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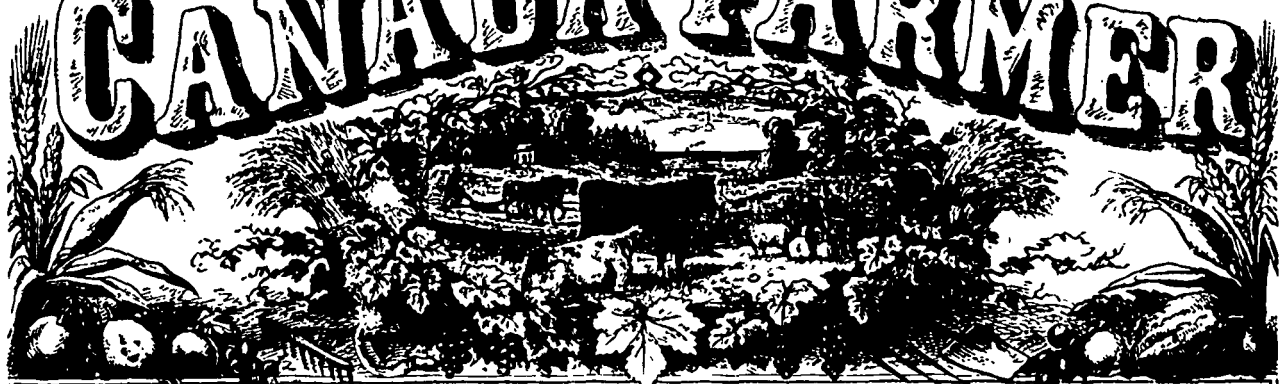
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THE

# CANADA FARMER



VOL. I. No. 4.

TORONTO, CANADA, APRIL 15, 1869.

NEW SERIES.

## The Field.

### Further Notes on Spring Work.

**POTATOES**—This crop deserves better culture than it usually gets, and also, perhaps, somewhat earlier planting. In an article on the "Relative Cost of Root Crops," we give the practical experience of a Quebec farmer in growing this crop, showing that, with careful culture, large returns can be depended upon. We are not among those who imagine that success in growing this crop is only to be had by those who invest largely in some new and costly variety. In fact, we think none of these high-priced new varieties will ever become as great favourites for the table as some of the old sorts. We would not desire a better potato for late summer and early winter use than the Scotch Kidney or Pink-eye, nor for late winter and spring use than the Peachblow; and with the same care and culture we think they will yield just as profitable returns as any of the newer sorts. For a large, coarse potato, to feed to stock, the California, Garnet Chili, Harrison and Cuzco, will prove valuable, being heavy yielders, though not very good as table potatoes.

**INDIAN CORN**—This crop succeeds well in most parts of Canada within thirty miles of the lakes. It is, however, scarcely so profitable now as roots or potatoes, for the more cheaply grown corn of the great prairies of the West comes into competition with it even at our own doors, while roots can be more profitably made into meat and manure, we think, in Canada at least; and less corn is grown here now than was ten years ago. Corn likes a light, warm, rich soil, with plenty of long manure. The season here being rather shorter than in the western prairies, the large, strong-growing sorts do not mature well. We must depend on the earlier kinds, as the Dutton, Eight-rows Yellow, &c., which do not yield so largely as the coarser varieties. About the 25th of May is as early as we can plant here, and we often get delayed till June, when the pro-

spect of the ears ripening before frost comes in the fall is rather uncertain. The land must be got ready and well prepared in good time, for a delay of a week in planting corn will often make a serious difference in the yield of the crop.

**CORNERS** should be sown by the end of May. An article on the culture of this crop will be found on another page, so we will not discuss the matter here.

**PARSNIPS**—This is a crop that might be more extensively grown than it is, especially on strong soils, which the parsnip delights in. It is a less troublesome and more certain crop than carrots, and has the advantage that it may be kept in the ground all winter without injury, and fed out to milch cows and to horses in spring, at a time when other roots are pretty well used up. The soil must be deeply ploughed and well worked. Plant in drills the same as for carrots; but this can be done earlier, as frost does not hurt the young plants. Seed costs 75 cents per pound, of which about four pounds will sow an acre. As the roots grow entirely below the surface, most of the work of weeding, &c., can be done with a scuffling hoe or scarifier. Thin out the young plants at the first weeding to four inches apart in the drills.

