is, true that successful culture, as our country becomes more thickly settled, will be confined to the intelligent and well-informed; yet the fact nevertheless remains, that the masses will do nothing toward off an evil until they are forced to it from necessity. The plodding, non-reading farmer will take no notice of the few bugs he first sees in his potato field, because they do him no material injury; but when the bugs have increased so as to make it a question of "potatoes or no potatoes" with him, then his energies will be aroused. But alas! his best efforts, at this time, often prove unavailing, and he has to spend days to accomplish that which a few minutes would have accomplished before. We therefore fully expect to see this great army of bugs continue its eastward march without hindrance, unless other preventive measures are taken than those already employed. A standing premium offered by the Minister of Agriculture, Mr. Carling, for a given number of beetles, or for the greatest number collected and killed in one season, or for the cleanest and best field of potatoes, of a given number of acres, within the infested districts along the eastern shores of the lakes mentioned and those of the St. Clair river, might, and undoubtedly would, be the best means of stamping it out and of keeping it out of the Dominion.

No doubt that, in suggesting any expenditure of money for such purposes, our Canadian brethren will deem us over-enthusiastic about "small things," and over-anxious for their welfare. Well, be that as it may, we don't forget that there is considerable of Uncle Sam's territory beyond Niagara. It is a mere matter of dollars and cents, and we venture to say that, when once this insect shall have spread over Ontario, a million dollars would be freely spent to accomplish that which will then be almost impossible, and which a very few thousands would effectually accomplish now—namely, its extermination from the Dominion.

An excellent chance is now afforded in Ontario—almost surrounded as it is by lakes—to keep this destructive enemy at bay. In the summer of 1869, reports of this insect's ravages, and of its progress eastward, came thick from Wisconsin and Indiana; but no organized effort was made to check it, and indeed there was very little chance of doing so. It is now fast spreading through Ohio; and, according to Dr. Trimble of New Jersey, has already reached Pennsylvania. Uncle Sam can not well prevent its onward spread around the southern shore of Lake Erie, through Pennsylvania and eastward; but, if it can be effectually resisted between Point Edward and the Detroit river, there will be little difficulty in preventing its crossing at Niagara. A victory would indeed be gained if, by intelligent effort, this grievous pest could be kept out of Upper Canada, while it is devastating the potato fields on all sides in the States; and Minister Carling would add to his well-deserved popularity by making the effort, whether it succeeds or not.

PARIS GREEN AS A REMEDY.

While on this subject it may be well to say a few words about the use of Paris green. This substance has now become THE remedy for the Colorado Potato Beetle, and it is the best yet discovered. Having thoroughly tested it ourselves, and having seen it extensively used, we can freely say that, when applied judiciously, it is efficient and harmless. If used pure and too abundantly, it will kill the vines as effectually as would the bugs, for it is nothing but arsenite of copper (often called "Scheele's green" by druggists), and contains a varied proportion of arsenious acid, according to its quality—often as much as 59 per cent., according to Brande and Taylor. But when used with six to twelve parts, either of flour, ashes, plaster or slacked lime, it causes no serious injury to the foliage, and just as effectually kills the bugs. The varied success attending its use, as reported through our many agricultural papers, must be attributed to the difference in the quality of the drug.

We hear many fears expressed that this poison may be washed into the soil, absorbed by the rootlets of the plants, and thus poison the tubers; but persons who entertain such fears forget that they themselves often apply to the ground, as nourishment for the vines, either animal, vegetable or mineral substances that are nauseous, or even poisonous to us. Animal and vegetable substances, of whatsoever nature, must be essentially changed in character and rendered harmless before they can be converted into healthy tubers, and a mineral poison could only do harm by being taken with the potatoes to the table. That any substance, sprinkled either on the vines or on the ground, would ever accompany to the table a vegetable which develops under ground, and which is always well cooked before use, is rendered highly improbable. There can be no danger in the use of sound tubers. But the wise and well-informed cultivator will seldom need to have recourse to Paris green, as he will find it more profitable to use the different preventive measures that have from time to time been recommended.

The poison may do harm, however, by being carelessly used, and it is most safely applied when attached to the end of a stick several feet long, and should not be used where children are likely to play.

THE TRUE REMEDY

consists in preventing them from becoming

numerous so late in the season. Watch for the beetles in early spring, when the vines are just peeping out of the ground. Ensnare as many of them as you can before they get a chance to pair, by making a few small heaps of potatoes in the field planted; to these the beetles will be attracted for food, and you can easily kill them in the morning. Keep an eagle eye for the eggs which are first deposited. Cultivate well by frequently stirring the soil. Surround your fields on the outside by rows of such tender-leaved varieties as the Mercer, Shaker Russett and Early Goodrich; but, above all, isolate your potato field as much as possible, either by using land surrounded with timber, or by planting in the centre of a corn field. Carry out these suggestions thoroughly, and you will not have much use for Paris green, and still less for the scorching remedy.—*American Entomologist and Botanist.*

The Poisonous (?) Tomato Worm.

In reply to Mr. R. Wilson, of Port Huron, who has sent us a specimen, we beg to state that we have never denied the fact of there being a Tomato Worm. On the contrary, we have frequently described it and remarked upon it. But we have denied, and still continue to deny that the creature is poisonous, either from its imaginary sting, or its projected spittle. An idea has somehow or other got into the heads of the people of this country that the poor innocent Tomato Worm is as deadly as a rattlesnake, and it seems as if no amount of contradiction or proof would ever persuade them that such is not the case. We had almost intended giving up the attempt to enlighten the mind of our readers on this subject, but our correspondent's note, and a recent paragraph in the newspapers, induce us to recur to the matter once more. The latest story is that an inhabitant of Dundas was sitting under a butternut tree, quietly cogitating upon things in general. Presently, he observed something like a bur upon his coat, and on attempting to remove it, was startled to find that it was not only alive, but also stung his finger severely. At once there flashed across his mind all the terrible stories that he had heard and read about the deadly Tomato Worm, and he began to think that his hour was come—that he was about to add one more to the long list of victims slain by this venomous beast! He rushed to the house—he sent a swift messenger for the doctor—and meanwhile he "kept his spirits up by pouring spirits down!" Ere long the poison began to work upon him he collapsed—his senses left him—his affrighted friends beheld, they thought, a dying man But, heaven be praised! by and by he began to recover—his senses came back to him—in due time he was restored to health. Surely, you will say, this was a clear case. But no; think a moment. The man sat under a *butternut tree;* that is not the place where tomatoes are usually grown, and not a single syllable is told us about any tomato plants being anywhere near. Secondly, the worm on his coat *looked like a bur.* A Tomato Worm, as is plain from the specimen sent us, is perfectly smooth, with the exception of a tail at one end, and no more like a bur than a horse is like a porcupine. Thirdly, there *is* a spiny yellowish-coloured caterpillar—the larva of the Io Emperor Moth—that looks very like a bur when coiled up, and whose sharp spines, as we have several times mentioned lately, possess the property of stinging like a nettle when incautiously handled. This worm feeds upon a variety of forest trees, but never, to the best of our knowledge, upon the tomato. We have no doubt that it was the spines of this insect that stung the man of Dundas, and that it affected him rather more severely than usual, just as we have known a man inclined to erysipelas forced to put his arm in a sling by a mosquito bite. We have often handled this insect, and thrust its spines into our fingers on purpose to try its powers, but have never experienced more than a transitory pain and trifling inflammation exactly like that produced by a nettle. Fourthly, it is a well established fact that people often become seriously ill, and sometimes die, from mere fright. Might not this have had something to do with the wonderful case at Dundas? And lastly, it appears to have been quite forgotten that the practice of "pouring spirits down," even for the seemingly innocent purpose of "keeping spirits up," has occasionally the effect of producing insensibility, when strict moderation is not adhered to. Now, we put it to the reader, is it not better as a rule to arrive at conclusions by some more gradual and safe method than by the process of jumping?

The Hop Louse.

The first appearance of anything connected with the lice in the spring, that I have discovered, is a small green aphis on the under side of the leaf from about the first to the tenth of May. It has much the appearance of a small green grasshopper, being at first not more than one-sixteenth of an inch in length, and, if disturbed, moves around quite lively, but seldom leaving the under side of the leaf. They grow to be about three-sixteenths of an inch in length, and mature, the first of them, about the first of June, when their feet become fastened to the leaf, and, shedding their skin, they become a fly. When the fly first comes out it is a very light red, with the tips of its wings having a milky appearance. The wings soon become clear, and the colour grows to a darker red as they mature. They are as active in five minutes after they are out of the skin as they ever get, for they seldom leave the hill on which they are grown, unless in heavy winds. At the time of their first appearance the vine is from four to six feet up the pole, the aphis continuing to increase and undergo the change as above till the last of July or first of August.

After the fly has arrived at the age of from two to three weeks, they begin to deposit lice on the under side of the large leaves, low down on the pole, where they are shaded, and ascend the pole as foliage affords shelter from the sun. The aphis cannot stand the heat of the sun without shade, as they die at once when shook from the leaf to the ground in the middle of the day.

The lice, being all females, commence laying live lice, if the weather is warm, when about eight days old, and when about fifteen days old have made a deposit of from fifteen to thirty each, when, by old age, or having fulfilled their mission, they die. Their colour when young is light green, and darker as they advance. The young grow up and go through the same process and transformation for about six generations in one season, the last being the one that damages the crop, as the former remain on the leaves, and while there I have not discovered that they do any particular damage except the amount of sap they take for support. But when the fruit is so far advanced as to be ripening off, it draws on the root for all the strength, the leaves begin to mature, and the lice are forced to leave them and go to the fruit to prevent starvation. Then the first damage shows itself, the hop assuming a watery appearance, then turning dark-coloured on the inside and looking as though struck with mildew (as some have seen fit to call it rather than say they have lice on their hops). I have seen acres spoiled by turning dark in six hours, through the effect of a heavy fog on a damp day. So far there has not been a male louse in the yard, but during the last of the picking season and the last generation, some flies are seen with wings about twice as long as their bodies. These are the males, and at this time impregnation takes place for the coming year. The last seen of them is on the ground, and they soon disappear, the impregnation passing through at least three transformations.

The young lice come from the mother backward, and walk off to a safe retreat at once. I have been unable to follow them through the winter. I have tried fumigating them with charcoal and sulphur, but the lice will stand more of it than the hops. The only remedy I know of is a cold storm from the first to the tenth of August, which will clean them out, every time, so that they cannot get in sufficient force to do any damage till the very last day's picking.—E. F. L., in *Rural New Yorker.*

Let me strongly advise the incorrigibly careless to have nothing to do with bees, either on my plan of management, or any other, for they will find both time and money almost certainly thrown away.—*Langstroth.*

Correspondence.

Capacity of Root-Cellar, &c.

"Teacher," writing from Fenelon Falls, wishes to be informed what space should be reckoned in building a cellar for roots, grain, &c. The capacity of the bushel is 2150 inches; hence the ordinary rule for estimating the number of bushels of grain in a bin is to multiply together the three dimensions of the bin in inches; and divide by 2150. The rule can, of course, be easily applied for the reverse proposition of calculating the space required for grain, as well as in reckoning the amount of grain in any given bin.

The rule for measuring corn in the ear is as follows: Measure the length, width, and height of the crib in feet; multiply these three dimensions together, and the product by 4; cut off the last right-hand figure; those to the left express the number of bushels of unshelled corn. If measured in inches, multiply the three dimensions together, and divide the product by 4,300 (twice 2,150, corn in the ear occupying twice the space of shelled corn or grain); the quotient will be the number of bushels.

In calculating for roots, it will be sufficiently accurate for all practical purposes to allow one cubic foot and two-thirds (1⅔) for each bushel, or 16⅔ feet (in decimals about 16.66) for every ten bushels.

An easy mode of reckoning will be to use the rule for measuring corn in the ear; to the quotient thus obtained add one-half the amount, and you will have about the quantity of bushels of turnips in the same space. For example, suppose:—

A space of 10 feet x 20 feet x 8 feet= 1,600 feet. Multiply by 4—6,400 feet. Cut off the right hand figure, leaving 640, the number of bushels of shelled corn. Add half this. 640 and 320 make 960, which would be about the number of bushels of turnips to allow for those dimensions. The relative bulk of corn in ear, roots and grain, may be calculated, in reference to the first, as half as much again as the second, and twice as much as the last. Thus, a space that would hold twenty bushels of unshelled corn would contain thirty bushels of roots, and forty bushels of grain.

Surfeited Pigs.

To the Editor.

SIR,—In answer to your Colchester, Nova Scotia, correspondent's question, (see CANADA FARMER, July 15, page 260,) I would say that almost any animal having grown "amazingly fast" for ten weeks is in danger of sickness. It argues over feeding; a fault a pig is naturally inclined to, and in this case was tempted to indulge the propensity.

I have wondered if the hog cholera, of which they complain out west in the United States, is occasioned by being fed exclusively on corn. I am of opinion, (but what is the value of an opinion?) that pigs require a mixed diet; that they are by nature omnivorous, that they require a portion of animal food, and, moreover, a mixture of good clean dirt with it. Horses are clean feeders, but they, and especially sucking colts, eat dirt with avidity when they can only get it at long intervals. Pigs eat dirt and grubs too, when, as in a state of nature, they live by grubbing.

Heavy losses have frequently resulted to the owners of breeding sows in consequence of keeping them penned up and confined to a diet of meal and milk, or slops.

Young pigs fed liberally with peas are subject to lameness; whether from being too stimulating, (hence inflammation), or deficient in phosphate of lime, (hence rickets), I cannot say.

Inference. Healthy stock is most likely to result from the use of a reasonable variety, and a liberal, but not immoderate, quantity of food.

BRAMLEY.

HEMP.—A correspondent who makes enquiries about hemp is referred to the number of the CANADA FARMER for March, 1869, where he will find a full account of the cultivation and preparation of this crop.

The Canada Farmer.

TORONTO, CANADA, OCT. 15, 1870.

The Provincial Exhibition.

The exhibition is over, and the most ungenerous of critics would hardly pronounce it to have been anything short of a most gratifying success. It has afforded to many thousands a most enjoyable holiday, and even the skies withheld the downpour that at one time seriously threatened to mar the pleasures of the occasion. But what is most of all a subject of congratulation is the undeniable proof that has been afforded of the steady and rapid advancement of the country in what most concerns its substantial progress and prosperity. It may not be uninstructive to review briefly some of the principal features of the exhibition, which best illustrate the spirit of enterprise and the growing intelligence at work amongst us.

Taking first of all the exhibition of live stock, the rapid advancement in the art of breeding and rearing is at once apparent. Every year affords a means of comparison; but if the show which has been held during the past week is compared with the one held at Toronto four years ago, the rate of improvement will be far more easily estimated. The country has been immensely indebted to those persons who have boldly speculated in the importation of stock from Europe, and from whose efforts the whole country is now deriving a marked benefit. Prices ranging from six to seven thousand dollars for a single animal, and, in addition, all the risk and cost of transportation, have been paid, and the result is that both in thorough-bred stock and in "grades," the results have been such as to astonish not only our own countrymen, but Americans who have resorted to the exhibition. In imported and home-bred animals proof has been afforded that the first risk and outlay have been wisely and profitably incurred. When we hear of such prices as $775 being paid for a nine months' old heifer we see what an impetus has been given by the introduction of first-class stock. There is no doubt that Canada is admirably adapted to this branch of industry, and that a large and profitable business is springing up in stock raised in this country from imported cattle.

Good mutton is not to be despised, and there is yet room for improvement in the breeding of sheep for the consuming markets. The display, however, of those on which we rely for our home supply of wool was very encouraging.

Not less so was the exhibition of pigs, although limited, probably through the want of due care in the arrangements made for their accommodation. It was difficult to realize, as one passed the pens of Berkshires, Suffolks and other well-known English breeds, that the ground one trod was that of a transatlantic Colony, separated by 3,000 miles of water from the mother country. Before these comely importations, the long-legged, long-snouted aboriginal porker is fast disappearing. There is an opening for a vastly increased export trade in pork, and too much encouragement cannot be given to the careful raising of the most profitable description of hogs, a matter, by the way, not hitherto sufficiently appreciated by many of our farmers.

In the improvement of the breed of horses, as well as in the importation and raising of cattle, it was evident that a spirit of enterprise had been at work, and with equally satisfactory results.

Nor in developing the productions of the soil is Canada destined to stand second to any other country. Apples that have no rivals, luscious pears that will stand comparison with any produced in Europe, and grapes approaching very nearly to perfection, afforded specimens of what in autumnal fruits this country is

already capable of doing. In grain, in field roots, in the many varieties of the gourd tribe, in garden vegetables, and notably in potatoes, the prolific nature and adaptability of the soil was splendidly illustrated.

The many ingenious machines for lessening and assisting farm labour found crowds of admirers, and gave the most conclusive evidence of the growing intelligence brought into play in connection with economic agriculture.

What is wanted, however, both as regards agricultural machinery and other mechanical inventions is a longer term for their exhibition. We suggested on a former occasion that arrangements might be made for a show of this description, which should extend over three or four weeks, and thus repay the owners for the cost and trouble of moving and fitting their machinery. It would have the effect probably of inducing a much larger number to exhibit, besides affording a far better opportunity for study and examination. An exhibition of machinery and manufactures at Toronto, commencing say on the first of September and being open for a month, would aid rather than detract from the Provincial exhibition in October.

Perhaps in conjunction with machinery and manufactures a stimulus might be given to Art by combining an exhibition of pictures. It must be a very poor picture indeed that does not attract some one, and the crowd in the north wing showed how much interest its contents excited. But, taken individually, there was really nothing of a particularly striking character to be seen there. Nothing, that is, on which an artist appeared to have laboured to show how much real genius he possessed. The collection had too much the appearance of a number of friendly contributions rather than of competing works of art. Professional artists are doubtless much engaged in the work of instructing others, and amateurs of sufficient talent to make a striking display, are necessarily few in number. But, having regard to the immense and direct influence the painter's art has on the mind of a nation, it would be well to consider by what means any existing defects in this department may be most effectually remedied and higher efforts successfully encouraged.

Passing over the very creditable exhibition of miscellaneous articles, there are two other sections which possess a certain domestic interest: the Poultry and the Apiarian departments. Of the first, although some good specimens were exhibited, it must be acknowledged that, on the whole, it was a failure. Several of the leading breeders were not represented at all, and both in quality and variety the show was this year certainly wanting. So much innocent pleasure and amusement are to be derived from poultry-keeping that it cannot be too generally encouraged.

Bee culture in Canada may be said to be in its infancy. But no one, who listened, either to the discussions of the apiarians in convention, or to the conversation going on around the exhibited hives, could fail to be struck with the great earnestness of the "bee-masters," or the actual love they feel for their avocation. As a source of commercial profit as well as amusement, bee-culture should be promoted as extensively as possible.

In thus reviewing briefly the impressions the Exhibition has created on our mind, it is, of course, necessary to remember that all this marvellous display of industry, intelligence, and energy, is shown in a country that has none of the advantages which great territorial proprietors or vast accumulations of wealth are able to afford to the arts and agriculture of Europe. What we see is the honest result of hard-handed toil, of thought quickened by necessity, or of single-handed enterprise. If we consider under what difficulties, and in how short a time so much has been achieved, we shall be able to form a just idea of the natural gifts of the country, and the sturdy resolution of its people.

The Colorado Potato Beetle.

In another column the reader will find an article on this most destructive insect from the *American Entomologist*—a well-known scientific journal edited by Mr. C. V. Riley, the accomplished State Entomologist of Missouri. The writer, in warning us of the terrible devastation to which we are exposed, proposes a mode of prevention which, we think, ought to be adopted by our Minister of Agriculture, namely, that a price should be set upon the head of the pest, so that a premium should be offered for every hundred, thousand, or ten thousand, captured in Canada, and duly sent in to some competent examiner. As the Fruit Growers' Association have proved in the case of the Plum Curculio, people will willingly adopt measures for the collection and destruction of a noxious insect when they are given so much per hundred for all they put to death, while they will not go to the same trouble for the sake of reaping a far higher reward, the salvation of their crop of fruit, or whatever it may be. We have no doubt that if Mr. Carling would offer to pay a dollar a hundred, or—if that is too much—a couple of dollars a thousand, for all genuine Canadian specimens of the Colorado Potato Beetle, the spread of the pest would be very greatly checked, if not altogether stopped.

Another mode of prevention that we also desire to urge very strongly upon the Government and the inhabitants of the western part of this Province, is the marking off of a tract of country about ten miles in width, all along the border line between the foot of Lake Huron and the head of Lake Erie, with the exception, possibly, of a portion of the eastern shore of Lake St. Clair, and stopping the culture of the potato throughout that whole tract during the prevalence of the pest in the neighbouring State of Michigan. This may seem a hard measure, and too much to demand of the people of that region; but is it not better that they should buy their potatoes for a season or two, than that they should lose their whole crops for years to come, and allow this pestilent creature to desolate the whole Dominion from Sandwich to Gaspe? To mitigate the privation, it might be advisable to allow any one within that region to grow not more than a quarter of an acre for household use, on the condition that if should be isolated from any other potato patch, and that the owner should guarantee to carefully destroy every Colorado beetle that alights upon it. The very least that should be done in the emergency is this restriction of the growth of the crop to small isolated patches, such as can be attended to with a reasonable hope of keeping the insect in check. Large areas it will be next to impossible to protect.

To carry out these regulations in thorough strictness—for nothing else will do—trustworthy persons should be appointed, with proper instructions, in every municipality throughout that portion of the country. But "what a frightful expense," says the ratepayer. Yes, it will be an expense, and it is a serious matter. Were the cholera, however, raging on our borders, should we not go to some expense to ward off the infection from ourselves? If the cattle plague threatened us from Michigan, would not some stringent regulation be adopted to prevent its crossing the border? Were one quarter of a town in flames, would we not willingly blow up or tear down a belt of houses to prevent the spread of the devouring element? And why not take similar measures of prevention to keep off from our country a foe whose ravages will surely prove as serious a pecuniary loss as any cattle plague or raging fire? If you do not believe it, visit the States of Iowa, Wisconsin, Missouri, Illinois and others, or ask their inhabitants, and you will soon learn the terrible powers of this beetle, and shudder at the thought of its approach.

"Prevention is better than cure." It is far easier, far cheaper to keep the insects out, than to check them when once established in the country.

Notes on the Weather.

During the greater part of September, the rainy character of the season has prevailed, which was very embarrassing to harvest operations. The amount of damage done varies much in different localities. From some quarters accounts reach us of good crops gathered in fair condition, whilst others report small yields or great loss in harvesting. But taking the Province as a whole, the returns will show about an average production of grain, while root crops and fodder will probably be abundant. The meadows and pastures have presented, in consequence of the warm and showery weather, a most unusual greenness of aspect, more resembling the verdure of English fields than the ordinary bare or burnt condition of the land towards the close of our Canadian summers.

The following notes are compiled from the records of the Toronto observatory :—

The mean temperature of the month was 62.4, being 4.4 higher than the average, and 1.7 warmer than September, 1869. Its average temperature was higher than that of any similar month in thirty years, with only two exceptions, namely, 1846 and 1865, which were respectively 63.4 and 64.5.

The highest temperature occurred on the 1st—78., and the lowest on the 20th—45.8.

The quantity of rain was greatly in excess of the usual rain-fall, being 6.794 (average of of 30 years being 3.694). Of this amount 2.285 inches fell on the 15th and 1.200 inches on the 30th. The number of rainy days were eleven, differing only slightly from the usual number. The amount of cloudiness was about the average, and the numbeo of clear days 8; partially clear 15; clouded 7.

Thunder-storms more or less severe occurred on the 3rd, 9th, 15th and 25th, and lightning alone on the 1st, 2nd, and 8th.

The prevailing winds have been from the north and east.

Influence of Cities on the Atmosphere.

Alkali and other chemical works on an extensive scale are more or less found in or near all manufacturing towns in England, and in order to prevent or rather mitigate their deleterious influence on the public health, an Act of Parliament was passed a few years since, subjecting all such works to official inspection. In Dr. Angus Smith's last report, much interesting information is contained as to the effect of large cities, and especially of factories, in contaminating the atmosphere. The following extracts express some of his principal conclusions :—

The rain from the sea (Western Islands) contains chiefly common salt, which crystallizes clearly.

The sulphates increase inland before large towns are reached.

The sulphates rise very high in large towns, because of the amount of sulphur in the coal used, as well as decomposition.

When the air has so much acid that two or three grains are found in a gallon of rain-water, or forty parts in a million, there is no hope for vegetation in a climate such as we have in the northern parts of the country.

Free acids are not found with certainty where combustion or manufactures are not the cause.

Experiments in the direction indicated above may enable us to study and express in distinct language the character of a climate, and certainly of the influence of cities on the atmosphere.

In Manchester, in 1867, the maximum acidity of the rain was 7.39 grains per gallon, and the minimum 0.31.

The total acid in rain collected from various sources bears the following relationship :—

Row. Dumbartonshire.....	100.00	= 1
Whiston, ten miles from Liverpool	470.67	= 4⅔
Birkenhead	528.29	= 5¼
Liverpool	938.21	= 9 2·5
Waterloo, on the shore	961.98	= 9½
Newcastle on Tyne	1051.73	= 10½
Manchester	1175.54	= 11⅔
Near an alkali work .	...1539.27	= 15 2·5

We can scarcely be surprised, after glancing at this table, at the rapid decay of stone in certain localities, compared with others, and the long endurance of buildings of antiquity which are far from large towns, and in a pure and open air, such as the Parthenon and Pyramids of Egypt.

Alkali works liberate free acid, which is brought down in rain solution, to the great injury of vegetable life. Large brickfields have often been found particularly deleterious in this respect, and to destroy even trees in the direction of the prevalent winds.

PRIZE LIST.—We defer, as usual, the publication of the award of prizes at the Provincial Exhibition till the list has been officially revised. In our next monthly issue we hope to give it complete and accurate.

THE PLEASANT VALLEY FRUIT AND WINE REPORTER is the title of a new semi-monthly paper, published at Hammondsport, N.Y., under the editorial care of A. L. Underhill, Esq, assisted by an able corps of associate editors, at the subscription price of one dollar per annum. The first number is a very handsomely illustrated eight-paged sheet, full of valuable information concerning grapes and wines, to which subjects it will be specially devoted. This new branch of industry is making great progress in America. We learn from this initial number of the *Fruit and Wine Reporter* that the capital invested in the manufacture of wines in that locality is eight hundred thousand dollars, and the vineyards are estimated to be worth two and a half millions of dollars, and give employment in the various departments to some two thousand persons. The average annual yield per acre, taking the whole acreage in bearing, is three thousand pounds. The vines that have been planted are more than half of them of the Catawba variety, about one-seventh Isabella, and about one-fourteenth Delaware, and the same of Iona. Very few Clintons have been planted, and it is thought by those competent to judge in these matters, that the Clinton has not been sufficiently prized. It is expected that the crop this year will not fall short of six thousand tons, selling to the wine cellars at ten cents per pound. We wish the Pleasant Valley *Fruit and Wine Reporter* every possible success, and shall be happy to place it on our exchange list.

Poultry Yard.

Poultry Keeping on a Large Scale.

The difficulty and frequent failures in keeping a large number of poultry in one spot has often been discussed in these columns. In England the attempt has failed; in France, a very few successful examples have been reported. The only hope of overcoming the difficulties of the enterprise appears to be in *giving the poultry a widely* extended range. On this subject the experience of Mr. Warren Leland, of the Metropolitan Hotel, New York, as given in a recent meeting of the New York Farmers' Club, and published in several of our American exchanges, is interesting and instructive. He says:—

"I have found that for every hundred fowls you must give up at least an acre. But rough land is as good as any. Hens naturally love the bush, and I lop young trees, but leave a shred by which they live a year or more. These form hiding places and retreats for them. In such places they prefer to lay. I have great success, and it depends on three or four rules, by observing which I believe one can make a good living by hens and turkeys.

"1. I give my fowls great range. Eighteen acres belong to them exclusively. Then the broods have the range of another big lot, and the turkeys go half a mile or more from the house. The eighteen acres of poultry yard is rough land, of little use for tillage. It has a pond in it and many rocks, and bushes and weeds, and sandy places, and ash heaps, and lime and bones and grass, and a place which I plough up to give them worms.

"2. When a hen has set I take her box, throw out the straw and earth, let it be out in the sun and rain a few days, and give it a good coat of whitewash on both sides. In winter, when it is very cold, I have an old stove in the house, and keep the warmth above freezing. There is also an open fireplace, where I build a fire on cool wet days. They dry themselves, and when the fire goes out there is a bed of ashes for them to wallow in. Summer and winter my hens have all the lime, ashes, and sand they want.

"3. Another reason why I have such luck is because my poultry yards receive all the scraps from the hotel. Egg-making is no easy work, and hens will not do much of it without high feed. They need just what a man who works requires—wheat bread and meat. As to breeds, I prefer the Brahmas, light and dark. I change the cock birds every spring, and a man on the farm has no other duty than to take care of my poultry. I have often 3,000 spring chickens."

Classification of Fowls.

W. B. Tegetmeier, the well known English writer on poultry, writes to the London *Field* as follows :—

The question, What is the best breed of fowls? is often asked. It is, however, as difficult to reply to as would be the query, What is the best kind of horse or dog? Before it could be answered, the requirements of the inquirer must be stated, and all the particulars respecting his conveniences for poultry-keeping taken into account.

In the *American Agriculturist* for June, 1870, an attempt has been made to give an extended classification of fowls, arranged according to their merits, regarded from different points of view. This is not exactly in accordance with English experience, and therefore in place of copying it verbatim, I present an arrangement of my own, freely acknowledging my indebtedness for the idea to the above-named journal :—

A. Prolificacy. -- Non-sitters — Hamburghs, Leghorns, Spanish, Houdans, Crevecœurs, and Polish. Sitters Brahmas, Cochins, Dorkings. (For winter layers, Brahmas and Cochin pullets are superior to all others.)

B. Value for Table.—First-rate table fowls for market—Dorkings, La Fleche, Houdan, and Crevecœurs. For home-use—Cross-bred Dorkings and Brahmas, cross-bred Crevecœur and Brahma, Brahmas, Cochins.

C. Hardihood.—Hardy – Brahmas, Cochins, Houdans, Leghorns. Hardy, if with unlimited range — Spangled Hamburghs, Game, Crevecœurs. Delicate - La Fleche, Dorking, Polish, Sultans.

D. Size of Eggs. Layers of large-sized eggs—Crevecœur, Spanish, Houdans, La Fleche. Layers of medium-sized eggs– Leghorns, Cochins, Brahmas, Dorkings, Polish, Game. Layers of small eggs Hamburghs, Bantams.

E. Size of Birds.—Large—Brahmas, Cochins, Dorkings, La Fleche, Malays, Crevecœur. Medium Spanish, Leghorns, Polish, Game. Small—Hamburghs, Sultans, Silkies. Diminutive– Bantams.

F. Activity. -- Active fowls — Hamburghs, Game, Game Bantams. Less vivacious—Spanish, Leghorns, Dorking, &c. Very domestic and quiet—Brahmas, Cochins.

G. Incubation.— Good sitters — Brahmas, Cochins, Dorkings, Game, Farm-yard fowls, Bantams, Silk Fowls. Non-sitters— Hamburghs, Spanish, Leghorns, Polish, French Breeds.

This arrangement is probably correct in the main, though perhaps in some respects the experience of other breeders may not exactly accord with my own

Rearing Young Turkeys.

Young turkeys are almost proverbially delicate, and many persons have so great a fear of the trouble and uncertainty of rearing them, that they will not make the attempt. I believe that turkeys, with proper management, can be raised as easily as chickens, and with as great a degree of certainty.

I have known poultry women who have reared them for years in succession without losing a single chick, whilst in other hands fifty per cent. or more have gone to the bad.

My own method of procedure is to follow nature as far as possible. I make my turkey nests on the ground; or if in a paved house, in large shallow boxes half filled with mould that can be damped at intervals. The hens, unless they come off regularly, are lifted off to feed, and then supplied with grain with a liberal hand.

When the young ones are hatched they are left undisturbed under the hen until the next day. No attempt is made to cram them; an absurd practice, which interferes most injuriously with the due digestion of the yolk that is absorbed into the intestines at birth, and constitutes all the food required for twenty or thirty hours after hatching.

The first food given them is egg beaten up with an equal bulk of milk, and baked into a soft custard; this is alternated with crumbled bread mixed with milk, to which oatmeal is added in a gradually increasing proportion. Ants' eggs are given if I can get them, but if not the custard is continued for a fortnight or three weeks. Quite as important as any other part of the dietary of young turkeys is the supply of green food, and many persons chop up nettles, onions, etc., with the meal; but if young turkeys are watched when grazing, it will be observed that they prefer eating bitter herbs belonging to the natural family *compositæ*, or compound flowered plants, such as the dandelion, etc. The common lettuce belongs to the same tribe, and I have this year fed largely on it. The greediness with which young turkeys devour this plant is remarkable. At three weeks old a dozen turkey chicks will eat four or five large lettuces in a day, and they even seem to prefer them when running to seed, at which time there is abundance of bitter milky juice in the plants. At the age of a month they will begin to peck a few grains of wheat or barley; but bread and milk, and meal, should form the staple of their food for the first two or three months of their lives.

Most persons say that young turkeys are particularly delicate when they are "shooting the red." This is not to be wondered at when it is remembered that they are generally put on whole grain, without milk, long before they arrive at that age, and suffer accordingly.

Another point of the highest importance in feeding turkeys, or young birds of any kind, is the hour at which they get their first repast. If the birds have their first meal deferred until long after daylight, they have been hungry for two or three hours, and suffer very much.

To be successful in rearing these, or any other young birds, they must either be supplied over night with their first meal, or the poultry maid must be up with the lark. There is no better plan than putting the hen and chicks, for the first month or two, in a closely wired aviary at night, which is open to the early sun, and lettuce and a good supply of soft food can be put under a coop, so that the hen cannot eat it, and there will be found but little left an hour after daybreak. —W. D. Tegetmeier in *London Field*.

Apiary.

Artificial Impregnation.

We are glad to know that some of our Canadian bee-keepers are turning their attention to artificial impregnation of queens. We have succeeded once in three cases tried this season.

J. Maitland, Kilmarnock, writes as follows :—

"I succeeded in introducing the Italian queen received from you all right; her brood is nice and bright; am well pleased with her. The Italian bee, when pure bred, appears milder in disposition than the black bee. I cannot say so with the hybrids.

"I am trying to breed queens and have them impregnated in confinement, on Mrs. Tupper's plan. I have not proved it out as fully as I expect to this season, but I have plans working which I think will test the matter beyond dispute.

"About two weeks ago I took two young queens out of my impregnating boxes and put them into hives about five miles away, where there are none but black bees kept. If they produce pure Italians it will be another proof of the system. A few days since I had the bees and queen leave one of my nucleus hives—no doubt for want of brood in the hive. I succeeded in catching the queen, placed her in the impregnating box, where I kept her for about 48 hours, and returned her to a nucleus hive; in 2½ days she was laying eggs.

"I had also a queen bee hatched without any wings. I tried the experiment with her, but when I was returning her to the nucleus hive, a bee stung her and she died. I was pretty sure she had been impregnated, as I found two dead drones. I am continuing the process, perhaps I may get another wingless queen ere long."

It is not necessary to remove the small hives away if they have plenty of honey. The queens can be returned to the hive, and all the bees kept confined until she lays.

Productive Honey Season

Mr. Wells, of Thurlow, writes :—"With reference to last year's yield of honey, I can fully endorse the remarks of Mr. J. H. Thomas in your journal. Comparing my returns this year with those examples of productiveness cited in his article, I find that mine are even more favourable.

"Fifty-eight stocks in the spring, and one half of them nearly starved, owing to the poverty of the previous year, have given me an aggregate of one hundred and two stocks, all in good condition. The yield from these for the season has been over 2,700 lbs. One stock alone netted over 150 lbs., from the top of the hive, and in addition a large swarm, from which in turn I got two boxes of 14 lbs. each. The Italian bee I find an excellent worker."

Beware of Humbugs.

I have been informed that some unprincipled fellow is travelling through the township of Clarke, imposing upon bee-keepers, and taking their money for instructing them how to remove the honey from the hive, and still have the bees do well, by giving them a compound or preparation made up by himself. It appears that he avoids or passes by the more intelligent bee-keepers, and plays his "little game" with such as are not well informed in bee culture.

I have repeatedly called attention to these unprincipled fellows in this journal, and warned bee-keepers against having anything to do with them, and I again repeat the warning, for every stock so treated is ruined, and every five dollars paid for such a process is worse than lost.

J. H. THOMAS.

Whence Came Our Honey Bees?

That our common honey bees are of foreign origin is universally admitted; but it is still a matter of dispute whence they came, or when they were introduced; though it is generally supposed that they were brought from England. Those in the Eastern States may have been thence derived; but we doubt whether those in the Middle States came from the same quarter.

In a pamphlet republished in the "Historical Magazine," Vol. VI., September, 1862, page 268, entitled "Good Order Established" in Pennsylvania and New Jersey, in America, by Thomas Budd, originally printed in the year 1685, occurs the following passage, referring to those then colonies:

"Bees are found, by the experience of several person that keep them, to thrive very well."

Hence it is obvious that bees must have been kept in Pennsylvania and New Jersey long enough prior to the close of 1685, to make the term "experience" applicable to those who kept them. It is also well known that bees were abundant, even in the forests of Pennsylvania, while they were yet comparatively rare in New England, where they were introduced from the "mother country" in 1680. They must thus have been derived from a distinct importation, if not from a different stock. We incline to the latter conjecture, and for this reason: We know that the bees in the Middle States were free from the ravages of the bee moth till about the year 1805, and that this pest came thither from New England. How long the insect existed there, before it became so devastating as to attract the notice of bee-keepers, is not known; but its progress south and west is traceable, and establishes the fact that it was a stranger south of the Hudson. Though not noticed early, it was doubtless imported with the first bees carried to New England, for it is a fact that importations of Italian bees, whether made from Italy direct, or from Germany, always bring with them the moth or the miller, or both. This we believe is invariably the case. We are credibly informed that the trunk and wardrobe of Herman, who accompanied the stocks imported by Mr. Parsons, of Flushing, were thus infected; and observation shows that it is so common an occurrence that it may be regarded as invariably true. It follows, we conceive, that the bees of Pennsylvania and the Middle States came from a country where the bee moth did not exist. That country, and the only country in Europe thus free and having early communication with the New World, is Sweden; and the Swedes and Finns had settlements in Pennsylvania and Delaware as early as 1627. Mead was their favourite beverage; and they would certainly be likely to carry with them, in their emigration, the means of supplying themselves with it, and would thus introduce a bee *not troubled with the moth. They* could do this, and emigrants from no other country could; for the bee moth was not known in Sweden till within the last twenty years—the desire to possess the Italian bee having carried that baneful pest thither also.—EDITOR *American Bee Journal.*

Poetry.

Sword and Plough.

FROM THE GERMAN OF WOLFGANG MÜLLER.