**MANGOLD WURTZEL**—This will give the largest yield of roots per acre of any crop we can grow, but is not equal in quality to carrots, beets, or turnips, for feeding to stock, by about 20 per cent. It has also the disadvantage of not keeping so well in our winter climate as turnips or carrots, and does not answer for fattening purposes. It is grown in the same way as carrots, except that the drills should be further apart, say twenty inches, and the plants thinned out to eight or ten inches apart in the drills. Sow from 20th April to 15th May. The Improved Long Red is best on rather light soils—the Globe varieties, either yellow or red, on stronger soils. Four pounds of seed, costing 50c. per pound, will sow an acre. With good soil and good culture, this crop will give from 1,000 to 1,500 bushels per acre.

**SUGAR BEETS** may be grown in the same way as mangolds, except that the drills should be closer together, say 14 to 18 inches apart, and the plants should be thinned out to about four inches apart in the drills. The large white sugar beet, which is the only kind of which seed can be had here, is better adapted to stock-feeding than sugar-making. Seed costs about 40c. per lb. Four pounds to the acre would be sufficient. The Silesian sugar beet, which is the kind grown for sugar-making in France and Germany, is smaller, more solid, and contains the largest percentage of sugar. In Europe, we believe, the beets are grown first in a seed-bed, and afterwards dibbled out in the field by hand, which is too expensive a process to succeed here.

**WHITE BEANS**—This is a valuable crop to grow, especially on light, sandy soils that are too porous to derive any benefit from the application of barn-yard manure. They always bring a good price, and will yield 20 bushels per acre, on light, warm soils, with fair treatment. Plant in hills two and a half feet apart each way, six or eight seeds in each, about the first week in June. Keep the ground free from weeds, and hill up after the rough leaves are out. Top-dress the soil at the time of planting with a large handful of unleached ashes to each hill, and after the plants have been weeded and hilled up, drop a handful of a mixture of plaster and ashes, or superphosphate, on each hill. There are both dwarf and tall varieties, the former the most suitable and least troublesome to grow on light soils; as they require no poles.

**TURNIPS**—This is about the last of the field crops that is put in the ground. The land must be well prepared and heavily manured where the seed is to be drilled in. Drill in rows 26 inches apart. On newly cleared lands very fine crops of Swedes may be raised from a broadcast sowing on the burnt surface. Give a liberal allowance of seed—three to four pounds per acre—and if some radish seed is intermixed in the proportion of one-fourth, the turnips will often escape the fly, as it prefers the radish plants,

and the young turnips often get into the rough leaf before the fly has done with the radishes. A dressing of superphosphate or guano, drilled in with the seed, or dusted on the young plants as soon as they appear, often keeps off the fly. So will dusting them with fine air-slaked lime early in the morning, or while the plants are wet with dew or rain. We will give a fuller article on turnip culture at another time.

### Value of Land in Canada.

It has often been said "That such and such land is not worth the money asked for it," when the price reaches, say \$35 an acre. One proof of this assertion is that no one having money to invest would purchase such land, as estates are bought in England, for investment. How then is it that we see so many farms sold at prices that no capitalist would look at for an investment? And why do we not have a landed aristocracy here, as in England and the old countries, looking at the purchase in the light of an investment, to derive an income from by way of rental? It would seem to be likely to pay about six per cent., as any good 100 acres of land, with say 80 or 90 acres cleared, will readily let for \$200 to \$250 a year, and sometimes more. We often see old-country men on rented farms make money enough in a few years to purchase others of their own, and pay nearly as high prices for them. This certainly shows there must be a margin for profit somewhere. We have known many, very many, such instances. And we have also often heard prices asked for land, and known them to be obtained, that perfectly staggered any belief in the oft-repeated saying that farming did not pay in Canada. With reference to the first statement of land readily being sold in favoured localities, in many parts of Canada, for \$35 an acre, and how farmers and others could afford to pay such a price, when the capitalist on a large scale would not look at it, we must carefully examine the subject with the views of the farmer who pays so much money—and very often it is all, or for the most part, paid in cash. Farmers, in answer to this, when they in their turn have sold out, will say, "Now what shall I do with this money? I have \$3,500, and a wife and, probably, three or four children. If I invest in bank stock, I shall derive an interest, regularly paid, of \$280 a year, payable half-yearly, and I may, and probably shall, lose 25 per cent. of capital by depreciation of bank stock. Can I and my family live on this amount?" I answer most unhesitatingly he cannot. But an outsider will say, "What are you going to do for employment?" There is where the whole question hinges. The farmer must go to work as a labourer, and with his \$280 a year and, say, \$144 and board, derived from his labour, could possibly be comfortable enough. But then he would require a house near his work, or he must build one. He must, in the latter case

be permanently employed in that neighbourhood, or he must travel far night and morning to his work, besides the cost of a piece of land and house, which, after being bought, and steady employment obtained, would afford no hope for his children to raise themselves to the dignity of land owners. They must be labourers until the old people die, and then the \$3,500 may be divided amongst them. But, if sickness or accident, to say nothing of death, should occur, the \$3,500 must be encroached on, if not spent altogether.

Now, on the other hand, the farmer would naturally say, I had better pay \$3,500 for 100 acres of land, with reasonably good buildings, and shall then secure steady employment for myself and family, and I certainly can make more of 80 or 90 acres of cleared land than \$280 a year, and my precarious employment when working for others. And my children are growing up, and can attend school during winter, and each year they will be more help to me on the farm. Whereas, were they hired out, they would never be at school, and would lose home influence. The matter is decided by the farm being bought, and a home once more provided for the future. Stock are gradually raised, and when a surplus occurs, a sale of several hundred dollars' worth forms a fund out of which a farm for each of the boys, as they reach man's estate, can safely be calculated on.

And such is the love of liberty and home inherent in our natures, that any boy had much rather work at home, with such a prospect, than work out, unless the family is too large. With these views, there is no doubt that land in Canada will ultimately be all worth \$35 an acre, even in remote districts where now it is not worth \$5. No doubt, a great deal of work must be done on a farm now worth \$5 before it is worth \$35; but during the process the farmer lives, gets crops, and each succeeding crop makes the land more free from stumps, and more nearly approaching the \$35 an acre standard. No doubt, there are difficulties as to teams, seed, &c., &c., but these wear away; and, moreover, the improvement is not confined to one man's exertions in the locality occupied, but all are improving alike, or nearly so; and the number of the population has often been proved a good and certain rule to judge of the value of land, provided the quality is good. And again, we see that in many settlements some bad lots always exist, and are longer in being occupied; but after the best lands are cleared up, the refuse are fast becoming saleable, and at far higher prices than were paid for the best during the first season of settlement. The two great hindrances to our prosperity as an agricultural country are the high price of labour and the insect plagues that attack the wheat. The labour of any country must always be regulated by the power and opportunity of the working man to better his

condition by going on land, or engaging in any other occupation on his own account, and no amount of legislation will lessen this evil, if evil it is. It has been shown that, in favoured sections, improved land is absolutely worth \$35; and we all know that plenty of land equally good can be obtained further back at from \$1 to \$8; and the difference between those sums and the improved value principally rests with the farmer's own labour and that of his family, who live meanwhile off the produce of the land. As a proof that this state of things must continue, we will suppose that the family are really too large to be profitably employed on one hundred acres of land, and it has been deemed advisable, is perhaps necessary, for some of them to leave. They only require to walk, probably, a mile or two to some one who wants help, and \$12 to \$14 a month, with board and washing, is readily paid. Even if hired by the year, \$12 are common wages for able men. Now, we shall soon see why land is valuable to this class of young men. They work, say five years at the annual rate of \$144 a year. Their clothes can be got, if economically inclined, at about \$30 a year, perhaps less, leaving \$570, or thereabouts, in five years to begin on land for themselves. Of course, the young man marries at once, and both young people "move on the new farm." The \$570 affords something to pay on account of the land, say \$400 down, and still leave \$170 for contingencies and living. Ten acres of wheat the first year would be only a reasonable year's work for an active man, and would leave nearly 25 per cent. of his time to help others who want help. The outside value of clearing, fencing, sowing, and harvesting ten acres of wheat would be (valued so as to enable a young active man to earn 75c. a day), about \$18 an acre, or \$180, and the first crop would be certain to amply repay this, were it not for the second great drawback to our prosperity in the wheat midge.