There once was a Count, so I've heard it said,
Who felt that his end drew near;
And he called his sons before his bed,
To part them his goods and gear.

He called for his plough, he called for his sword—
That gallant good and brave—
They brought him both at their father's word,
And thus he his blessing gave:—

"My first born son, my pride and might,
Do thou my sword retain,
My castle on the lordly height,
And all my broad domain.

"On thee, my well-loved younger boy,
My plough I here bestow;
A peaceful life shalt thou enjoy,
In the quiet vale below."

Contented sank the sire to rest,
Now all was given away.
The sons held true his last behest
E'en till their dying day.

"Now tell us what came of the steel of flame,
Of the castle and its knight,
And tell us what came of the vale so tame,
And the humble peasant wight."

Oh ask not of me what the end may be,
Ask of the country round:
The castle is dust, the sword is rust,
The height but desert ground.

But the vale spreads wide, in the golden pride,
Of the autumn sunlight now,
It teems and it ripens far and wide,
And the honour abides with the plough.

Household.

Preserving Eggs.

A sensible writer in the *Western Rural* gives several methods of preserving eggs, as follows: -We have tried several modes and never found any difficulty in keeping eggs any desired length of time for culinary purposes, seemingly as good and fresh as when first laid. Our principal mode has been that recommended by Mons. Chas. Jacque, which, from several years' experience, proved one of the best we ever tried; having succeeded in keeping eggs nice for use from six to eight months after they were laid. He says:—The most certain and most lasting mode of preservation consists in covering the eggs in a jar filled with lime water, recently prepared, and keeping them in a cool place. The lime water is prepared from quick lime r that which has been slacked but lately, by placing it in a quantity of water greater than would cover the eggs. The milk of lime which is thus formed is allowed to stand several hours. The clear liquid which separates itself from the excess of lime used is the lime water, which is poured off for use. Lime water not only prevents the evaporation, since the eggs are plunged in the liquid, but the alkali which it holds in solution closes the pores of the shell, and prevents all fermentation, either of the eggs or of the organic matter which the water might contain."

We have had good results also from packing eggs in very dry barrel salt, which have kept for months in a well preserved state. Our mode was to stand a box or stone jar in a cool place in the cellar, put therein a layer of salt, then one of eggs, with the large ends downward, taking care that the eggs did not touch one another; continue this practice until the jar or box is full; cover the box, and let it stand without disturbing until the eggs are needed for use. We have packed eggs in this way in June and July, and found them in January and February perfectly fresh in looks, and having no stale or musty taste when brought to the table.

HOW TO MAKE OLD SALT PORK AS SWEET AND TENDER AS FRESH PIG'S MEAT.—There is no humbug about this, though it may look like it. We have tried it, and we know the person who discovered it, Mrs. Washington Champion, who thus has fresh, tender meat the year round. It is simple, but requires some labour. The principle has been approached before. The thing is done by boiling and frying alternately, and finishing off with sweet milk, boiling and frying also. Here is the receipt: Boil slowly in several waters till sufficiently freshened. Then boil in another water till reduced to a fry. The frying should not take long—about fifteen minutes. Fry for a while till about half done or less, so as to get the water well out, else it will be snappish thereafter. Turn off the fat and pour on sweet milk, which boil down another fifteen minutes, and finish by frying brown. Now you have something that is perfectly tender; the oil is not all fried out, as is the case with some meat. The lean is tender with the rest. Pork even tainted or otherwise objectionable, may thus be treated to great advantage. Will each house-wife that reads this receipt try it, and get the benefit of it? It is no humbug.—*Country Gentleman.*

Agricultural Intelligence.

Provincial Exhibition.

The twenty-fifth annual exhibition of the Provincial Agricultural and Arts Association of Ontario was held in Toronto during the first week in October The weather previously had been wet, and on the opening day of the Fair (Monday) rain came down with scarcely any intermission, making the ground nearly everywhere muddy and swampy. But the succeeding days, though not bright, were fair, and the show was a complete success. The following record is compiled from the reports made each day, and consequently describes the events as transpiring rather than past. The account here given is also confined to those departments which are of more immediate interest to the agricultural reader.

HORSES.

BLOOD HORSES.

As in former years there are only a very limited number of entries in this class. The show of blood horses at our Provincial Exhibition presents a rather unfavourable comparison with other classes, more especially as regards numbers. We consider the show of blood horses as a class only middling, although there are a few very good specimens of the blood horse exhibited. The class for aged stallions presents the largest numbers of entries, and several valuable and well-known animals are shown, as "Jack the Barber," by "Vandal," a favourite Canadian sire; "Extra" by "Endorser," out of "Natura.' "Extra" is very well bred, and was a first-class racehorse, and three years ago he left Kentucky for the sum of seven thousand five hundred dollars. Such a fine horse must prove a desirable acquisition to this country. In the list of entries is the old horse "Kennet,' who has competed successfully in former years, but in the present exhibition we expect he will have to succumb to younger competitors.

In young stock the entries are very few indeed, and the principal exhibitors are the Messrs. White, of Bronte, Mr Shedden, of Toronto, and Dr. Morton, of Bradford. The Messrs. White always compete largely in this class. Among the young animals our choice is the colt by "Lightning" out of "Vinnie Ream;" he is a beautiful bay, of fine size and action, and shows many of the fine points of his illustrious sire, and, judging from present appearances, he cannot fail to be a race horse. Mr. Shedden also shows "Julia Adams, with a handsome colt at her foot by "Thunder."

Although several of our enterprising agriculturists and breeders are certainly deserving of every encouragement for their importation of blood stock, there is yet great room for improvement. We have quite enough of thoroughbred stallions throughout the country; our deficiency consists in the limited number of well-bred mares. Many of the mares at present used for breeding purposes have been put to the stud after a severe racing campaign of a number of years, thereby becoming enervated and in a great measure unfitted for successful brood mares. We believe it would be well worth the attention of our breeders, and also well repay the outlay, to import pure bred and young mares of good size, and put them to the stud before being weakened by severe training and racing. No doubt the raising of half-bred horses proves profitable in many cases; but the thoroughbred will always command the highest price, if he has size and style. Our severe climate may somewhat militate against the proper development of the thoroughbred, as compared with milder climates, such as Kentucky, Virginia, &c.

The show of heavy draught horses has never been excelled at any previous Exhibition held in this Province, and the turn out of to-day, both as regards excellence and numbers, amply testifies to the fact that Western Canada possesses the finest heavy draught horses to be met with on the continent of America. Of late years breeders have been stimulated by the large prices realized for horses for the New York and other markets. A great many of the horses shown have been imported from England and Scotland, and Canadian enterprise has always secured the best specimens. In the class for stallions, four years old and upwards, there are twelve entries, and nine of these are imported. Mr. Kemp, of Weston, again exhibits the beautiful bay horse, "England's Glory," one of the finest horses of his breed. He is the winner of several first prizes at the Provincial Shows, and although only five years old, he weighs upwards of twenty-one hundred pounds. Mr. Robert Ferris, of Richmond Hill, shows his four year old horse that gained the first prize at London last season. "Sir Walter Scott," the property of Mr. Porter, of Darlington, is again on the grounds. Mr. Buckland, of Guelph, shows a very fine young horse, bred by Mr. Wilson, of Bayham Hall, Suffolk, England. We believe the show of aged stallions cannot be surpassed at any exhibition in Britain.

There are eight competitors in the three-year old class. Mr. Jas. Lawrie, Scarboro, shows his two imported horses, "Tinto" and "Farmer's Fancy." They are both fine specimens of the Clydesdale, and were bred by that well-known breeder, Mr. Muir, of Hardington Mains, Lanarkshire, Scotland Mr. Kitchen, of Whitby, shows a very fine Canadian bred horse, equal to many of the imported ones.

There are twelve two-year old stallions shown. Mr. Duncan McConnachie exhibits his grey colt, that gained the first prize as a yearling. He is a very fine young horse of perfect symmetry. One of the finest young horses at the exhibition is the two-year old colt, the property of Mr. Ferris, and imported two weeks ago from Scotland. This colt is one of the best ever imported into this country, he gained the second prize at the Highland Agricultural show, in July last, and he is likely to be placed in the first position here. Mr. Simon Beattie exhibits a very stylish colt, bred by Joseph Hope, of Cumberland, England. Mr. John Leith, of Clarke, Mr. McFarlane, of Pickering, and Mr. Morrison, show very good horses.

Of yearling colts there are five entries. Fourteen fillies are exhibited, five three-year olds, six two-year olds, and three yearlings. Mr. Jeffrey, Whitby, shows a filly by Conqueror that is likely to be placed first in her class. Mr. Davidson, of Pickering, has his filly that gained the second prize at London, and Mr. Neal Taylor is again present with the filly that gained the first prize as a yearling last season. In this class the well-known breeder of horses, Mr. Beith, of Darlington, is also an exhibitor.

There are twelve brood mares exhibited. Mr. McConnachie shows two, both bred by exhibitor, one of them is a superior animal and will be hard to beat. Mr. Beith, Mr Davidson, and Mr. Crawford, also exhibit excellent mares.

In section ten, Mr. Hendrie, of Toronto, shows a pair of handsome grays, and Mr. Simon Beattie a pair of imported Suffolk mares, five year olds—their combined weight being upwards of thirty-four hundred pounds. D. McLean, York, and Morrison, Scarboro', also show very fine teams.

On Wednesday the Judges commenced their task of judging the blood stock. The entries being few there was very little difficulty in deciding the prizes. Dr. Morton gained the first prize for aged stallions, with the chestnut horse "Extra," who also received the diploma for the best horse of any age. Mr. Shedden's colt, by "Lightning," was much admired, and received the first prize in his class.

The road and carriage horses were the next on the list, and in the section for aged stallions there were twenty-six entries. The horses exhibited were mostly superior animals, and the Judges experienced considerable difficulty in deciding. Mr. Orr, of Georgetown, was again successful with his horse by "Whalebone," who was also placed first on the list at the London and Hamilton Exhibitions. He is a very fine horse, possessing size, strength and action. Mr. Buckland, of Guelph, exhibited an imported coaching horse, of good style and symmetry, and bred by Mr. Harrison, of Yorkshire, England. This horse, although it was a splendid animal, failed to secure a prize. In the class for three year olds, the well-known importer of valuable stock, Mr. Simon Beattie, showed the imported horse "Grand Turk," a very promising horse, of superior style and action.

The two year olds and yearlings were quite a show of themselves. Mr. Simon Shunk, Vaughan, gained the first prize with his yearling colt, by "King Tom" Messrs. Lake & Fraser, of Fredericksburg, showed a pair broke to harness. The Association's Diploma for best stallion of any age, was awarded to Mr. Orr's horse

In the class for French Canadian stallions there were six animals exhibited. Mr. R. Wells, of King, secured the first prize with an exceedingly handsome horse, of perfect build and action. Mr. Sylvester, of Scarboro', was awarded a prize for his horse "Montreal Telegraph." The road and carriage fillies were numerous, and some most excellent animals were exhibited.

Immediately after the prizes had been awarded in this section, the prize animals were paraded around the Judges' stand, and minutely inspected by His Excellency the Governor-General, and also by the Lieutenant-Governor, both of whom seemed much pleased with the handsome show of horses.

The matched pairs of carriage horses, although very good, were not equal to the show of some former years, this year they were arranged under two sections, the one for horses sixteen hands and upwards, and the other for horses under sixteen hands. When placed under the standard, only three of the competing teams were found to stand the measure

Mr Grand, of Toronto, and Mr. Carpenter, of Whitby, showed two very good pairs of heavy carriage horses.

For horses under sixteen hands, a pair of handsome and good stepping greys were awarded the first prize. Of single carriage horses there were upwards of forty entries, and as in the preceding section the show was not quite equal to that of last year's Provincial.

There were sixteen saddle horses entered, and the first prize was awarded to a handsome chestnut mare, the property of A. Smith, V. S., Toronto. In this class Mr. Hendrie, and Mr. Leys of Toronto, exhibited very fine ani-

mals. After the saddle horses were shown, the ponies came forward, and considerable amusement was afforded the spectators by a good contest of speed between two diminutive specimens of the equine species.

AGRICULTURAL HORSES.

The Province of Ontario cannot be surpassed for horses of the above description, and the exhibition of the agricultural horses proves highly attractive to the farming community. The first on the list is the aged stallions, twenty-one entries. In this section the judges had a difficult and arduous task to perform, as a number of the competitors were very evenly matched. The red ticket was given to a brown horse by "Coachman," the property of Mr. Coulter, of Brampton. The winner of the first prize stands over sixteen hands high, with strong back and fine head, and action like a carriage horse. Mr. Crawford, of Scarboro, showed a very useful looking animal. Two or three of the animals shown appeared better fitted for the heavy draught than this class.

The judging of the horses was finished at noon Thursday. The show of heavy draught stallions was particularly fine. England's Glory was awarded the first prize, this being the third year he has gained a first prize at the Provincial. In the three-year old class Mr. Mason, of Tuckersmith, Huron county, gained the first prize with his brown horse bred by Mr. Green, Lincolnshire, England. Mr. Mason's horse is a perfect model of symmetry.

In the two-year old class the chief attraction and winner of the first prize was Mr. Robert Ferris's recently imported colt A. 1, bred by Mr. Kerr, of Castle Douglas, Scotland. As we formerly mentioned it was the general opinion that this colt was the best specimen of the heavy draught on the ground.

The colt stands nearly sixteen hands high, is a beautiful brown, with a white stripe on the forehead, long rangy neck, short back and powerful loins, and is an excellent mover for a horse of his class. Such a valuable animal is likely to prove of great benefit to the stock raisers of this country, and we are sure Mr. Ferris will meet with that encouragement which his enterprise deserves. When the three winners—Mr. Mason's horse, England's Glory, and Mr. Ferris's colt—came together to compete for the diploma for the best stallion of any age, the Judges, after a careful and minute inspection awarded the red ticket to the latter. This decision was received with applause by the spectators around the ring. In the afternoon all the prize takers were exhibited together, and it was the universal opinion that the present exhibition of horses has never been equalled in this country. The careful decision of the Judges has given general satisfaction.

CATTLE.

By 9:30 a.m. Wednesday the Judges in the cattle classes got to work, and did not get through till late in the afternoon. In the Shorthorn and Hereford classes, they gave great encomiums on the stock brought in, and the newly imported stock of Mr. John Miller, of Pickering, elicited high praise from them. In some of the Shorthorn classes great difficulty was found in coming to a decision upon the merits of the animals presented for their inspection, and the services of J. R. Page, of Sennett Co., N.Y., and J. Mackelcan, of the *Canada Farmer*, were more than once called in to assist in the decisions. George Miller's herd was detained on the way from Northern Ohio State Fair, and did not get up in time.

SHORTHORNS.

In aged bulls seven came into the ring, and after much discussion the prizes were awarded, 1st to "Oxford Mazurka," 2nd to "Loudon Duke," and 3rd to "Ontario John." A fairer one could not be given. In three year old bulls ten came into the ring, a tolerably even lot, and not much to choose from, nor any of particular merit. 1st prize goes to "Oxford Chief," 2nd to "Sir Colin Campbell," and 3rd to "Darling Duke"—all red and white bulls. Eight came in of two year old bulls, among them we have the finest lot on the ground, and "Fawsley Chief" deservedly gets 1st, while "Bell, Duke of Markham," is placed 2nd, and "Grand Duke of Cambridge" 3rd—a decision that might well be reversed to be satisfactory to good judges. In the yearling bull class only five come in; 1st goes to "Kosciusko," as we expected; while "President Grant" gets 2nd, and "Orion" 3rd. In the bull calf class there are no less than sixteen enter the ring. "6th Grand Duke of Moreton" easily obtains 1st; but there is much diversity about the other prizes, which are finally awarded, 2nd to "Sir Henry," and 3rd to "Joe Johnstone." The whole class is good, and another year will doubtless see some much improved, while others may go down. The 1st prize one is a most promising animal for the future. Thomson's newly imported "Grand Duke of Orange" though entered, was not shown. For the diploma six enter, and it at once goes to "Fawsley Chief," that may be considered as the very best Shorthorn bull now in Ontario. The aged cow class is a most magnificent one, and can hardly be exceeded anywhere. Nine enter, and after much time spent, and a close and critical examination, the prizes go, 1st to "Cherry Bloom," 2nd to "Rose of Strathallan," and 3rd to "Gola," all imported from Great Britain. The three year old class only brings out five, but they are all first-class. 1st to "Clara Barton," 2nd to "Miss Margaret 4th," 3rd to "Dominion Belle." These decisions are somewhat open to criticism, and a reverse position of the 2nd and 1st prizes would probably be more correct; and "Queen of May" is certainly better than the 3rd prize cow. In 2 years heifer class, six enter, and the 1st prize goes at once to "Minnie Annandalle," just imported; "Rosamond" being placed 2nd, and "Cambridge 10th" 3rd—a position that might well be reversed with credit to the judges. In the one year old class there are six in the ring, and a fine lot they are. The competition for 1st is close between "Christabel" and "Sylvia," both imported this Fall, but the former is lame from getting hurt in her stall, and so "Sylvia" gets 1st, while "Christabel" is placed 2nd, and "Empress" is placed 3rd. In the heifer calf class, nine come in; 1st goes to "Princess," 2nd to "Rosa Bonheur," and 3rd to "Lady Bell." For the herd prize, there are but two herds; that of F. W. Stone, comprising bull "Grand Duke of Cambridge," cows and heifer "Isabella 12th," "Miss Margaret, 4th," "Cambridge, 10th," "Morning Glory," and "Duchess of York, 8th;" and that of John Miller, comprising bull "Fawsley Chief," and cows "Cherry Bloom," "Rose of Strathallan," "Gola," "Lorena," and "Nelly Bly." Miller easily gets the prize, and the judges say a better herd has never yet been shown, every animal in it being first-rate.

HEREFORDS.

As will be seen by the prize list, Mr. Stone had the field to himself, though he is beaten for 1st prize for aged bulls, which goes to "Robin Hood," a bull of his own breeding, though now out of his hands.

AYRSHIRES.

The competition in this class is very close and keen. Mr. Laurie's aged bull "Avondale Farmer," 1st prize, is not easily beaten. J. L. Gibb, of Compton, Quebec, had entered several of his fine herd, but none of them put in an appearance. Mr. Thomas Thompson, of Williamsburgh, has no less than 8 head imported this fall, arriving from sea only two weeks ago, and he gets many prizes with them. His 1st prize aged cow, "Diamond," is a fine one, as is J. P. Wheeler's 1st prize three year old cow. Mr. Thompson's imported 1st and 2nd prize two year old heifers, "Rossie, 3rd," and "Rossie, 2nd," are good ones.

GRADES.

The class for grade cattle embraced only 41 entries, but though not nearly as numerous as one would expect to see, nevertheless, as regards quality, contained many animals little inferior to thoroughbreds, if not themselves thoroughbred. All that were shown were evidently crosses of short-horn blood on native stock, up to an extreme point, and the prizes went mostly to men who are large breeders of short-horns. There is something wrong about this. The grade class is the only one which the generality of farmers in Canada can fairly expect to have to themselves, and get some encouragement for using thoroughbred males to their cows, and it is hardly fair to them that the great stock-breeders, in addition to carrying off the prizes in the classes of which they make a specialty, should bring animals that are practically purebred to contend against the more humble efforts towards improvement of their less fortunate brethren, who have neither the capital nor advantages they have. It might be worth while for the Association to consider whether it would not be advisable to restrict the entries in the grade classes to animals of native stock, having less than four crosses of pure blood in them, and also to give prizes for females of each grade cross, say Short-horns, Herefords, Devons, and Ayrshire, so as to bring out the respective merits of each cross on our native stock, and show what each can attain to in its own sphere of improvement. This would be fairer to the small farmers, and give at least a modicum of encouragement in their efforts at improving the general stock of the country.