The wages, therefore, \$180, invested in the ten acres of wheat, would leave, at 75c. each day, about \$45 to be received from his neighbours for help, in addition to his own work. In favoured localities, where the midge is not found, the above statement is literally true, and thousands of cases could be cited to prove it. But it is all "knocked into the middle of next week" by the midge. The land is cleared; labour is bestowed by no niggard hand; the wheat is fine, and all promises well. Some debt exists, no doubt, but the proceeds of ten acres of good wheat, at say 25 to 30 bushels an acre, will amply pay all, and leave the land cleared—when on comes the pest by the million, and in one week away goes the prosperity and hope for the future for that year. This is now, thank Heaven, of less frequent occurrence than formerly, and is yearly decreasing. Still it does exist, and, notwithstanding these drawbacks, good land, with large improve

ments and reasonable buildings, is absolutely worth to the purchaser \$35 per acre, and from it he can and does derive a living for himself and family, and ultimately settles his sons; whilst the great capitalist would not think of investing in the purchase as a source of income, although, as we have shown, the small capitalist would not hesitate to do so.

There is another great anomaly in Canada, namely, "the grown up labour of the sons where a large family exists, working at home." I know of several instances of families having as many as 4 or 5 able men, including the father, all at home and spending their time in working 100 or 200 acres of good land, the most part of it cleared. Now, if we charge the homestead with what these four or five young men can get, if employed singly by others, we should soon have the value of the farm utterly consumed in labour. Each of these men could get, by the year, \$240, board themselves, and probably more. This would amount to \$1,200 yearly, a sum that would soon forfeit the farm if it had to be paid from its products and labour hired to work it; but the farm does pay them clothes and food, and they often, from choice, remain for years, as they well know their united energies will in a few years make as much as will buy a farm and stock it with teams and cows for the elder sons, and in rotation for those following. C.

### Germination.

This may be defined as the first commencement of life, or vegetation, in plants. A seed, when sound, contains within itself all the elements of life, but this life can only be called into action by special means. These are moisture and heat in combination. Moisture to start life, heat to support it. All seeds, when fully ripe and in a healthy state, contain an embryo living plant. This embryo is surrounded by matter containing a large proportion of carbon, which has the effect of preventing its development. To get rid of this carbon, which is essential to the preservation of the seed, but an impediment to its progress towards the plant state, it must first be converted into carbonic acid, to do which a supply of oxygen is necessary. This cannot be obtained from the air, as the shell or husk which covers the seed is impervious to the atmosphere. Therefore, water must be first absorbed in order to soften the husk, and then the oxygen, having access, unites with the carbon, forming carbonic acid. The pores of the seed having now become opened by the action of moisture, as soon as sufficient heat is applied, the embryo parts with the carbonic acid through its respiratory organs, and commences its start in life.

If the requisite amount of heat necessary to support the vital principle now set into action is maintained, the embryo continues to progress till it becomes a plant. But if

this heat (the amount of which varies in different species of plants) is wanting, the germ of life in the newly started embryo, after a few feeble struggles for existence, soon expires, and the seed containing it soon decays. The same effect follows when heat is applied in excess. The temperature at which seeds will germinate extends over a wide range of the thermometer. Below 32° Fahr. none will germinate, though there are many grasses and weeds, the seeds of which will start to grow at a temperature but little above freezing. The general range is from 45° to 90°, 50° would be about the average of a favourable temperature for ordinary farm crops, 55° to 70° for garden crops and Indian corn, 80° to 90° for tobacco, and most tropical greenhouse plants. The vitality of the seed of cereals is said to be destroyed by a prolonged exposure in the earth to a temperature of 113°, while on the other hand, some seeds, such as those of the acacia, have been immersed in boiling water for some minutes, without destroying their vitality.

How much moisture is necessary to germination depends on the nature of the plant. For the seed of plants that live and grow in water total immersion appears requisite while to the seed of land plants water in a fluid state is injurious. They require to come into contact with a moderate amount of water, in the form of vapour only. Many seeds have a hard outside covering that prevents quick germination, and are therefore benefited by being steeped in water for a certain time before being planted.

It has been stated that by employing certain mineral solutions for this purpose, the same effect is produced on a crop as would be occasioned if a heavy manuring had been applied to the soil. But this theory has not been borne out by practice, and we think it will prove erroneous.

The practice of steeping the seeds of grain before planting, in mineral solutions, is often done for the purpose of preventing smut, and we think might be more generally adopted in this country with benefit. Our springs are so short and come in so suddenly that it is of importance to get the plants started into a thrifty growth before warm dry weather overtakes them. And as, in many cases, land cannot be properly prepared for the reception of seed until it becomes dry enough to cultivate, which is often late in the season, much time is lost if the seed sown has to remain dormant in the soil for several days—sometimes weeks—after sowing, until the husk becomes sufficiently softened to allow moisture to reach the embryo. Besides this, the weeds, which, as we have before stated, require, but a low temperature to start them into life, come in, and occupy the soil, to the detriment of the more useful sown crop, so that the young plants often have a hard struggle for existence before they get advanced enough to enable the cultivator to distinguish them from weeds and root out

the latter. This is especially the case with garden vegetables and root crops.

As we have shown that actual contact with water is not desirable for the embryo, the seeds when steeped should not be sprouted, but only remain moist just long enough to soften the husk, and then be sown while moist, so that the process of germination may continue in the soil. We believe that steeping the seed of grain for a short time before sowing, in a weak solution of nitre, copperas, or ammoniacal salts, while it tends to prevent smut, also helps the young plants, when developed from the embryo, into a more vigorous and rapid growth at the early stages of plant life. The small amount of mineral matter adhering to the husk, although not sufficient to produce any appreciable effect on the crop, in comparison with the effect of a good dressing of manure to the soil, still may be enough to act as a stimulant in the early stages of growth.

Many failures which occur in the endeavour to grow plants from seed brought from great distances, as across the sea, or from a warm to a cold climate, are owing to the defective mode in which they are conveyed, rather than any fault in the seed itself. It often happens that seed is packed and stowed away in such a manner that it comes in contact with heated air, and afterwards with cold air. This is attended with the production of moisture sufficient to start germination, which soon stops for want of anything to maintain it, the embryo dies, and can never be started into life again. The main point to be attended to in transporting seeds is to keep them cool and dry, and subject to no sudden changes of temperature. There is another condition in connection with this subject of which we are treating, that must not be left out of view, namely, that air and light, as well as heat and moisture, are necessary to the embryo, after germination has taken place; therefore it is not well to plant seeds so deep as to be beyond the reach of atmospheric influence, or of the vivifying effect of the sun. When once the plant has attained an existence, it draws a large share of its food from the oxygen of the air, and requires not merely light, but an abundance of it. Therefore, the more sunshine it can enjoy, the more rapidly will it grow, provided it has also sufficient moisture to enable it to yield fluid enough to counteract the loss occasioned by evaporation.

### Fencing, and the Best Way to Do It.

My attention has lately been called to the absolute necessity of some permanent and cheap plan for fencing, specially applicable to the older districts, where fence rails can not now be obtained, and lumber is high in price, and where the original hardwood rails are year by year decaying, so as to render repairs all but impossible, and the necessity for new fence of a better quality imperative. No doubt, rail fence is above all