SHEEP.

The regret which the miserable condition of the sheep pens could not but cause was aggravated when at length on Wednesday morning the animals were brought from various quarters, where they had as it were been hidden, to make their appearance before the judges; for a finer lot of sheep in all the classes has never, perhaps, been seen at a Provincial show. The chief breeders of this stock in Ontario were present to maintain their reputation by specimens that had not before been surpassed; and several new and very valuable importations added an unwonted interest to the exhibition. It was extremely unfortunate that the public should not have enjoyed a good opportunity of seeing the display. Almost the only dry spot to be found in the space allotted to sheep was a planked causeway between the two centre sheds. On this flooring the judges took their station, and the animals were brought before them in succession for examination; while the throng of spectators, eager to have a sight of the various lots, crowded around the judges, and very much hindered and embarrassed them in the discharge of their duties. Every exhibition shows more and more the importance of having judging done early, and before the general public are admitted to the grounds. Until arrangements are made to secure this, the judges can hardly escape the annoyance of a promiscuous crowd about them, and visitors will in most cases fail to gratify their legitimate

curiosity as to the awards. When these are decided and ticketed, a much greater interest is felt by the spectators.

In regard to the total number of entries, there is a falling off from last year, but this is entirely due to a decrease in the class of Leicesters, and is nearly counterbalanced by a marked increase in the number of Cotswolds. The other classes, in the two years, numerically correspond very closely. The Cotswold sheep are a remarkably fine lot In aged rams the first prize was awarded to Mr. John Snell, of Edmonton, for a very grand specimen of the breed, who thus takes precedence of Mr. Miller's imported animals The 2nd prize was given to one of four remarkably well-bred sheep that came out to Mr. Miller last year, but had not previously been exhibited in this country. James Russell, of Markham, took the third prize.

The shearling rams were a very large and a very meritorious class, in which all the principal breeders competed, but Mr. Stone swept the honours with his two beautiful imported shearlings that arrived in the Province a few days ago. Their wool is of remarkably fine quality, and though not large they are first-class specimens of the breed. In the section of ram lambs, also very numerous, Mr. John Miller took the first prize, and Mr. Russell, of Markham, the rest. In aged ewes Mr. George Mitchell, of Darlington, carried away the first prize. A very close competition in shearling ewes was decided in favour of Mr. J. Miller, who took precedence of Mr. Snell. The merits of the animals were, however, very evenly balanced, and good judges might have reversed the decision. The last section in this class also caused the Judges great perplexity. After a long consultation, Messrs. Stone, Snell and Russell divided the honours in the order named.

The next class on the prize list was also remarkably good, in which Richard Lean took the first prize for aged rams over an imported animal just received from Battersby, Lincolnshire, by Mr. Snell. Both were magnificent types of the Leicester breed. In shearling rams, Mr. Snell was first, and Mr. Adam Oliver, of Downie, second. The ram lambs were a beautiful lot; T. Teasdale, J. Snell, and James Russell taking the premiums. Among the aged ewes, a recent importation by Mr. Snell, from the flocks of Messrs. Walcott and Campbell, took the first prize; but in shearling ewes, this generally successful exhibitor gave place to Mr. W. H. Wallbridge, who distanced all competitors with a fine ewe just imported from Great Britain. The wool, like that of other first-class English-bred Leicesters, was remarkably fine, but the animal was not in show trim. In England this ewe had taken a first prize at the Yorkshire Show, where she had beaten a first prize winner at the Royal Society's Show. Mr. C. Walker, of London, exhibited the best ewe lambs of this breed; but the whole class was good, if not altogether first class. Among the meritorious lots was a pen of six lambs, just imported by Thomas Douglas, of Lobo, which arrived too late for competition.

The falling off in our Leicesters as compared with former shows is partly to be attributed to the want of fresh importations of pure blood for the last two or three years, and partly to the injudicious intermixing of Cotswold and Lincoln blood into many of our Leicester flocks, with the object of increasing size, but at the expense of symmetry and early maturity, which are the highest characteristics of the Leicester as a breed. There is much more need of pure Blood Leicesters to cross on our common stock, or even the Cotswolds, than ever there was, now that good mutton readily commands so high a price, and early lambs are at a premium.

The Southdown class was fairly represented, and, as usual, Mr Stone secured the lion's share of the honours The most beautiful specimens of this breed on the ground, and, perhaps, on the continent, were two ewes that could not easily be matched for neatness and symmetry of form, or closeness and fineness of wool. Among the extra entries were four Lincoln ewes, exhibited by W. H. Wallbridge, of Belleville, who had just imported them from Great Britain. One of these had gained the very highest honours at home, having won a first prize at the Royal Society's show, and also at the great Lincolnshire show, held at Sleaford, besides a similar distinction at the Yorkshire show in Wakefield. They were very large sheep, and no one would suppose they were only shearlings. A ram of the same breed, imported along with them, had died. The judges awarded two prizes to the best of the lot.

There was a larger display than usual of Merinos, with several good specimens of the breed. J. & W. Smith, of Burford; R. D. Foley, of Darlington; A. Young, of Barton; and J. W. Johnson, of Grantham, were the principal exhibitors.

There was a good lot of fat sheep. The chief interest of the show in this class was centred in the Prince of Wales' prize, which this year was offered for the best lot of Leicesters, comprising one ram (one shear and over,) one ram lamb, three aged ewes, three shearling ewes, and three ewe lambs. There were six entries for this prize, but only three exhibitors, Mr. Snell, Mr. C. Walker, and Mr. James Russell, actually competed. The three lots, as they stood in row before the judges, presented a beautiful appearance and elicited general admiration. The decision was unanimously given in favour of Mr. Snell.

SWINE.

Under favourable circumstances there is little doubt but that the show of pigs this year would have been superior in numbers, as well as quality, to that of preceding exhibitions, but the miserable weather and the wretched condition of the pens has deterred many of the best and most enterprising breeders from sending their pigs to the grounds. Consequently, though in most of the classes the number of entries exceeds that of last year, a very large proportion of the pens are empty, and the actual show is numerically small. The only class in which the entries show a falling off is in that for large breeds, and this is neither a matter of surprise nor of regret, for though undoubtedly the larger varieties have their use, especially for purposes of crossing, and should not therefore be altogether neglected, yet for general utility, of early maturity, thrift and economy in feeding and delicacy of flesh there can be no question but that the smaller breeds are the most desirable. They are more easily managed, command a readier sale in the market, and will at a very early age attain weights the most convenient for the general consumer, giving the farmer a quicker return and a larger increase in proportion to the amount of food than the mammoths of the family That this opinion is prevalent would appear from the very few representatives of the large breeds to be met with at the present exhibition, while in all the smaller varieties, though from causes already explained the show is small, the entries are increased.

In the class of improved Berkshires there is the largest competition, and many animals of very great merit were on the ground. Most noticeable among these were two splendid imported boars, one the property of Mr. George Roach, of Hamilton, the other of Mr. John Snell, of Edmonton. The first of them is 13 months old, squarely built, with sufficient length, a good head and fine skin, and altogether an excellent type for the breeder. Mr Snell's importation is a little younger, and perhaps of rather larger frame. Both are extremely valuable acquisitions to the country. Among the sows in the same class are three importations that arrest the admiration of every visitor. They are the property of Mr. Miller, of Pickering, and constituted a prize pen at the late Oxford Show of the Royal Society of England. They are nine months old, evidently of the same litter, though one of them, exhibited by herself in another section, seems to carry the palm for all the best qualities of this favourite variety. It certainly would not be easy to find a better model of porcine excellence. Apparently, they are as gentle and almost domestic in disposition as they are symmetrical in form.

Mr. George Roach exhibits some beautiful animals in the same section, though we understand that he withheld some of his best stock on account of the condition of the pens. Other exhibitors, whose names have on former occasions been found on the prize list, have again contributed to this very meritorious class.

Another breed which is unusually well represented is the Essex, of which there are purer specimens than we ever remember to have seen at any Provincial Exhibition. Here again Mr. Roach is pre-eminent; and his imported specimens as well as the progeny of former importations, are admirably adapted to display the points of this choice breed, and to render it a favourite on this side of the Atlantic. Amongst the aged boars Mr. Roach exhibits the sire of some of his best stock, a noble animal two years and eight months old, imported from England in 1868. He also shows a number of younger ones that bid fair to rival their parent in excellence Among the females of this breed Mr. Roach shows a ten months old sow, that is without exception the prettiest animal of the kind that we have seen As in all good pigs the head is remarkably small, the snout short, the legs short and fine, the body squarely and compactly built, with the back broad so as to give it the character known as "table-back," making altogether a perfect study for the breeder A number of younger sows of the same breed, shown by this enterprising exhibitor, give promise of rare excellence. They were all in prime condition and beautifully clean Mr McCrae, of Guelph, is also a prominent exhibitor of this variety and shows good specimens.

The Suffolks are another good class, containing some very choice animals. Here also Mr. Roach has the lion's share of enterprise and honour. He shows largely in every section, some of the animals being importations of 1868, or the present year. Among such a number of first-class animals it is not easy to select the choicest; but a 10-months boar and a 10-months sow took our fancy as much as any of the lot. Messrs. Featherstone, of Toronto Township, and Main, of Trafalgar, are also meritorious exhibitors in this class.

Of other small breeds, or rather mixed varieties and crosses of no particular breed, there is a miscellaneous collection, with a few animals of merit among them. Altogether the show in this class of stock, notwithstanding the serious drawbacks of the wretched accommodation, gives evidence of marked improvement, which is, no doubt, chiefly due to the enterprise of those breeders who have imported good blood from Great Britain.

POULTRY.

In contrast to other miserable quarters, the Poultry shed, an entirely new structure erected for the purpose, has been very well constructed, and those who remember the pools and mud through which they had to wade on the occasion of the last Provincial exhibition in Toronto, in order to gain a sight of the bedraggled birds, in coops too much exposed to the weather, cannot fail to be struck with the greatly improved accommodations provided this year. This consists of a spacious shed, 200 feet long by 24 feet wide, the sides being composed of open slats, so as to allow abundant ventilation, while a tight roof keeps all perfectly dry. The centre is occupied by two double tiers, one above another, of neat and commodious coops. A strong railing extends all round to prevent visitors crowding too closely, and there is ample space outside this railed enclosure for a considerable crowd to walk without inconvenience. The front of each coop is a separate wooden frame with upright wires. The whole of this front is hited out to admit or remove the birds, and is kept in place by a button. This may be found inconvenient, and it strikes us that the plan adopted by the Poultry Association is preferable—namely, removing one or two of the wires, or providing a very simple door, for which one of the upright wires serves as a hinge. We think the two tiers of coops better than three, as none of the birds are raised to a height where they cannot readily be seen. In many respects this poultry shed is a model worthy of imitation, and is decidedly the best that has yet been erected at any agricultural exhibition in Canada. Very few birds indeed were in their places on the first two days, and not more than half the coops were filled at any time.

Although the number of entries in the poultry class was considerable, the show itself was by no means a large one, and as the accommodation provided was ample for an exhibition of very large proportions, the effect of empty coops, with birds only here and there, detracted from the success of this department. The fault of such a result lies entirely with those who made entries but did not send their specimens—an injustice which we have frequently noticed and condemned. All the birds could easily have been shown on one side of the row of coops, and would have looked better thus collected together. But the manager had of course no alternative than to leave the coops for expected occupants, according to his catalogue.

We miss in the present exhibition some prominent exhibitors. Mr. Bogue is the only representative of London. He has some of the best birds in the exhibition. The first and second prize pairs of White Dorkings are his, and very beautiful birds they are. In coloured Dorkings, Mr. Van Ingen, of Woodstock, takes the first prize with a splendid pair. The Golden Polands of Mr. Bogue are also fine specimens, and Mr. McGrath, of Toronto, shows a good pair of the same variety.

Game fowl are not in their usual force. Cochins are also very far behind the splendid display to which we have recently become accustomed. Mr. McLean Howard and Mr. H. M. Thomas show two good specimens of the Partridge variety. Brahma Pootras are somewhat better represented, but not in their usual numbers. H. M. Thomas shows the best birds of this breed, both of the light and dark varieties. The latter are the progeny of the fine birds imported two years ago by Mrs. Varley, and that attracted so much notice at the second exhibition of the Ontario Poultry Association. In Golden Hamburgs, Mr. McLean Howard showed, as usual, beautiful specimens of this most graceful variety. Mr. Van Ingen had two pairs of Houdans. In Bantams, the most remarkable pen was a pair of very small and pretty game, shown by J. Main, of Trafalgar. The show of geese was fine, and the number of competitors respectable. There were also some good pens of ducks. The Aylesburys of Mr. Bogue and Mr. J. Forsyth, were particularly worthy of notice. Among the young birds the last-named exhibitor had some good specimens, which were the produce of imported eggs. Mr. Howard also showed some dark Brahma chickens of similar origin There was only a small show of pigeons. Mr. McGrath showed a good lot of carriers, pouters and tumblers; but there were very few other entries.

On the whole, without detracting at all from the merits of many of the specimens, we must say the exhibition of poultry is a decided falling off from those of recent years; and it is evident that there is room and need for the Poultry Association to bestir itself to keep up or revive an interest in this branch of stock raising.

IMPLEMENTS.

No branch of the exhibition suffered more from the bad weather than the implements department. The continued rain of Monday made exhibitors afraid to bring their machines on the ground, and in many cases we failed to find the owner or attendant of such as were on view. Many of the implements had not even a ticket attached, and we frequently returned in the vain hope of finding some guide in our perplexity. From such causes as these, the report of this interesting department will be briefer and less finished than we could have wished. The first articles, and probably those of most importance, are the steam engines. They are represented by the rotary engine and portable boiler manufactured by Messrs. Hamilton & Son; also, that of Messrs. Waterous & Co., of Brantford, the latter in full operation, driving a portable steam saw-mill, with lath mill and double edger, so arranged as to edge a board on both sides at once, and, at the same time, to be quite under control of the operator. The vast number of these saw-mills in use seem to point them out as having met with public approbation. This being the only moving piece of machinery driven by steam in actual work, is a source of general attraction, and it is much to be regretted that some arrangement by which the various other machines could be worked has not been carried out—the attractions of the more ordinary machines in actual operation being far in excess of the more elaborate whilst at rest. This firm have been before the public for many years, and all accounts coincide in awarding to them the credit of having first constructed the clipper mill now exhibited. We know that a mill of the same construction as this one was exhibited formerly in Toronto, and at once sold for exportation—we believe to Africa. To guard against the difficulty of casual breakage in a foreign country, some portions were made in duplicate, but we have been led to believe they were never required. One great peculiarity of the engine is the adaptation of the circular slide valve, and when engines on a somewhat larger scale than the one exhibited are used for driving flouring mills, a most simple and effective cut-off is attached, whereby an immense saving of steam is effected. The great advantage of the portable clipper mill consists in its being so readily adapted to any locality, and it can be erected in a few hours without any extensive building, as is usually required. Driven by the same engine now shown is their far-famed shingle machine, which is capable of turning out a large quantity of work each day. Another addition the enterprising firm have lately made to their merchant saw-mills is their pony saw-mill, by which an immense quantity of narrow boards for fencing, siding or flooring can be cut, and with the minimum amount of labour, as the machine in question is entirely automatic and self-setting. We lately visited a large merchant mill, built by Messrs. Waterous & Co., in which this new addition was working, and from the satisfaction expressed by the owner at the work performed, it would seem to be a great success.

Dickey, Neill & Co., of Toronto, exhibit a complete iron saw-mill "rig," the saw frame being of iron, instead of wood, as ordinarily used. They seem to have combined all the American improvements and some of Canadian invention. Amongst others we notice the "log mover," being constructed to be effected by friction, instead of the old ratchet wheel; also a new feed-motion, supposed to be more efficient than the old plan. A great saving of heavy lifts is effected by the "log turner," a machine so arranged that when a slab is taken off the log and it becomes advisable to roll the log over, this machine accomplishes in a moment, by the power of the engine, the work of two men, that would occupy double or treble the time. A double edging machine, is so arranged as to have one saw movable on the shaft, and capable of being moved out or in, in a moment, thus cutting and edging both edges of a rough board at once. They show one of Earl's steam pumps, direct action; and one of Cole's water wheels, of the turbine shape, which is claimed to be a great improvement on those now in use; various castings from green sand, and hand forgings.

PLOUGHS.

Ploughs were well represented, and some very handsome ones were exhibited. Those of John Gray and Co., of Glasgow, Scotland, created much speculation on their merit as two-furrowed ploughs. The iron ploughs were in considerable number, and of excellent manufacture and finish, some of them had additional attachments said to be of great service. The wooden ploughs were also well represented, and quite a number were on the ground. The subsoil ploughs were of almost all shapes, as adapted to loosen the hard under-stratum. Much diversity of opinion prevailed relative to these implements, and considerable ingenuity has been displayed in producing the result said to be arrived at. There are also some double share Trench ploughs, well manufactured articles; and double mould-board ploughs. There are several Gang ploughs, some turning three and some four furrows.

CULTIVATORS, HARROWS, ETC.

The two horse cultivators in iron are excellent articles, and well worthy the farmer's attention. There are many improvements lately made, some no doubt very important; one in particular is that of removing the share and substituting its support so arranged as to form a strong and substantial grubber, where the land is too hard to allow of the ordinary share being used. There was, however, much praise due to all as most useful implements. Those cultivators manufactured from wood and iron combined seemed to be liked by farmers, but could hardly be as durable as all iron.

There were some horse hoes, for one and two horses, and small gang ploughs used as horse hoes, reversible in their action on the soil. These ploughs were considered very useful as cultivators between corn and potatoes, turnips, &c., &c.

The clod crusher shown we consider is liable to be broken when coming in contact with stony land; otherwise, no doubt, it is an efficient implement.

There were several pairs of iron harrows, and one with wooden "balls" and steel teeth, said to be a most useful tool and of very light draught. The wooden harrows did not excite much attention.

The wooden rollers were various and fanciful in their construction, adapted to all kinds of uneven surface and rounding land, and so arranged as to turn very easily, many of them being in two or three portions, instead of being formed of one long roller as was the case formerly.

Of grain drills there were three, and all possessed advantages—some in excess of others when used in particular positions and under trying circumstances. There were two seed drills of the ordinary kind used. Those used for sowing plaster were well adapted for the purpose, and saved a great deal of the irregularity that of necessity exists in hand sowing.

MOWING MACHINES, ETC.

In mowing machines and reapers there was an immense show, all excellent in their way, and all claiming something peculiar as adapted for various kinds of work. Some reapers were splendid samples of automatic work, especially those with self rakers, which were so completely under the control of the driver that he could make a sheaf of any given size all day long. The labour-saving of these machines must be immense at the present high price of labour.

RAKES AND PITCH-FORKS.

In horse rakes there was a good show, and several varieties, those with steel spring teeth seemed to be the favourites generally, as less likely to get out of repair.

The horse pitch-fork, for unloading unbound grain and hay, and conveying it to any part of the barn on overhead railways, was very much visited—those who had for years used the old plan being strongly interested in the new, and those who had derived the benefit from the improvement universally approving of the implement.

THRESHING MACHINES.

We next come to the horse power threshing machine and separator, and here there was a splendid show, with, as usual, many claimants for various improvements. That which seemed specially to please the public was a most excellent adaptation of the position of the separator to the horse-power, whereby the one can be used in any position relative to the other, not necessarily, as heretofore, confined to a right angle or parallel position. This improvement was due to Messrs. Medcalf, of Toronto, and we have no doubt will prove of immense utility and convenience.