others the cheapest, but many will no longer have their farm fronts encumbered with "snake fence," and many are using boards, at a great cost, where often cedar can readily be procured. To such I would now offer a few considerations, the result of carefully conducted practical experiments. I have used all kinds of fences, from "brush fence," to "basswood rails," from cedar rails and ash poles, laid straight or crooked, to board fence; and all my experience goes to show that a fence made of cedar rails, twelve feet in length, split as flat as possible, and about four inches by two or three thick, makes the most durable kind of fence; especially if, instead of the many kinds of straight fence we so often see, posts are mortised with five holes, 2½ by 4½ inches each, and cedar rails, tapered at each end to half their thickness, for about four or five inches in length, are inserted, passing each other in the mortise. They should be placed about 4 inches from the ground to the first rail, then allow four to five inches for the rail itself, and four inches of space for the following rails, and spaces of six inches alternately until six rails high are attained. Of course, the top rails should always be the heaviest and best, as being exposed to the weight of people getting over them. For cattle it does not much signify, whether the rail at the top be heavy or light, as if they can jump over they will do so, and if in jumping they catch the top rail, they will break rails of almost any size. Still, perhaps, the animal would be less tempted to try a strong rail than a weak one, so always put a strong one at the top. I find such cedar fence to be about half the price of the ordinary board fence, when well done in both cases. If poor hemlock lumber is used, and no covers are used to the upper boards, or to the butts on the posts, some expense may be saved in the first outlay, but such work makes a miserable job, and does not last many years without repair. Inch boards, six inches wide, of common lumber, full of knots, of course, and nailed with one or two three-inch nails on a cedar post, will be very liable to be broken the first time a horse reaches over it, if his neck touches it with any force. He may not intend to break out, and only lean against it to rub his neck, but off it goes, and the fence in that place is only 3½ feet high. Moreover, such a board will hardly bear any one to get over it. It therefore becomes very advisable to have a cover from post to post, to oppose the edgeway support to any pressure from within or without. Good flat cedar rails can be bought for \$20 a thousand, in almost any locality where cedar grows, delivered at the roadside, and they cost but little more to haul than green pine boards. Cedar can also often be obtained where boards are scarce and dear, and generally by the labour of the farmer himself. Let us now consider the comparative cost of the two kinds, presuming that the fence is in all cases four and a half feet high, and the quantity to be

fenced in either case, "boards" or "cedar," 40 rods for experiment.

Let us first reckon the expense of the board fence:—

At five boards high, six inches wide each, and a six inch cover, forty rods will require 2,100 feet of common lumber, at \$8 per thousand (the ordinary price of boards in such localities as described).....	\$16 80
95 posts at, say, 8c.....	7 60
Setting each, at 8c.....	7 60
Completing fence, at 8c per post.....	7 60
60 lbs. nails, at 4c.....	2 40
	<b>\$12 00</b>

We thus see that a good board fence, with five boards high, each of six inches, and a cover to top and butts on each post, with posts seven feet apart, costs \$1 50 per rod, exclusive, most generally, of teaming the lumber from the mill. In some localities the lumber will cost more, in others less, and the same observations may with truth probably apply to cedar. My observations apply more particularly where pine does not grow, and where cedar often does.

And now let us reckon the cost of cedar rail fence, with posts twelve feet apart, the fence to be six bars high and forty rods long, the same as the board fence above mentioned:—

To 55 posts at 8c.....	\$1 40
330 flat rails, at \$20 per thousand...	6 60
Flattening and tapering ends, ½c. each	1 65
Digging for and setting 55 posts at 8c.	4 40
Boring and mortising 55 posts at 4c....	2 20
Additional time required to insert rails in each post as being set, at 2c.....	1 10
	<b>\$20 35</b>

Thus the total cost, exclusive of hauling rails, for forty rods of fence, is \$20 35, or about 51c. a rod, against \$1 05 for board fence.

In mortising the posts, the ends of the mortises do not require cutting out square, and all the work requisite to bestow on them is, after boring, to cut out with a mallet and chisel the centre piece between the two holes. To make all the mortises straight and in line, and "true" with each other, as carpenters technically term it, the operator must first place two logs of wood, solidly fixed and bedded in the earth, with notches cut as wide as an ordinary cedar post, and room on each side for a piece of 3 by 3-inch scantling, to be fastened firmly to the logs, so that the post can rest between the pieces of scantling, and be firmly wedged in its place—so firmly as to be almost immovable until the boring is completed. Marks are made across the scantling to enable the operator to make all the mortises the required distance apart, and to ensure the spaces being all alike when the fence is up. The scantling must be level. The boring appa-