OTHER IMPLEMENTS.

In potato diggers there were several shown, one in particular that claimed to possess the power of digging and cleaning the potatoes, and having them all picked up and in a box, and, moreover, thus effectually operating on three acres each day.

There were three stump extractors on the ground, two screws and one lever. All had their admirers, and if the size of the chains used is any guide, their strength at a pull must be immense.

In straw cutters the show was certainly most excellent; many kinds were heavy and strong—strong enough to cut not only the straw, but apparently also the fork used to handle it with. Some exhibitors claim that any small stick that by accident may get into it affords no impediment whatever, so far as breakage is concerned.

There are several smut machines, of excellent construction, and much was claimed for their performances.

The grain-cracker and corn and cob grinder was much approved of generally as among the most useful implements the farmer could possess.

The elaborate clover-cleaning machines are so far in advance of former exhibitions as scarcely to be recognized as an effect of the original conception.

There were several cider mills and presses, and visions of cider and excellent and palatable drinks were manifestly in the minds of the many spectators.

WAGGONS AND SLEIGHS.

The two-horse team waggons, with spring market waggons, were in great force, and numbers of excellent articles were on exhibition. One cart also, such as is used for light purposes, was shown.

In farm sleighs there was little shown, with one exception, which consisted of a combined sleigh, with wheels so arranged that if at any portion of a journey the snow should fail, nothing more was required than to bear down on a handle, and the wheels did the work, to be again raised in their turn if the sleighing was again good.

BRICK-MAKING MACHINES.

There were two brick making machines on the ground, one in actual work, and it certainly turned out an excellent article with rapidity; the other was not tried at that time, and was only a hand machine, whereas the first named was driven by power and pressed every brick in its turn.

DITCHING MACHINE.

The draining or ditching machine was much thought of. Hitherto the digging of the trench for the tiles has been a great expense, but with this machine there seems to be no doubt that draining can be done wholesale and at small cost.

There was a large show of straw-cutters, which excited much attention, and were arranged for horse or hand power. One of this class of implements was so adjusted as to be used as a pea thrasher, and a conveyer or straw carrier attached formed a most complete addition to it. We understand it works exceedingly well. The single and double horse powers were well adapted for such uses, and combine an exceedingly cheap power with great economy of room.

The Eureka ship pump was much liked, and possessed the great advantage of being constructed so as readily to pump wheat or water from the hold of a wrecked vessel.

The root-steaming boiler, an arrangement for steaming feed for cattle, was constructed of cast iron with corrugated surface; supposed to combine more than ordinary advantages by this formation.

A self-unloading waggon box was shown, and certainly had every appearance of a most useful addition.

In drain tiles there was only one principal entry. This machine is said to make tiles of any size likely to be required, and at the same time capable of turning them out in large quantities. A large assortment of very superior quality was shown.

Messrs. Tuttle, Date & Rodden showed an excellent assortment of scythes, hoes, forks, and other tools, some with additional portions to those usually made, whereby it was believed more than ordinary strength was attained, combined with great neatness of appearance.

The Oshawa Works, as usual, exhibited a good assortment of hoes, forks, scythes, and other tools. This old manufacturing company still retain their character for good tools, as their assortment fully proves.

The fanning mill department was very active. Exhibitors under this head were testing their various mills, with all sorts of apparently impossible performances, such as mixing oats, peas, wheat, and grass and weed seeds together, and at one operation completing an entire separation, leaving the wheat or peas entirely free from all oats or weed seeds. The various smaller seeds were collected, and cleaned, and separated in heaps each by itself. These implements, certainly, have attained to great perfection in cleaning grain. One mill was so arranged with a conveyer for the cleaned grain that it delivered it completely finished in the bag.

Machines for cutting roots for stock were numerous and well represented, and were capable of cutting any shaped piece from simply slicing the turnip to cutting it into dice or pulping it into mash.

Churns were numerous and of all kinds; some were driven by dogs, and seemed to be much admired on that account. There was every motion conceivable given to the cream by the churn, from the ordinary old fashioned dasher to the tumbling honet churn, which was caused to revolve over and over with great apparent ease to the operator.

The wooden force pumps were in full action, and it was claimed by the maker that he could throw a stream of ¾ of an inch in diameter from 40 to 60 feet high with the power of two or three men. These pumps were therefore well adapted for farm fire engines.

In washing machines there was but a miserable show. Whether the machines now on trial and those condemned for inefficiency throughout the country have caused a despairing lull in the manufacture we are unable to say, but certainly there are more condemned washing machines in the country than great successes in the manufacture.

The fruit pickers were of various kinds, and several sorts were shown. There can be no doubt that the introduction of some machine by which our fruit can be picked with less labour than by hand, and at the same time without injury, would be a most useful implement. We export largely to the old countries, and if the fruit is bruised it decays and is valueless.

The horse shoeing brake was a very strong and useful machine, and blacksmiths would do well to have one or more in a village, where accidents can be contended with or operations performed.

Welland Vale Tool Works show some excellent specimens of manufacture in forks, hoes, scythes, and various articles of like nature, some of which, the manure and hay forks in particular, have an excellent additional attachment at the juncture of the handle, whereby great additional strength and extreme neatness of manufacture is obtained.

The St. Catharines Saw Works, amongst a full assortment of saws for ordinary purposes, show a monster six foot eight inch circular saw—a creditable addition to our Canadian manufactures also, what is claimed to be a champion combination cross and ripping hand saw, so arranged with deeply cut gullet as to greatly assist in the delivery of the saw-dust.

Goldie & McCulloch, of Galt, exhibit mill stones, planing machines, and barrel head turning machine, heading planer, with turbine water wheel; tenoning machine, sash and moulding machine, self acting shingle machine, with vertical saw, cloth press, cloth brusher, carding machine, with steam governor and water wheel governor, measuring and winding machine, used in cloth manufacturing, with indicator attached, wool picker, hard waste pickers, and must machine.

McKeckine & Bertram, Dundas Tool Works, produce a complete assortment of mechanical tools and wood working machinery. Also, tools of various kinds for working in iron—amongst which are four drilling machines, expanding die, and bolt cutter; a compound planer for planing straight and circular iron work; nine foot planer; 14 foot and gap lathe; and complete screw cutting lathe; car wheel borer, for Messrs. Hamilton, capable of boring 40 to 50 wheels per day. This machine weighs 8,000 lbs. Amongst the wood working machines is one for planing, moulding, and beading on both sides of the lumber to be operated on; one pony planer, and machines for sash and door work; shaping machine for all kinds of irregularly formed work; power mortiemg machine, one specially for car work, and also for ordinary use.

Morrison & Co. show an assortment of steam gauges and brass work; engineer's clock for timing an engine's work and speed; and steam indicator, and test guage for boilers, with an assortment of cabinet brass work.

Sweet, Barns & Co., of Syracuse, N. Y., exhibit mowing machine knives, with sickle bars and sections.

Charles Levy & Co. exhibit a planing and moulding machine, constructed on a new plan, dispensing with numbers of belts, and using worm feeding wheels; also a powerful water wheel, manufactured by Barber & Harris, of Meaford.

ARCHITECTURAL.

John Dennis shows a barn of new construction, the object being to dispense with the ordinary heavy timber used, and to substitute that of a very much lighter description. The principal feature of its construction seems to be that of first building a small barn with exceedingly light timber, and using all the well known strength derived from additional long braces. When this centre erection is completed similar additions are made all round the first, and attached to it there is also a horse power of the old cheap "finger and thumb" motion, said to be strong enough for eight horse power, which drives a threshing and unloading machine for hay and loose grain when unbound. The grain is delivered on a transverse railway arranged in the roof, which conveys its load to any part as required, and on its arrival at any one given point automatically delivers its load and returns for another. The new principle here developed and used, consists of round 2 in. holes being bored, and square 2 inch hardwood pins driven into the piece that would ordinarily be mortised; the other end of the square pins is again inserted into the piece that ordinarily would be tenoned and through each end of this square pin, where the two surfaces of the part of the timber to be joined are brought together, smaller pins of about ¾ of an inch in diameter are driven across, with a little "draw bore," as it is called, which effectually brings all parts into close contact. It will be seen that by this means small hardwood tenons are virtually substituted for the ordinary pin, and can be therefore made much lighter.

GRAIN.

In spite of adverse harvest weather and the various troubles and difficulties that croakers are apt to bemoan so woefully, the appearance of the grain at the present exhibition affords abundant evidence that, in sections of the country widely spread, the quality of the crop has been better than usual. The samples of all the cereals, but especially of wheat and oats, are finer than we have seen them for several years; and in some instances there was an evenness of excellence that rendered it a matter of no small difficulty for the Judges to award the premiums. For the Canada Company's prize of $100 there were more than the usual number of competitors, but the honour was awarded to James McNair. of Vaughan, for a remarkably good sample of Deihl wheat, heavy, plump, and even. The second prize of $50, given by the Association, was gained by John Cullis, of Hamilton Township, for 25 bushels of Soules wheat, and the third to Joseph Freeman, of Flamboro, for the same quantity of the Deihl variety. The first prize for the best two bushels of white winter wheat was to Joseph Redmond, of Otonabee, and the second to W. Taylor, of Pickering. The last-named exhibitor also secured the first prize for red winter wheat, and W. Grant, of Puslinch, obtained the second.

The samples of Fife wheat were particularly good, not only in the section devoted specially to that variety, but in the mixed class, the Fife wheat took all the premiums. The prizes did not go to any particular district, but were divided over the Province in every direction, showing that no section has been specially favoured in the season.

There were some excellent samples of barley, many of which, in spite of the pervading wet weather, were not only plump and well filled, but bright in colour. Of the two-rowed there were six entries,, Thomas Gibson, of Markham, taking the first prize. The competition in the six-rowed variety was much greater, and Walter Riddel, of Cobourg, won the laurels.

There was but a small show of rye.

In oats there were a large number of entries, and the samples were unusually fine. Indeed, there was scarcely a bag of inferior ones among them. The judges had much difficulty in making the award—in white oats especially, which were remarkably fine. There were also several bags of heavy and well-filled black oats, the best sample of which was undoubtedly shown by W. Riddel, and gained for him another first prize.

There was less competition in peas, though the samples were good.

Indian corn was fairly represented, the palm going to Niagara in the person of H. J. Brown.

Five bales of hops were exhibited, mostly well cured, and in prime condition.

There was besides a good display of various seeds, though the number of competitors in this class was, as usual, small.

FIELD ROOTS.

The favourable accounts received from all parts of the country respecting the fine condition of the root crops would lead us to expect a good exhibition in this department, and the visitors to the building in which the field products, along with the horticultural collection and produce of the dairy, were effectively displayed, would meet with no disappointment in regard to this part of the show. Whatever the season, we generally see some immense specimens of mangold and ruta bagas; but there is this year a uniformity of excellence, and a larger proportion than usual of fine samples. Some of the monster mangolds were quite curiosities, but such giants are not the most desirable for the farmer to aim after, and medium sized roots are on many accounts the most profitable. There was a good display of the sugar beet, a crop that will, no doubt, be more extensively grown now that the attention of the cultivator has been directed to the feasibility of successfully raising the root and manufacturing the sugar in this country. Of carrots, especially the white Belgian variety, there was an excellent show. In the display of potatoes we did not notice anything very remarkable. Some of the exhibitors would have improved the appearance of their collections if they had taken the trouble to remove the dirt from the tubers. At an exhibition one expects to see at least clean samples. The squashes for cattle and field pumpkins, as usual, elicited exclamations of wonder from the passing spectator.

HORTICULTURAL DEPARTMENT.

FRUIT.

The display in the general list is one of unusual beauty and excellence. The change made in the prize list, whereby those varieties most usually grown throughout the Province were brought in direct competition with each other, had the effect of calling out a most superb display, and made the contest for excellence unusually spirited.

The collections of thirty varieties of apples which were shown were of superior merit, and such was their excellence that the judges, after awarding the three prizes, designated two others of the collections as worthy of high commendation. Also in the collections of ten varieties of apple the same fine quality was manifest; and a fourth one of them was distinguished by a commendation from the judges.

In the collections of four varieties of dessert and four varieties of cooking apples, the competition was very high, and it was only after long and critical examination that the awards offirst prize were made to Mr. Gage J. Miller, of Virgil, who displayed much judgment in selecting for the collections varieties of high quality as well as fine samples of fruit.

The samples of Snow Apples placed upon the tables were indeed of surpassing excellence, and long and sharp was the scrutiny to which they were subjected by the judges. This variety usually succeeds best in the northern parts of the apple region, and we see that both the prizes for this variety were taken by gentlemen residing in the cooler sections—the first by Mr. Sam'l. Wood, of Islington, and the second by Mr. John Shuttleworth, of Weston.

The Fall Pippin is still a great favourite, as could be seen by the number of samples exhibited, although in some places it is becoming very difficult to grow it free from spots. It is an excellent apple, and Mr. F. Morrison, of Hamilton, may well be congratulated on being able to grow it in such high perfection as to carry off the first prize.

As an autumn apple of great beauty and excellence, valuable both as a dessert and cooking fruit, and selling in the market for the highest prices, the Gravenstein stands in the foremost rank. The display of this variety was not large, but the specimens shown were of great excellence, and came, so far as the prizes indicate, in best quality from the old Niagara District.

The Ribston Pippin is a very valuable variety, admirably adapted to our climate, growing here in the highest perfection, and commanding, when shipped to the markets of Great Britain, the very highest prices. We are sure the admirers of this fruit at home would have paused in wondering delight over the truly splendid display made in this variety. Though the first prize was given to Mr. Gage J. Miller, of Virgil, who has the advantage of residing in what is termed the fruit garden of Canada, yet the second prize was won by Mr. G. Tattle, of Yorkville, with a sample scarcely inferior, thus showing the adaptability of this fine variety to most parts of the country.

The Spitzenberg, Baldwin, Rhode Island Greening, and Roxborough Russets — four varieties now well known and universally esteemed, were displayed in great force, and of the very finest quality.

The best samples of Golden Russets of Western New York were from the Niagara District, where it has been considerably planted by growers for market, and is gaining a decided reputation as a profitable market apple.

The Swayzie Pomme Grise, one of our most delicious winter dessert apples, has not yet found its way into very general cultivation. The best samples were from Niagara, where it has been long known and highly esteemed. We cannot here refrain from a word of commendation upon the decision of the judges, who evidently were not influenced by size merely, but awarded the prizes to the best developed specimens of the true and normal type.

The Northern Spy is gradually working its way into the esteem of the Canadian fruit growers, if we may judge from the number of plates of this variety and the excellence of the samples. The tree is tardy in coming into bearing, and will not yield its fruit in perfection to the negligent cultivator, but the tree is hardy, and from its habit of putting forth its blossoms quite late, the fruit often escapes a late spring frost that nips its more adventurous neighbours, while in quality for table or kitchen use, and in beauty of appearance, it has few equals.

There was quite a number of seedling apples offered in competition, the most of which, in the opinion of the judges, exhibited no distinguishing quality of excellence But there were two plates of these which were notable exceptions, and to which the prizes were awarded, the first exhibited by Mr. John Shuttleworth, of Weston, and the second by Mr. W. Forfar, of Agincourt.

Mr. Shuttleworth's seedling bore a very marked resemblance to the St. Lawrence, but when tested with that variety seemed to be a later sort and of a more sprightly flavour. This seedling should be sent to the fruit committee of the Fruit Grower's Association, with a full account of its origin, and the character of the tree, in competition for their premium of fifty dollars.

The collections of twenty varieties of pears and of ten varieties embraced some of our very best and most valuable sorts, but some of those most usually seen at our exhibitions were doubtless ripe and gone some time ago. Yet we never saw finer samples, more even and perfect, than those to which the first prizes were given, and they certainly reflect great credit upon the skill and taste of the worthy President of the Fruit Growers' Association. Were others of our clergy to emulate his example, and seek for rest and refreshment to their wearied mental energies and social sensibilities in the soothing and healthful culture of the fruit or flower garden, they would be much the gainers in bodily health, and their people in better sermons.

Bartletswere too far gone—only two plates, and these fast going to decay, put in an appearance.

White Doyenne has spotted and marked so badly in the United States that it is not much planted now by our neighbours over the border, but the specimens shown here manifest no symptom of trouble from this cause, and were most desirable specimens of this much-valued sort.

No one of our pears seems to be so widely adapted to the various parts of the Province as the Flemish Beauty. The tree is very hardy—one of the most hardy, and the fruit is both of large size and fine quality. The plates shown are very fine indeed, and fully sustain the high reputation of this pear for beauty and quality.

The Louise Bonne de Jersey is a variety so productive, and of such pleasing appearance, that it has become a general favourite, notwithstanding that it is not of the very highest quality.

On the other hand the Belle Lucrative is a fruit of the highest quality, but has been so little cultivated that only two plates were shown for this variety, and of these only the one shown by Mr. John Sharman, of Oakville, was the Belle Lucrative.

If greatness be a quality of goodness, then surely the Duchesse d'Angouleme on exhibition are of the highest degree of goodness. We heard one of the most experienced of the judges in this department remark that he thought he had never seen such monstrous pears. Mr. Robert Stibbard, of Eglinton, who bore off the palm, should tell his less fortunate brothers in fruit culture how he grows such monsters.

Were the tree of the Beurre Bosc only a little more hardy, we are sure it would soon become a favourite sort. In symmetry of form, fine cinnamon russet colour, and rich, juicy, spicy flesh, there is nothing to be desired. There are not many plates exhibited, and the two prizes are taken by Niagara, where probably it finds its most congenial climate.

Beurre Clairgeau will doubtless be found to thrive and fruit well over a larger portion of the country; for we find that Mr. George Murray, of York Township, carries off one of the prizes. It is comparatively a new sort, but one which will probably find favour on account of its fine size and appearance.

It is too soon to get many specimens of Clapp's Favourite, for which a prize was offered, but no samples appeared on exhibition. This new variety has been very highly commended, and is well worthy of a trial at the hands of lovers of good fruit, and it has been well done to draw attention to it by the offer of a premium.

Winter Nelis is one of our very best winter sorts, and the samples shown are of the highest excellence. It succeeds well over a large part of the country, which might be inferred from the fact that the first prize was taken by Mr. W. A. Smith, of Brantford, and the second by Mr. J. Young, of Hamilton.

The mysterious pear blight seems to be particularly fatal to the *Glout Morceau*, but the specimens here shown demonstrate that the trees do sometimes live and bear most noble samples of this fine winter pear

The Vicar of Winkfield is another of those very productive kinds which have been a good deal disseminated, and if ever well developed specimens could be a guarantee of fine flavour, these should secure that very desirable quality; but the sort is one of great fickleness, bringing to mind Virgil's description of woman, "*varium et mutabile semper femina.*"

In any other variety of fall pear the competition was very spirited; but Mr. W. R. Warren, of Niagara, distanced all competitors with a plate of the very finest Seckels—a variety that has no peer for quality; and Mr. R. Burnet, of Hamilton, justly won the second with fine samples of Beurre d'Anjou—a variety that promises to be one of our most valuable late sorts

It is too late in the season to expect a good display of plums; hence, although the crop in many places has been very fine this season, the number exhibited is quite limited. One exhibitor, with commendable zeal, has endeavoured to preserve a number of varieties beyond the period of ripening for the purpose of exhibiting them, but the acid preparation in which they were kept so destroyed the flavour that the judges could form no opinion of their quality beyond their size.

What is true of the plums is also to be said of the peaches—the time of the Exhibition is too late for any display of good peaches. A few are shown, but they are, like all late peaches, lacking in richness, sweetness, and delicacy of flavour.

The display of grapes grown in open air is large, and gives evidence of increasing attention to the cultivation of this fruit. The number of varieties is constantly increasing, and quite a number have been found to be every way reliable in our climate. There were some thirty varieties shewn by Mr. James Taylor, of St. Catharines, who has paid no little attention to the cultivation of the grape, and exhibits samples of great size and beauty, which received the first prize.

The Concord variety is shewn in considerable quantity, and is evidently succeeding over a large part of the country. The vine is hardy, and a very abundant bearer.

There were a good many plates of the Delawares shown also, one of the sweetest grapes grown successfully in the open air The prize samples came from Niagara, and were most beautifully ripened

It is too late to expect many samples of the Adirondac, which is an early ripening sort; but the prize sample, shown by Mr. Thos. Brownlie, of Scarboro', proves that it can be well grown on the north shore of Lake Ontario.

The Diana has now been quite extensively disseminated, and it is gratifying to find that so good a grape is grown, and ripened in such perfection, in Toronto and York Township, that the grapes from this locality carried off both prizes. It is said to be an excellent variety for the manufacture of wine, and that the prize wines was made from this grape.

The Creveling is a very early ripening sort. The prize samples came from St. Catharines and Scarboro, showing that it thrives well in quite different localities. The fruit is of fine quality, but the vines do not always set well, thus often giving the bunches a very loose and straggling appearance.

The Hartford Prolific is also early, and evidently grows well in Scarboro and at Goderich. It is hardly equal in quality to either Creveling or Adirondac.

A large number of the Rogers Hybrids were shown. These are very large in berry, not uniform in bunch, most of them quite hardy and ripening in good season. The best bunches of Rogers, number 19, came from York Township, which shows that some will thrive over a large part of the Province.

The Catawba will not usually ripen well in Ontario, but Mr. Durand, of Niagara, exhibited three clusters of this variety that fully equalled any, even the best we ever saw, from the famed islands of Lake Erie.

The Iona is comparatively new, and many fears are entertained lest it should not be found to thrive in most parts of the Province, but Mr. J. B. Hay, of Waterdown, exhibited some very well-ripened clusters.

There are but few plates of grapes grown under glass in the general list, but the few that are shown are of fine quality. It is to be hoped that our residents in those parts of the land where the finer out of-door grapes cannot be thoroughly ripened will avail themselves of the hints given in the *Canada Farmer*, upon the cheap construction of glass houses, and enjoy the comfort of delicious grapes grown under glass.

There is a considerable display of water melons, and some green and scarlet flesh melons, but in October they cannot be of a very fine quality.

There were a few entries of domestic wines, but it was evident that very few yet understand the art of making wine from grapes. The dry wines on exhibition were almost sweet, and most of the sweet wine would pass for a cordial. Yet it is only by continued attempts that success can be achieved, and there is no reason why wines of excellent quality should not be made here. The prize offered for the best essay on wine making is a judicious action on the part of the Agricultural Association, and if continued for a few years will furnish our people with the much needed information on this subject.

In the professional list there is a very fine display of fruit of every sort, in which Mr. Leslie's, of Toronto, nurseries are most prominent, ably followed up by by J. A. Bruce & Co., of Hamilton; James Dougall, of Windsor, D. W. Beadle, of St. Catharines, J. & J. Gray, of Toronto; Chas. Arnold, of Paris; and C. E. Woolverton, of Grimsby. The country owes much to the enterprise and labours of these gentlemen in the distribution throughout the Province of such excellent and truly valuable and profitable fruits.

The collection of fruits shown by the Hamilton Horticultural Society, to which was awarded the first prize, is a truly magnificent display of all kinds of fruit, contested keenly by the Galloway Club of Lincoln County.

The display of garden vegetables of all kinds was large, and gives evidence of increasing interest and attention in this department of horticulture. A liberal variety of garden vegetables should be enjoyed by every well-to-do farmer, yet we venture to say there are very many who give no attention to the cultivation of the garden.

The celery exhibited is good, the onions as handsome as any could wish, and tomatoes and capsicums in greatest profusion. We noticed that in winter squashes the variety known as the Hubbard carried off first, second, and third prizes; and the first prize for the best six varieties of patatoes for table use was given to Garnet Chili, Early Goderich, Ash-leaved Kidney, Breeze's King of the Earlies, Breeze's Prolific, and Early Rose.

There was nothing of much interest to be found in the floral department, unless we except some really beautiful dahlias, in which Messrs. Leslie & Sons take the lead. Of these we name Lady Hubert, Queen Mab Bird of Passage, Peri, Stafford's Gem, and Triumph, as being very fine indeed. It can be no matter of disappointment that the display of flowers should be limited; the only wonder is that the frosts had not cut them down out of doors, so that the only resource would have been in greenhouse plants.

In closing this hurried sketch of the horticultural department of the exhibition, we can truly congratulate its friends on the continued evidence of progress, and an ever increasing taste among the people for, and skil in the cultivation of these finer products, for which so large a part of the Province is most admirably adapted.

DAIRY PRODUCTS

The new stimulus that has been given to dairy husbandry during the last few years by the introduction of the factory system, has called forth a large amount of enterprise and skill, and in various sections of the country, east and west, new establishments, are springing up, while the increased competition and the refined requirements of the English markets are stimulating the pioneers in this manufacture to bring up the quality of their production to the highest possible pitch of perfection. Judging by the factory products shown at the exhibition, we expect to learn that the quality of Canadian cheese during the past season has been of superior excellence. There was considerable competition; and the districts represented were widely spread, but chiefly in the counties of Oxford, Hastings, Northumberland, York, Halton, Haldimand, Welland, Perth, Huron and Grey. The general excellence of the samples was so good that the judges were very slow in making their election, and we believe did not come to a decision till after an adjournment. It is quite certain that some of the cheeses not honoured with a premium card were of a quality that reflected great credit on the maker Our own judgment would even have given a first prize to one of this undistinguished lot. The prize cheeses, were, however, without doubt, excellent samples. A. McBean, of Galt, Platt Kiernan, of Haldimand, and T. Ballantyne, of Sebringville, carried off the honours in the order of their names.

The private dairy cheeses, though not so numerous, made a creditable display, and were mostly of prime quality. A. Shaw, Nissouri, J. Patton, Scarboro', J. Franks, Dorchester, and A. Glendinning, Scarboro', were the successful exhibitors. Mr. Shaw also took a first prize for Stilton cheese; and Mr. Parsons, of Guelph, took only a second, though it would be difficult to find a better article than the cheese of his make.

The competition in butter, and the quality of much that was exhibited, gave evidence, which ought not to be confined to these rare occasions, that good butter can be made in Canada. Six prizes were awarded in each section, and the judges felt constrained to distinguish others as worthy of a premium. Let the unfortunate consumers who have suffered from dyspepsia and nausea, or deprived themselves of the luxury of butter because a good article was not to be had, consult the prize list and take courage.

APIARY DEPARTMENT.

Bee hives, bees, and honey, were well represented, showing clearly a great interest in bee culture. There were six competitors in bee-hives. Most of the hives, though constructed on the movable comb principle, are somewhat small. B. Losee, of Cobourg, showed a hive with a wire bottom, underneath which is a drawer for catching the moth, dirt, &c. If this is not kept quite clean it will prove detrimental to the hive, and become a moth nest instead of a moth trap. The frames of this hive come in contact with each other down the entire sides, and it must be difficult to operate without killing bees.

Mr. P. Nicolls, of Lindsay, showed what he calls the Economic Hive. The frames are hung with metal bearings, so constructed as to hold the frames at equal distances apart It has an internal arrangement, which, by means of a crank, is forced against the panes to hold them in place, or by withdrawing the frames may be moved apart. This in many cases would be difficult to do.

D. A. Jones, Tecumseth, exhibited Jones' Perfection Hive. The hive proper is made of tin, which is encased with wood. The frames are very deep, and for that reason difficult to handle when filled with honey.

J. Munson, of Collingwood, also showed the Dominion Beehive. It is much upon the same principle as the Langstroth hive, as improved by H. Alley, of Wintram, Mass. It is constructed with side and top drawers for surplus honey. Like the Langstroth it is very heavy and cumbersome, and like the Economic hive it is expensive.

J. H. Thomas was also on hand as usual with his hive, which is too well-known to require description. He also exhibited two fine stocks of Italian bees, and an Italian queen in an observing hive.

A. C. Attwood, of Vanneck, Middlesex Co., also exhibited J. H. Thomas's hive, as he claims, improved by himself. Mr. Attwood also exhibited a movable bee palace for exhibition purposes, which is very tastefully constructed, and in every way convenient.

It is gratifying to see a growing interest in this branch of rural economy. Nearly every year new hives are brought out claiming attention, but in most cases they are too complicated and too expensive.

NATURAL HISTORY AT THE PROVINCIAL EXHIBITION.

Were the progress of natural science in Canada to be measured by the display in this department at the annual exhibition, sorry indeed would be the estimate formed of the labours of our naturalists and the capabilities of our country. Those, however, who possess collections in the various classes of zoology and botany, know better than to expose their precious treasures to the dust and dirt of the exhibition, and the manifold hazards of carriage to and fro, when the only compensation they can look for is the few paltry prizes offered by the Association. If the Association desires to afford to its visitors a representation of the fauna and flora of the country, let it offer more suitable prizes and ask for collections of a more special character; and let it also set apart a certain portion of its space for the fitting arrangement and display of the specimens. In these days, when some men devote the labours of their lives to the working up of a few families in a single order of the animal or vegetable kingdom, it is absurd to ask for such general collections as would require a whole museum to illustrate.

Last year, at London, there was a very creditable display in the department of Zoology, thanks to the local branch of the Entomological Society, but this year there is not a single insect on exhibition, not a single mammal, not a reptile, not a shell, not a fossil, not a mineral. The only entries are—in Mithology a fine case of stuffed birds, chiefly water-fowl, very prettily grouped about a bit of marsh, with artificial water, rocks, ferns, lilies, etc,; it is contributed by Mr. J. Sand, of Toronto. A number of cases of both Canadian and foreign birds by Mr. S. Herring, taxidermist, Toronto, among which we noticed particularly some English game birds, such as quail, pheasants and partridges; a pair of East India pheasants, California quail, bitterns, a large case of owls, ducks, gulls, hawks from various parts of the world; another of herons and other birds; others of ducks, snipe, &c,—the whole well mounted and carefully preserved. In Botany an excellent collection of Canadian plants by Prof. Macoun, of Belleville, comprising no less than 1565 species, viz of exogens 785, endogens 381, acrogens 79, and anophytes 320. A collection of Canadian ferns by the same exhibitor, who is well-known as one of the best botanists in the Dominion. A very fine and well-prepared collection of native medicinal plants and roots also by Prof. Macoun. A neatly-prepared collection of Canadian plants by Miss Marton, of Guelph. The only other entries in natural history were by Mr. S. Wilmot, of Newcastle, who exhibited a series of aquaria stocked with salmon in their different stages, white-fish, and speckled trout all of his own rearing. and also the breeding apparatus filled with salmon

ova. This is certainly one of the most interesting and valuable portions of the whole exhibition, and many thanks are due to Mr. Wilmot for the amount of trouble that he has taken in bringing up so cumbrous an apparatus for the edification of visitors. His success in this somewhat novel branch of industry has thus far been very encouraging. Less than four years ago he began with four salmon; this year he has sent out from his ponds no less than 250,000 young fish. We trust that his good example will be widely followed, and that in a few years all our rivers and streams may be stocked with fish, and salmon become as cheap and abundant as they were in the days of the first settlers.

Annual Meeting of the Agricultural and Arts Association.

The annual meeting of the Directors of the Provincial Agricultural Association was held on Oct. 6th in the Agricultural Hall. There was a large attendance, not only of delegates, but of visitors from various parts of the Province. Hon. David Christie, the President, occupied the chair.

The President in his address adverted to the prosperous condition of the agricultural interest, and the happy continuance of peace in this country. He referred to the success of the present exhibition, and gave the financial statement of the year from the 1st of January to the 20th September, as follows:—

RECEIPTS.

Balance on hand 1st Jan., 1870	$1,649 97
Prizes unpaid and returned	12 00
Miscellaneous sources	791 54
Rents of Hall and shops	900 00
Government Grant for 1870	10,000 00
Rents for Booths to date	1,510 00
	$14,843 51

PAYMENTS.

Salaries	$1,323 32
Board expenses	1,206 75
Miscellaneous (payment to Glackmeyer, $1,000, etc)	1,397 87
Printing and Stationery	595 84
Legal expenses	229 19
Exhibition	229 00
Prizes	13 00
Veterinary School	550 00
	$5,544 97
By balance	9,298 54
	$14,843 51

He vindicated the management of the Council, and deprecated any transfer of power from that body into the hands of Government. He then very appropriately set forth the advantages of agriculture as a pursuit, and in the course of his remarks on this subject observed:—"My conviction is that we have lessened, *most materially*, the *grain-producing* power of the country, by the excessive drain which we have made on it for so many years. There can be no question that the most direct and economical recuperative process is in increasing the number of acres of grass, and diminishing the number of acres of grain—in other words, by *more* and *better stock*, and *less grain*. After all, I should not say that the result will be *less grain*. The acres in grain would be fewer, but the gross product would be much larger, while we should have more beef, mutton, and pork, and of better quality. It is also of the greatest importance to economize food for stock as much as possible, because *labour* is *money*, and labour costs a good deal of money in Canada. There are *two* ways of doing this—by improving the quality of the stock, and by economy in the mode of giving them their food. Some years ago I was much struck with the truth of a remark made by a farmer at a meeting of a farmers' club in Yorkshire The subject under discussion was the kind and quality of stock which farmers ought to keep. He said, "*I cannot afford to keep inferior stock, it is too expensive.*" This is true to the letter—inferior stock is too expensive to be profitable; that is, food, which has cost a great deal to produce it, is given to animals which, from their nature and conformation, give the poorest possible returns; there can be no economy in that. I do not wish to be understood as insisting that every farmer ought to keep a thoroughbred herd; that is a business by itself, for as Thomas Bates once said with entire truth, "There are twenty men fit to be premier for one that is fit to be a breeder;" yet, every farmer who breeds cattle, or sheep, or pigs, ought to have pure-bred males, and to use no other if he can get them, because it is only in this way that he can cheaply raise animals which will give the largest return for the food they get. Much may also be done in the way of economizing food by the mode in which it is given. Of course food will go much further when it is prepared in such manner as will give the digestive organs as much aid as possible, such as by cutting and steaming, and by crushing grain, etc.; but I specially refer to a practice which is becoming more common than it was, namely, giving stock a portion of grain or other condensed food while on pasture, and by soiling. Many recent experiments have been made which show that a very large saving can be effected by this process. The most extensive Canadian experiment has been made at Bow Park. Mr. Brown has expressed himself to me in terms of high commendation of this mode of feeding, as proved by his experience; the results of which, it is to be hoped, he will make public.

"When I had the honour on a previous occasion (15 years ago) to address you, I alluded at some length to the great necessity for more thorough and systematic agricultural education So much does want of it still appear to me to be urgent, that I feel it to be my duty again to refer to the subject. The question is, what can be done to supply the deficiency? We have an agricultural class in University College, and an able, experienced teacher, but few students. My conviction is that the work must be more radical; it must begin in our common schools; that is, elementary agricultural and mechanical instruction should form a leading part of the teaching. Dr. Ryerson has published a valuable little work on agriculture, which I hope to see made a text book in all the rural districts. Unquestionably, the result of giving elementary instruction would be not only to impart much important scientific and practical knowledge, but to make the farmers' sons of the country feel the importance and dignity of the profession of agriculture. Dr. Ryerson has done good service to the country by compiling the manual to which I have referred, and I hope that he will see to it that the benefit which it is so well calculated to confer shall not be lost to the country. It is a good thing for the cause which we desire to promote that we have so able a coadjutor as the Chief Superintendent of Education I feel convinced that he will soon make agricultural and mechanical instruction a leading feature in our common school teaching."

The next topic taken up was the Veterinary College in reference to which the proceedings of the Council and the reports of the institution have been already published.

The grant to the Entomological Society was mentioned, and the address concluded with some observations on the change in our own tariff, by which live stock for the improvement of breeds is to be admitted free of duty. He lamented however, that our American brethren had not reciprocated the action

A vote of thanks to the President for his able address was passed unanimously.

The question of the next place for holding the Exhibition was then discussed. A large number voted in favour of Ottawa, but a majority of 77 against 51 decided in favour of Kingston

Fruit Growers' Association.

ANNUAL MEETING.

The Fruit Growers' Association of Ontario held their annual meeting in the Agricultural Hall, Toronto, on Tuesday evening, October 4th, 1870.

President Burnet occupied the chair. The Secretary read the proceedings of the last meeting, which were approved.

The Directors' Report was then submitted, which contained the discussions of the meetings held at Brantford, Hamilton, London, and St. Catharines; the Prize Essay of W. Saunders, Esq., of London; the report of Mr. Saunders on the rewards offered for the capture of curculio; the report on the distribution of the Eumelan Grape; the returns received to the questions issued; an account of the fruit received from the Fruit Growers' Society of Nova Scotia; and the circular, embodying the objects and benefits of the Association.

The Treasurer's Report was then read, showing—

Balance in Treasury since 20th Sept., 69	$ 318 64
Members' fees since 20th Sept., '69	381 00
Government grant, August, 1870	350 00
Total	$1,049 64
Disbursements since 20th Sept., '69	860 41
Balance	$ 189 23

The President read his annual address, which was listened to with deep attention.

Mr. Saunders, of London, moved, seconded by Mr. Ross, of Goderich,—That the thanks of the meeting be tendered to the President for his very interesting and able address, and that he is requested to furnish the Association a copy for publication in the proceedings, which motion was carried with applause.

The meeting then proceeded to the election of officers, with the following result:—

President—Rev. R. Burnet, of Hamilton.

Vice-President—Mr. J. C. Rykert, M.P.P., St. Catharines.

Secretary-Treasurer—D. W. Beadle, St. Catharines.

Directors—Messrs. Jas. Dougall, Windsor; W. Holton, Hamilton; W. H. Mills, Hamilton: W. H. Boulton, Toronto; A. B. Bennett, Brantford; Geo. Leslie, jr., Toronto; W. Saunders, London; A. M Ross, Goderich; and Chas. Arnold, Paris.

Auditors—W. L. Copeland, St. Catharines; and W. J. McCalla.

Notice of motion to amend the Constitution of the Association, so as to separate the offices of Secretary and Treasurer, having been given by Mr. Mills at the Brantford meeting,

Mr. Mills brought the motion forward, and explained that his object was to secure to the Society greater checks upon the funds than could exist under the present arrangement, and not that he had any objections to urge against the person who had held the offices of Secretary and Treasurer.

No person seconding the motion, it was withdrawn.

Miscellaneous business now being in order,

Mr. Hammond, of Credit, asked how the Association classed the Ribston Pippin, whether as a fall or winter apple.

Mr. Dougall, of Windsor, replied that its season of maturity depended upon the place where it was grown; that in the varied climate of our Province—embracing the long, warm summers of the South of Essex, and the short, cool seasons of the Muskoka District—the Ribston Pippin was in the former an early fall apple, quite dry and mealy now, and in the latter was a winter apple, keeping well until March.

Mr. Leslie, of Toronto, said that it varied much also with the warmth of the summer, in some seasons ripening up early, and in other and cooler seasons ripening more slowly and keeping much later.

Mr. Caldwell, of Galt, stated that the apple kept well until March in that section, and was truly there a winter apple.

Mr. Arnold, of Paris, asked what are we to do in judging when the apple is entered both in the fall and winter varieties? and suggested that the method of classification now in use should be abandoned, and that prizes should be offered only for the best samples of particular kinds, without reference to their season of ripening, so that the judges would have to determine which was the best sample of Ribston Pippin, or Snow Apple, or Greening, and not which was the best fall apple or winter.

Mr. Beadle stated that, thanks to the efforts of the President and Vice-President, a beginning had been this year effected in this direction, which it was to be hoped would be carried out in all the departments of the fruit list.

Mr. Rykert stated that as soon as the Board of Agriculture should place sufficient prize money at the disposal of the Committee having in charge the Horticultural department of the prize list, this much needed reform would be effected.

Mr. A. M. Ross, of Goderich, wished to know the cause and cure of the rot in the fruit of the plum He had suffered much from this rot during the past season, much more than from the curculio, and deemed the rot a far more serious obstacle to the successful culture of the plum than the little turk.

Mr. SAUNDERS, of London, had also suffered severely from this rotting of the fruit, but could not suggest any remedy.

Mr. DOUGALL, of Windsor, had taken pains to have all the rotting plums carefully gathered and thrown on the ground, and then covered them and the ground under the plum trees with quicklime, also dusting quicklime freely through the tops of the trees, and thought he had in this way been successful in putting a stop to all further spread of the disease. He believed that this rotting was caused by minute fungi fastening on the fruit and developing there, and that the quicklime destroyed the fungus. The rot could not have been caused by the weather, for there had been no rain there for three months.

Mr. MILLS, of Hamilton, thought that the rot was not caused by a fungus, but that the rot having begun, and the state of the atmosphere being favourable to the growth of this fungus, it found in the rotting portion of the plum a favourable place for its growth and development. He thought the rot was caused by warmth and moisture occurring at a certain stage of the growth of the plum, and when this did not occur at that particular stage the rot did not occur, hence the plums in some seasons escape the rot altogether.

Mr. Ross said that last season was very wet, and the fruit on only two of his plum trees was affected by the rot, and these were shaded by other trees; this year the rot spread from those affected last year to the trees adjacent, while the trees in another part of his garden wholly escaped; hence he thinks that the rot is infectious in some way, and that if once introduced, if no way of stopping it can be discovered, it will continue to spread until the fruit on all the trees in the vicinity is affected.

Mr. W. H. BOULTON, of Toronto, said that the fruit on trees standing in the open ground in his garden was not affected, but on trees at the south side of a board fence the plums had rotted very considerably.

Mr. ARNOLD, of Paris, believed it to be an infectious fungus, which under favourable conditions grew upon the fruit, causing it to rot.

Mr. SAUNDERS, of London, asked why some of the plums on his trees should be rotten and others near not at all affected, if the cause of the rot be an infectious fungus?

Mr. ARNOLD replied that he had not observed such a state of things, but that the rot spread to the plums adjacent.

Mr. MILLS, of Hamilton, did not think that the rot is caused by fungi; and that the reason why some plums on the tree escaped while others rot is in the difference in the texture of the skin of different plums on the same tree, and that those having a skin whose texture resists the influences of moisture and heat escape the rot.

[NOTE BY THE HORTICULTURAL EDITOR—Gentlemen in this discussion made use of the term "infectious fungi;" but they did not mean to be understood as using that term in the usual sense of the word, "*infectious.*" Fungi increase by means of minute spores, which are perfected under favourable conditions in a very short time, and in countless millions. These spores are very minute, float in the air, and are carried about by the lightest currents, and these falling on a surface suited to their growth, under conditions of moisture and heat favourable to their germination, soon develop into a perfect plant, again perfecting its spores, to be in turn carried by currents of air and deposited upon some spot where they may germinate and perfect themselves.]

The PRESIDENT announced that the next order of business was the discussion of the subject of fruit culture in its relations to the farming interests of the Province.

Mr. MILLS stated that as the hour was getting late, now half-past nine, he would move that the discussion of this subject be postponed, and that the meeting do now adjourn.

This motion was carried, and the Association adjourned, to meet in the city of Hamilton, at the call of the President.

Ontario Beekeepers' Association.

ANNUAL MEETING.

The annual meeting of the Ontario Beekeepers' Association was held in Victoria Hall, Toronto, on the 5th. The meeting having been called to order by Rev. W. F. Clarke, President of the Association, the minutes of the last meeting were then read by the Secretary and approved, after which a few very appropriate and interesting remarks were made by the President. The meeting then proceeded to the discussion of the following questions:—Is there any danger of stocks having too much honey for wintering well? It was decided that there is not. What is the true principle of ventilating stocks in the winter, and how may it be secured? After a somewhat lengthy discussion it was decided that the true principle of ventilation consists in retaining the heat, but allowing the moisture to escape. In what respect are the Italian bees superior to the black bees? After a pleasant discussion it was decided that they were more prolific, more inclined to swarm early, hardier and better honey gatherers.

The officers were then appointed for the ensuing year as follows:—Rev. W. F. Clarke, President, re-elected; J. H. Thomas, Vice-President; A. C. Attwood, Secretary and Treasurer; Executive Committee—H. M. Thomas, D. A. Jones, G. Bennett, B. Losee, D. M. Beckie

The meeting was then adjourned, to meet again on Thursday evening in Victoria Hall, Melinda street.

SECOND DAY.

In the absence of the President the meeting on Thursday evening was called to order by the Vice-President. The meeting proceeded to discuss the following questions:—

Which is the most profitable way of disposing of late or weak stocks? It was decided it was best to take them up.

The opinion was generally expressed that the honey extractor was likely to come into general use among bee-keepers.

After considerable discussion it was decided that it was doubtful whether artificial impregnation could be reduced to successful practice.

After much discussion it was unanimously decided that in ordinary seasons it is unsafe to take honey from the body of the hive later than the first of July.

No decision was arrived at on the question, What is the best plan to prevent swarming?

Have any cases of foul-brood been discovered? It was answered that four cases had been observed.

Do queens mate more than once, and are queens ever partially impregnated? After some discussion it was decided in the affirmative.

The meeting then adjourned, to meet again at the time and place of the next Provincial Fair.

Quebec Provincial Exhibition.

Montreal was favoured with superb weather for the grand attractions of the Show week, and it was fortunate that the great boat race at Lachine did not take place till after the principal days of the Agricultural Exhibition; otherwise it is to be feared that on an occasion of such peculiar interest, aquatics would have robbed agriculture of a very large proportion of her votaries, and the crowds that thronged the Show grounds at the base of Mount Royal would have been found on the river side at Lachine. As it happened, there was ample opportunity on Tuesday and Wednesday (Sept. 13th and 14th), for the public to view the very excellent Exhibition with which the Quebec Board of Agriculture have inaugurated the new Fair Grounds at Montreal. These grounds are situated north-west of the city, and comprise an oblong area of about 21 acres. The land was but recently purchased, and was in a very rough condition. The preparatory work of draining and levelling has been done, the whole has been fenced in a substantial manner, and temporary structures have been erected for the Exhibition. These will be replaced by more permanent buildings for future shows. The horse sheds occupy one side of the grounds, along its whole length; and a similar row of covered stalls have been provided for cattle on the opposite side. In the centre of the ground is a building forming three sides of a square, for the Industrial department; south of this long sheds have been erected for sheep and poultry, and to the back similar structures were set apart for swine.

On the whole the exhibition of the present year compared very favourably with that of 1868, and in some respects showed marked improvement. Taking the live stock in the order of the Prize List, the Horses claim precedence, and this class was well filled. There were altogether a large number of entries, (nearly 200,) and many animals of superior merit. The competition was mostly confined to stallions, which were consequently in great force. The principal breeds represented were Clyde, Percheron, Normandy, Suffolk and Canadian. Among the first there were some splendid specimens of great weight and power, and well calculated to give a good frame and muscular development to the agricultural horse. The Percherons seem to be coming into favour in the Province, and might with advantage be introduced into Ontario. They are powerfully built, mostly grey in colour, of good size and great strength, with a marked do-

cility of temper, and greater quickness in action and pace than the Clydes. A fine specimen of this breed lately imported by Mr. Wright, of L'Assumption, gained the first prize. The Beauharnois Agricultural Society also showed fine specimens of both breeds. The Canadian horses, of which there were several good examples, present a close resemblance to the Normandy horse, from which they originally sprung. There was a magnificent Suffolk horse (Duke) on the ground. The animal is now owned by the Huntingdon Live Stock Importing Society, but was imported from England by Mr Cochrane. There was a fair show both of heavy and light draught stallions, and a goodly array of colts and fillies of the general agricultural variety. One of the principal attractions of this class was a very fine "coaching stallion," imported from England by Mr. Hyndman, and now owned by the Huntingdon Live Stock Importing Society. He is a superior animal, dappled brown with black joints, seems full of power combined with activity, and looked the beau ideal in form, speed, style, and action of a carriage horse.

The Cattle class comes next in order, and formed a main feature of the Exhibition. Mr. Cochrane was, in every sense of the term, the principal exhibitor, and showed nine of his recently imported animals These, though not the choicest of his herd, are really magnificent specimens of the Shorthorn breed. The lot shown by him, consisted of a two-year old bull, "Old Sam," and a one-year old bull, "Star of the Realm," two Booth cows, "Lady of the Lake" and "Jessie Hopewell," and one of Bates' strain, named "Potentilla;" two heifers, (two year old) "Lady Highthorn" and Baddow Rose;" a yearling heifer, "Phillis IX," and a bull calf. Some of the above had but just arrived on the continent, after a calm and prosperous voyage, which they had weathered without the slighest injury. Among the last arrivals was the famous cow, "Lady Grateful," for which Mr. Cochrane paid Mr. Booth the unprecedented sum of 1,500 guineas. This was too valuable an animal to expose to the risks of travel and showing, but those on the ground were of such a high order of excellence as may well prove to the Canadian breeder what may be attained by careful breeding.

The Ayrshires were most numerously represented, and appear to be growing in favour in the Province. There were over a hundred entries of this breed, and perhaps not a poor one amongst them. Taking them altogether, they were the finest lot that have been exhibited in Canada. The first prize bull, "Mars," owned by Mr. J. L. Gibb, is as perfect a specimen of the breed as can be desired, and cannot be exceeded on the continent. A considerable number of these Ayrshires were quite recent importations, and one of the best was literally transferred from the ship to the show-yard. Messrs Gibb, Whitney, Dawes, and Irving, the gentlemen who have most largely imported this valuable breed into the country, deserve great credit for their spirit and enterprise. For dairy purposes exclusively, Ayrshires are, without doubt, the best unmixed breed.

Of Herefords there were but 7 entries, and a very fair lot. In fact this breed scarcely ever fails, wherever shown, to hold the first rank, as regards evenness of quality, amongst individual specimens.

Devons were but scantily represented, there being but eleven entries, and these, with the exception of the prize animals, were of very inferior order.

The Galloways were represented by just four specimens not deserving any special notice. The breed, valuable chiefly for its hardiness, is evidently not in favour.

Mr. Sheldon Stephens showed a lot of 21 Jerseys, very beautiful animals—4 bulls and 17 cows and heifers, of all ages. The original importation was made two years ago, and the herd has largely increased in the interval. The best were purchased from Prince Albert's farm. They were erroneously classed as Alderneys. It would be well for agricultural societies to include the Jerseys, Alderneys, and Guernseys together, under the name of Channel Island cattle, in order to prevent confusion.

There were two prizes offered for the best herds of cattle, comprising one bull and 5 females of any age; the first, or Prince of Wales' prize, being $60, and the second, by the Bureau of Agriculture, $50. The Prince's prize was awarded to Mr. Cochrane for a herd of Shorthorns, consisting of Old Sam, Lady of the Lake, Jessie Hope well, Potentilla, Baddow Rose and Lady Highthorn: the second was awarded to a herd of Ayrshires.

The sheep classes were tolerably well filled, especially that devoted to Long-wools other than Leicesters or Cotswolds. Of Cotswolds there was a capital show, including many fine animals either imported or bred by Mr. Cochrane; among them a magnificent Shearling ram, which deservedly attracted general admiration, and a pair of ewes that took the prize at the Royal Agricultural Show this year. The Leicesters and Southdowns were of less account, but the class of Long-wools as a whole showed to advantage, with many fine cross-bred specimens of an admixture of Leicester and Cotswold blood.

Of the swine, it would not perhaps be too much to say that it is not often that a better class of pigs is met with than the Suffolks and Yorkshires shown here. They monopolised the lion's share of 118 pens; the Berkshires making a numerically small remainder. Some recent importations shown by Mr. Cochrane were among the choicest of the class.

There was a tolerably fair show of poultry, well accommodated as to shelter, and rather better arranged as to varieties than in former exhibitions; but they would have shown to greater advantage in uniform pens, which can only be secured when provided by the Directors of the Exhibition, instead of being left to the fancy of the exhibitors Mr. Stephens' Dark Brahmas were excellent birds.

The display of implements was not large, but possessed some special features of interest. One thing worthy of note was the number of implements shewn by the firm of Evans & Co., who have, what is much wanted in the principal cities of Ontario, an Agricultural Implement store, where the farmers can procure almost anything in this department, instead of being obliged in every case to ascertain the name and locality of the manufacturer, and obtain the desired article from him. This has been often felt as a serious inconvenience in Ontario A double-furrow plough may be mentioned among the novelties. Much interest was also manifested in a brick machine in actual operation Judging by the expeditious and capital work turned out, it has every promise of being a most useful invention. The patentees and exhibitors were Messrs. Bulmer and Sheppard, of Montreal. The machinery appears simple and effective. The prepared clay is fed at the top, well worked and mixed within the apparatus, and pressed into moulds at the bottom. The bricks are turned out six at a time, every few minutes, perfect in shape and solidity. A man carries away each tray as it is delivered, and replaces it with an empty one. Two men and three or four boys are all that are required to attend to the machines. It is said to be capable of turning out 15,000 bricks a day. The amount of pressure can be regulated with the greatest nicety by the operator who attends to the moulds, and there is a contrivance by which, if any stone or other obstruction impedes the working, the parts are thrown out of gear, and the impediment can at once be detected and removed. The machine on the ground was worked by two horses, but it is equally adapted for steam power The proprietors intend to exhibit this invention at the Ontario Provincial Fair.

A small steam engine and screw, constructed for a miniature propeller, also attracted considerable notice. It was made by Mr Gilbert for the Harbour Commissioner The entire weight of the engine and boiler is 29 cwt., the length of the boat is 36 feet, and it draws but 3 feet of water The remaining implements consisted of the usual array exhibited on such occasions.

The display of grain, roots and dairy products occupied a comparatively small shed, and was in no way remarkable.

The Industrial Department, for which a temporary wooden building had been erected, was comparatively small in extent, and the articles, for the most part, were contributed by Montreal exhibitors. The utmost was made of the limited space, and the general arrangements, under the direction of

Mr. Pell, were excellent; but there was not sufficient light for an adequate display. On entering, the building the visitor was first attracted by the tastefully arranged stand of Messrs. Winning, Hill & Ware, who are celebrated for their cordials, liqueurs, syrups, and other articles of a like nature. This firm carried off the gold medal at the Paris Exposition There was a fine display of domestic and monumental marbles from the respective firms of Forsyth and Mavor; and, adjoining these, were interesting displays of ornamental slate in imitation of various marbles. The patentees, A. K. and W. I. Mills, prepare this "marbleized slate" from the best material quarried in Vermont, and by putting on the marbled surface within the Province, can offer the manufacture at a much lower price than it can be imported from the States. The material is admirably adapted for a variety of purposes, and its introduction into Ontario would be a great advantage. The proprietors exhibited ornamental fire places, and a number of other articles, in very elegant and effective styles. It is very cleanly and well adapted for many homely domestic uses, as well as for decorative objects.

A large proportion of the building was occupied by stoves, furnaces, and the like. There was a fine display of carriages, a great variety of sewing machines, and a fair assortment of household furniture; besides a miscellaneous collection of manufactured articles, altogether too numerous to particularise.

The Show was, on the whole, a good one, and attracted a large concourse of visitors. With the improved accommodation and arrangements which will, no doubt, be carried out before another year, the Council of Agriculture hope to establish an annual Exhibition, which will assuredly be of great service to the Province in stimulating progress in the various industrial arts.

The Western Fair.

The Western Fair, under the joint auspices of the East Middlesex and London Agricultural Societies, was held in the showgrounds of the latter city, on the 27th and two following days of September, and was altogether a success. The weather was fine, and the grounds were filled each day by a large gathering of visitors.

HORSES.

The number of entries in the horse class was unprecedented, and the stalls were crowded to excess. Many should never have been exhibited, but there were in nearly every section animals that deserved distinction. Of blood-horses there was only a small show; but the numbers and general excellence of those in the agricultural section were considerably above par, while the chief bulk of the show in this department was made up by the road and carriage horses. In the heavy draught class there were some fine imported specimens—one shown by Mr. Buckland, of Guelph, was deserving of special notice. He is a Suffolk Punch, named "Britton," 4 years old, a powerfully built animal, and had in England twice gained prizes at the Royal Society's shows. Thomas Evans also showed a fine imported draught horse, "Canaby," 5 years old. There were also good native bred specimens of the same breed.

Among the agricultural horses considerable difficulty was experienced by the variety and distinct character of the animals entered under this head. Some were too light, and should have been considered roadsters, and others were decidedly too heavy and fitted only for draught work. The first prize for aged horses in this class was awarded to G. Teasdale, of London, for a fine bay stallion, "Royal Oak," 5 years old; and the 2nd to Leonard Hunter, of Osbourne, for his horse "Young Coachman," that has been a successful competitor in previous years. The 3rd prize was gained by A. M. Leach, of Brooke.

In the 3-year-old section, the highest place was gained by James Jackson, of North Dorchester, for a well-known stallion "Hard Fortune." The 2nd prize in this section went to Thomas Hodgins, of Biddulph, for a good bay named "Rob Roy."

The 2-year-old section contained one of the most promising animals on the ground, a bright bay, which deservedly took the first prize. He is the property of Daniel Flood, of London, was sired by "Anglo-American," and is a remarkably fine animal.

A few good yearlings were shown in the same section. "Captain Wallace," a horse of some celebrity, owned by Mr. J. Mason, of Clinton, was exhibited, but failed to get a prize. A beautiful black French Canadian stallion was shewn by Lachlan Wier, of St. Thomas, and was entitled to an extra prize. Among a number of good matched horses, a pair of superb greys, owned by J. Rutledge, of London, gained a first prize, and a promising pair of bays the second. In road and carriage horses Mr. Buckland shewed an imported animal of much merit. This section was very numerously filled, as was also that of horses for general purposes

CATTLE.

The Durham class was well filled, there being 123 entries. In the two-year old section, Mr. McLeish gained the first prize for a roan bull, and Major Greig the second for his red and white bull, Harold—a decision which, in our opinion, should have been reversed. The yearling bulls were also good, and a very promising animal, shown by J. S. Smith, and bred, we believe, by Messrs. White & Kirby, took the first honours, Col. Taylor carrying off the second for Proud Duke, bred by J. O. Sheldon, of Geneva. In the yearlings, J. McGugan, of Strathroy, gained the first prize and diploma for the best bull on the ground. There were some excellent aged cows; the honours in this section went to J. S. Thomson, of Whitby, for Duchess 8th, who gained the first place. His yearling heifers, Christabel and Sylvia, attracted much attention, and won the highest honours in their classes. Major Greig's 6th Duchess of Oakland obtained the first prize in her class, two year old heifers; while in three year cows Bride of Greenwood was placed third, being beaten by Thomson's Queen of the May for first place, and Colonel Taylor's Elgitha for second. For Duchess 6th, of Oaklands, Major Greig gave $1,500 at the McMillan sale in Xenia, Ohio. Bride of Greenwood was also bought on the same occasion. Several of the others were from Mr. Cochrane's stock. The other breeds of cattle did not come up in numbers or excellence to the Shorthorns; but the Devons were, on the whole, a good class, and some of the animals shown were perhaps the best of that breed in the Province. There were a considerable number of grades, some of them crosses with Shorthorns, of superior excellence. There was also a fair show of fat cattle and working oxen.

SHEEP AND SWINE.

In addition to the live stock already noticed, the London fair had a good display in other classes of animals. The show of pigs and sheep, however, was seen to some disadvantage from the disproportion between the accommodation which had been provided for a Provincial Exhibition, and the diminished, though respectable, number of occupants in this local fair. Barring the drawback of long rows of empty pens, there was altogether a fine collection of Leicester and Cotswold sheep, and a few of other breeds. Among the pigs were a large preponderance of improved Berkshires, with some good Suffolks. Mr. Roach, of Hamilton, was among the most meritorious exhibitors, and had on view, besides a large number of animals bred by himself from imported stock, four recent importations of great value, consisting of an improved Berkshire boar, 13 months old, a Suffolk boar and two young Suffolk sows. Mr. John Corrie also exhibited some remarkably good animals, and among them a beautiful imported Berkshire hog.

POULTRY.

Of the poultry one expects in London a superior show, for the city and neighbourhood claim some of the most successful breeders of this class of stock. In the present exhibition there were a large number of entries, but a very considerable proportion failed to show, and the display, though a fine one, was in consequence much crippled. The season of the year is also somewhat unfavourable, and many good birds were in poor feather, and not at all in show condition. Notwithstanding these disadvantages, there was a fine display of nearly every variety of fowl. Among Mr. Lamb's best pens were buff and white Cochins, and a beautiful pair of silver pheasants. Mr. Peters showed some fine Dorkings, besides other excellent birds. Mr. Bogue's silver Polands were magnificent, as were also his silver pencilled Hamburghs. Mr. Fearman, of Hamilton, showed some superior dark Brahmas. Mr. Plummer and Mr Lamb had each a fine collection of different varieties. Rouen and Aylesbury ducks were in force, and there was a good show of geese, both white and grey. A notable defect, which should by all means be remedied in future, was the absence of proper arrangements, a fault that seriously detracted from the effectiveness of the show.

IMPLEMENTS.

There was a fair display of the usual varieties of farm implements, contributed for the most part by well known exhibitors. Among the novelties deserving notice was a strongly built and effective stump machine, manufactured by Mr. John Plummer, of London, which seemed well calculated for its work. There was also a convenient construction of waggon, exhibited by Parker & Bateman, Strathroy, for the purpose of unloading by tilting over the box. This movement is effected when desired by the horses stepping forward. The same firm showed a simple and effective gate hinge, which allows of adjustment for snow, &c. Anderson & Johnson showed a meritorious invention styled a "lodged grain and pea harvester," which consists of a number of strong iron teeth that can be attached to any reaping machine so as to project beyond the ordinary guards.

HORTICULTURAL PRODUCTS.

This department of the exhibition was well filled, and the spacious shed appropriated to it presented a most attractive appearance. The display of fruit, especially apples, was unusually good, with a large competition, both in the general collections and varieties. For the best collection the first prize was given to one containing the following sorts :—Maiden's Blush, Cayuga Redstreak, English Russet, Northern Spy, Drap d'or, Spitzenberg, King of Tompkins' county, Beauty of Kent, Jonathan, Baldwin, Winesap, Dominie, Fall Pippin, Fall Orange, Canada Red, Golden russet, R. I. Greening, Kentish Fill-basket, and Snow.

The first prize for the four best varieties of dessert apples was given for Snow, Russet, Robin Hood and Golden Russet. For the best cooking apples—R. I. Greening, Gravenstein, Fall Pippin and Twenty-ounce. For the best 12 dessert apples (single variety)—Gravenstein, the best 12 fall cooking—Cayuga Redstreak—a remarkably good specimen; the best 12 winter dessert—English golden Russet; and the best 12 winter cooking—Rhode Island Greening.

The show of pears was small. The prize for the best six varieties was awarded for White Doyenne, Seckel, Glout Morceau, Louise bonne de Jersey, Flemish Beauty and Duchesse d'Angouleme. The prize for the best three varieties was adjudged to Louise bonne de Jersey, Duchesse d'Angouleme, and Bartlet. In the single varieties Flemish Beauty carried the palm for dessert fruit, and Beurre Clairgeau for winter.

There was but a small show of plums. Mr. Saunders took a first prize for a plate of Dennistone's Superb.

Peaches also were but slenderly represented, the most meritorious specimens being seedling fruit raised by F. F. McMullen, the Verger of St. Peter's.

There was a remarkably fine display of grapes, to which the Hon. J. Carling contributed a meritorious collection, a noble bunch of Muscat Hamburg being conspicuous among them. Mr. Carling also showed a fine collection of plants in flower, which, with a similar one furnished by Mr F. Rowland, and another by James Goodall, from the grounds of the late Judge Wilson, contributed much to the adornment of the room. The general display of flowers was, for the season, a good one.

Among the vegetables, the most worthy of note were potatoes, which were exhibited in unusual quantities and excellence.

The arrangements in the horticultural hall were excellent, while in some other departments, more especially the live stock, they were very bad. Another defect which, amid so much to commend, calls for passing notice, was the absence of any names of owners or premium cards, till the exhibition was nearly over. Reporters and the public were kept equally in the dark in these interesting particulars. There are some advantages in withholding the exhibitors' names, but we think the disadvantages counterbalance them; and, at all events, arrangements should be made for an early completion of the judging and announcement of the awards

IMPORTATION OF THOROUGHBRED STOCK.—Mr. John Miller, of Pickering, has just imported from England and Scotland a valuable lot of thoroughbred stock, consisting of one Shorthorn bull and eleven cows and heifers of the same breed all of first-class pedigrees, and several of them prize-winners in British show-yards. He has also imported a number of pure-bred Cotswold sheep and Berkshire pigs.

Crops in the States.

An Associated Press despatch, dated Washington, Sept. 16, states :—

The August report on the crops, from the Department of Agriculture, says that the corn is injured somewhat in some localities by the drought, the wet weather, heat, worms, and heavy frosts, but not sufficiently as yet to threaten a material reduction of the product heretofore anticipated. The States showing a condition below the average are New Hampshire, Massachusetts, Rhode Island, Connecticut, Delaware, Maryland, Mississippi, Kansas, Nebraska, California and Oregon. There is considerable damage done to the cotton crop from rust, worms and unfavourable August weather, but the general prospect is not discouraging. There is little in figures to indicate a decreased yield of cotton, and favourable weather henceforth must insure considerable increase. Returns upon the wheat product pertain chiefly to the condition of the crops when harvested. The grain has not been threshed out to any considerable extent, so the October returns must be had before the estimate of the aggregate of wheat productions of the year can be made. The quality of the grain threshed is generally excellent, in many cases compensating for the deficient quantity. The rice and barley crops were generally harvested in good condition, with slight local drawbacks. There is an apparent diminution in the rye crop and also barley. Tennessee, Michigan, North Carolina, West Virginia, and Wisconsin are the only States in which the report of the prospect of buckwheat is above or up to the average. The middle or Western States indicate a decline of 5 to 10 per cent.; New England 15 to 20 per cent. The drought in many sections has materially injured the potato crop. In most of the States the quantity of the hay crop is above the average. Sorghum seems to have been entirely neglected east of Pennsylvania. The crop in most of the western States is reported in a fair condition. Louisiana and Florida report a sugar crop five to ten per cent. above the average. Texas, Mississippi, Alabama and Georgia report ten per cent below the average. California is the only State that reports an increased average in hops. The tobacco crop is reported 1·4 per cent. below the average in Connecticut; seven below in Massachusetts; 10 in Maryland; 17 in Mississippi; four in Texas; and two above the average in New York; five in Pennsylvania; four in Virginia; 14 in North Carolina; 10 in South Carolina; 13 in Georgia; 10 in Arkansas; 9 in Tennessee; 10 in Kentucky, and three in Ohio. There is an average in Missouri, Illinois and Michigan. There is much complaint of apples falling during the last two months and of retarded growth, caused by the dry weather. A fair product is promised in the eastern and middle States generally; and in Virginia, North Carolina, South Carolina, Tennessee and Kentucky, six-tenths of the average crops in the western States. The small decline in wool is favourable. The size and weight of the stock of hogs generally compare favourably with that of former years, except in several of the southern States and Illinois, Indiana, New Hampshire, Massachusetts, Connecticut and Oregon, which indicate depreciation in this regard.

This year will be remarkable in France for a great advance in the employment of agricultural machinery.

The International Agricultural Exhibition announced to take place in Paris next year, has been brought to a stand still; and it would not be surprising if it was deferred, apart from the return of peace, till 1872.

EARLY ROSE POTATO.—This has proved to be the best second early potato this season, of good size, productive, and cooking dry and mealy. We commend it for trial.

The Quebec Board of Agriculture are about to compile and publish a Canadian Herd Book for Ayrshire Cattle, on a plan similar to the Shorthorn Herd Book issued by the Ontario Board of Agriculture.

The whole of the breeding stud of Colonel Townley, and the yearlings of Mr. Vaughan, were sold by auction by Messrs. Tattersall, at Fairfield. The sale was very slow, and many of the yearlings offered were withdrawn. There was only one case in which especial interest was shown, and that was in the competition between Mr. Hartington, of Limerick, Mr. Holmes, of Beverly, and Mr. Blenkiron, for possession of Breadalbane, own brother to Blair Athol, which eventually ended in favour of the last-named gentleman for £1,650.

A great breadth of barley has been raised this season in the county of Ontario, and the dealers expect large quantities will be brought to market. The Whitby *Gazette* says a great deal of barley has been carried over from last season, and advises all who are thus situated not to mix last year's crops with those of the present, as by doing so it will render the whole comparatively valueless. New barley malts more quickly than old, so that maltsters will not buy grain of different crops mixed together, as they cannot use them. Most of the barley crop is used for brewing purposes, and farmers will do well to recollect this caution, as otherwise they will find a difficulty in selling.

The Guelph monthly fair on October 5, had a large supply of cattle, but buyers were few and timid. The decline in beef in the United States, and the absence of the usual number of buyers at the Provincial exhibition tended to dull competition. The *Mercury* says fat cattle brought, live weight, from 3c to 4c, and one good animal sold for 4½c, which was considered a very good figure. Average animals sold at from $30 to $38 per head. Mr. Samuel Ridgeway, of Eramosa, sold a very nice heifer for $38. Milch cows were not in demand, and the class of animals offered was of inferior quality. The price asked ranged anywhere from $25 to $40. Sheep were on the ground in very small numbers. One middling lot was offered at $4 per head, but the buyers would not give more than $3, which was refused. Working oxen were present in considerable numbers. There was but little demand for them. A very fair yoke of these cattle could be had for from $75 to $100.

Miscellaneous.

Novel Application of the Sewing Machine.

The old country farmer, from his moist climate, and the large amount of manure he uses, both artificial and ordinary farm-yard manure, has more straw than he knows what to do with, and he also has more crops than he can think of putting entirely under roofed buildings. Consequently, the stack yard is to be found on every farm, containing a greater or less number of stacks of grain, beans and peas, and of hay, although generally there is a considerable amount of hay stacked near to its place of growth. But all these stacks are thatched with straw, and thus rendered completely weatherproof. The stacks of wheat, beans and peas, are only thatched on the roof, but barley, to prevent staining, is often thatched down the sides as well. The thatching bill in a large farm varies from £15 to £35 sterling annually.

Good thatchers are scarce, and some use more straw than others. Mistakes in the work happen, and then great destruction of the grain follows, for besides that which is absolutely lost, the sample of the whole is injured, and consequently reduced in price. In order to meet these difficulties, some ingenious person adopted the plan of constructing a large sewing machine, with large needles, sufficiently strong to carry good sized tarred yarn, and of length enough to reach through the required thickness of straw. These machines put in two or more rows of stitching along the middle of a belt of straw, and at one end also in some cases. The straw is laid on a frame or table, and supplied in a continuous belt to the machine. The needle work alternately, so that one of them goes through the piece of straw stitched up by the other. The straw thus stitched together is rolled up in large rolls, and applied to the roof of the rick. The lower roll is put on first, all round the lower part of the roof of the rick, until the circuit is complete. The second row overlaps the first, covers over the stitches, and keeps them dry, the loose ends of the straw always overlapping. The mats or belts of straw are fastened on in the usual way, by pegs or spars stuck into the body of the roof of the rick, and thus the operation is effectually and quickly completed without the necessity of any specially skilled labour. Fifteen hundred feet superficial waterproof thatch can thus be made by hand power per hour; no doubt, when carefully taken off, it will last for more than one season.

Henry Ward Beecher on Interest.

No blister draws sharper than the interest does Of all industries, none is comparable to that of interest. It works day and night, in fair weather and foul. It has no sound in its footsteps, but travels fast. It gnaws at a man's substance with invisible teeth. It binds industry with its films, as a fly is bound in a spider's web. Debts roll a man over and over, binding him hand and foot, letting him hang upon the fatal mesh, until the long-legged interest devours him. There is but one thing on a farm like it, and that is, the Canada thistle, which swarms new plants every time you break its roots, whose blossoms are prolific, and every flower the father of a million seeds; every leaf is an awl and every branch a spear, and every plant like a platoon of bayonets, and a field of them like an armed host. The whole plant is a torment and a vegetable curse and yet a farmer had better make his bed upon Canada thistles than attempt to lie at ease upon interest

Building Lime.

As it is often of considerable importance to those who may wish to use lime for any of the purposes for which it is available that they should be able to distinguish a good article from that which is of inferior quality, we shall describe briefly a few of the common tests by which good lime may be distinguished from that which is poor. Of two pieces of lime about the same size, the heavier will usually be the best. There are a few marked exceptions to this rule, but in general it will afford trustworthy indications.

Good lime is greasy and unctuous to the touch; poor lime is dry and gritty; when good lime slacks in water it falls quickly, causes the water to boil up furiously, and gives out a great quantity of heat. The slacking of poor lime is attended with but a slight boiling of the water, and a small increase of the heat; moreover, the quantity of water required to slack good lime will be nearly one half its bulk. Good lime, when slacked, will swell to twice its original bulk, and if exposed to water continually changed, the lime will all be taken up without leaving any residue. Poor lime, when slacked, will swell to two and a half times its original bulk, and there will always remain a gritty residue, no matter how much water may be run over it.—*Am. Engineer.*

Advertisements.

Markets.

Toronto Markets.

"Canada Farmer" Office, Oct 14th, 1870.

FLOUR AND MEAL.

There is nothing of special interest to note in the breadstuffs market. The continuance of the continental war has but slightly affected prices either at Mark Lane, or in the United States, though if anything there is a slight upward tendency. The following are the Toronto rates:

Flour—Superfine, $5.15; Extra, $5.20; Fancy, $5.25 to $5.50.

Oatmeal—$4.40 to $4.50.

Cornmeal—$4.00.

Bran—$11.00 to $13.

GRAIN.

The demand for wheat is chiefly for local milling purposes. Barley is coming in pretty plentifully, but some farmers are still holding back for a rise. Oats are plentiful and prices remain steady.

Wheat—Soules, $1.15 to $1.25; Treadwell, $1.10 to $1.12; Spring, $1 to $1.10, Midge Proof, $1.00 to $1.05.

Barley—Bright, 70c to 78c.; inferior, 60c. to 65c.

Oats 37c. to 38c.

Peas—70c.

Rye—70c.

HAY AND STRAW.

Hay continues in good supply and selling at $8.00 to $12.00.

Straw is scarce, and has sold as high as $10. From $6.00 to $8.00 may be considered the present price.

PROVISIONS

Live Hogs—$6.00 to $6.50

Pork Mess, $27

Hams—13½c. to 17½c. wholesale

Cheese New, 12½c. to 13c.

Butter—17c. and upwards

Eggs 12½c to 14c. per dozen.

Salt—Goderich, $1.65; American, $1.75; Liverpool, coarse, 75c. to 80c.; fine, $1.00 to $1.20

CATTLE MARKET.

There is a free supply; many farmers running short of pasture and not intending to put over their stock during winter are sending in their beasts to market.

Beeves $3.50 to $5.

Sheep $3.00 to $5.00.

Lambs $2.25 to $3.25.

HIDES AND SKINS.

Hides green, 8c; cured, 9c.

Calfskins- 11c. to 12c.

Sheepskins- 65c

Wool—30c. to 31c.

Montreal Markets.

Flour—Extra, $5.90 to $5.95; Fancy, $5.70 to $5.75; Welland Canal Superfine, $5.25 to $5.30; Superfine No. 1 Canada Wheat, $5.30 to $5.90; No. 1 Western wheat, $5.25 to $5.30; No. 2 Western wheat, $4.90 to $4.95. Bag Flour, $2.40 to $2.60.

Wheat Canada fall, $1.15 to $1.16; western, $1.13 to $1.25 in bond.

Oats—Per 32 lbs., 40c to 42½c

Barley Per 48 lbs., 65c to 70c.

Butter Dairy, 20c to 21c., store packed, 17c to 25c.

Ashes -Pots, $6.25 to $6.30; Pearls, $6.85 to $6.90

Pork Mess, $26.50.

Provincial Markets.

London, Oct. 11.—Spring wheat, $1.20 to $1.29. Red Fall do. $1 to $1.09, White do. $1 to $1.20; Barley, 50c to 64c. Peas, 60c to 65c. Oats, 31c to 32c. Corn, 70c to 65c. Rye, 55c to 65c. Fleece wool, 28c to 31c.

Hamilton, Oct 11. Delhi wheat, $1.20 to $1.22. Treadwell do., $1.05 to $1.06, red and amber, $1.05 to $1.06. Barley, prime, 70c to 78c; do., poor, 50c to 67c. Oats, 34c to 36c. Peas, 55c to 60c. American fleece, 37c to 38c. Canada fleece, 30c to 31c.

Ottawa, Oct 11. Flour Extra, $7.25. Double, $6.25 to $7. No 1, $6.25. Oatmeal, $5 to $5.25. Cornmeal, $3.75 to $4. Oats, 50c to 52c. Peas, 60c to 70c. Wheat $1.15 to $1.20. Pork, mess, $27. Beef, $5. Dressed hogs, $9 to $10.

Guelph, Oct 11. Fall wheat per bushel, $1.00 to $1.02. Spring, $1.05 to $1.15. Oats, 32c to 36c. Peas, 56c to 63c. Barley, 55c to 70c. Wool, 31c to 32c. Hides, per cwt, $5.50 to $6.50. Beef, $7 to $8. Pork, $7 to $8.50. Eggs, 15c to 17c. Butter, 15c to 19c. Pelts, 40c to 70c. Lambskins, 50c to 75c.

Owen Sound, Oct. 12.—Fall wheat, $1; Spring do., 98c to $1.01. Barley, 50c to 60c. Oats, 29c. Peas, 50c to 54c. Butter, 15c to 17c. Eggs, 10c to 12c. Hay, $6.50 to $7.

Contents of this Number.

The Canada Farmer is printed and published on the 15th of every month, by the Globe Printing Company, at their Printing House, 26 and 28 King Street East, Toronto, Ontario, where all communications for the paper must be addressed.

Subscription Price, $1 per annum (Postage Free) payable in advance.

The Canada Farmer presents a first-class medium for agricultural advertisements. Terms of advertising, 20 cents per line space. Twelve lines' space equals one inch. No advertisements taken for less than ten lines' space.

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.