ratus, on a small scale, need only be an ordinary framing auger, such as all carpenters who frame heavy buildings use, and which costs but a few dollars, will last a life time, and is always wanted on a farm. Small slides are fastened with a couple of screws to the under side of the boring frame, to work between the scantling, and guide the auger straight. To bevel the ends of the rails, the operator must have two small logs of wood, eleven feet apart, with notches at either end so arranged that a wedge will hold the rail in the notch, quite upright, whilst one or two blows of a carpenter's light broad-axe, or even the ordinary chopping axe, bevels the end as required; and by walking to the other end, and going through the same process, the rail is finished, bevelled at each end, and the bevels relatively "true" with each other. This work can all be performed during winter in the barn, or in some sheltered place, and the posts and rails hauled away, as fast as finished, and laid down where required in spring, for the fence. Another advantage this fence has is that it must be completed as the posts are set. This obviates the necessity for removing the old fence more than required to replace the new daily; and no nails being required, and all the labour being winter work, secures the additional advantage that the work is all within the farmer's own family. The top rail being much stronger than those below it, avoids the necessity of a cover, as in the board fence, and the posts being twelve feet apart, saves nearly 50 per cent. A cedar rail of twelve feet will readily bear any one going over it, and I also sustain a great pressure from within or without. The digging holes and setting posts will not always cost 8c. each, and often not 4c., but both estimates of cedar and boards are necessarily alike in these respects. We all know that any man could make great wages in digging post-holes, setting posts, and putting in the rails into the mortises at 10c. apiece, in some localities. Care must be taken that the "back," or reverse of the rail, is always one way, or the bevels will not come right, and the rails reversed to suit the bevel near the bottom make "pig holes," which can be avoided by having all the bends one way.

C.

**Practical Drainage.**

By ALLAN MACDOUGALL, C.E

II.

Having secured a good outlet, the next operation is to divide the field for the drains, putting in the main drains, and the side, or arterial drains, as they are always called, because they are similar to the arteries of the human frame, and answer the same purpose, leading the water from the sides of the field to the trunk drain. Drains ought always to be laid so as to run with the fall of the land. A good many persons hold a different theory—that they ought to be laid

across the land—but a little consideration will show the error of the latter idea. Suppose the strata of a field to lie parallel to the surface, and that it is proposed to put in drains thirty feet apart. If they are put in across the field, either at right angles or diagonally to the main drain, which we shall suppose has been laid in the slope of the land, then the water, after it has passed any particular drain, or the water on the lower side of that drain, as it cannot flow up hill, must go thirty feet to find a drain to let it escape.

For instance, the water that is above B, of course, runs into the drain at B, but

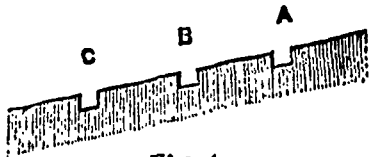
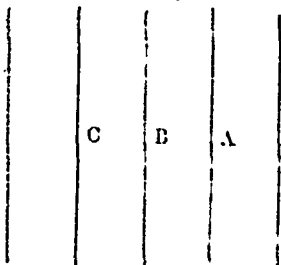


Fig. 1.

water on the side of B next to C cannot flow up-hill, so has to seek its outlet at C, and when the drains are across the field has to flow from B to C to get a drain. Now, if the drains are laid in the slope of the land, the water running down the slope is attracted to the drain near it, and each drain, A B C (Fig. 2), draws the water from equal distances on both sides, consequently water half way between A and B has only fifteen feet to flow to get to a drain. This is of great consequence, as the chief object of draining being to get rid of water as soon as possible, it is accomplished soonest by the method mentioned in Fig. 2.

FIG. 2.



When the surface of a field is undulating, the main drain ought to be laid in the centre of the field, in the lowest places, and the side drains brought down the slopes to it, all of them being parallel to each other, according as they may come down from the right or left. Should the surface of a field appear to be quite level, or only to have a slight fall, the main drain ought to be placed in the centre, and the side ones and the other drains led into it. In this case, the side drains can be placed at right angles to the main drain, as they will answer their purpose better. The main drain, from its larger size, will discharge more water than the side ones, which are smaller, as there will be less friction in the pipes to be overcome, and in tile draining, where the tiles are usually only two inches in diameter, this is a great consideration. A field should be laid

out so as to have the drains at equal distances from each other, so as to give each drain an equal surface. This can always be done on the average of farm lands, and a short experience will enable a person to judge with tolerable accuracy how his drains must run.

On no question relating to drainage is there more difference of opinion than on that of the proper depth and distance apart at which drains ought to be laid. On this very important question of depth the greatest authorities differ, and have differed to a considerable extent. The object to be attained in draining is to place a drain sufficiently deep, so that while it rapidly draws off the surface water, it will also promote a free circulation of air through the soil, and enable sufficient moisture to be drawn up from the subsoil during the dry weather to supply the roots of plants. It is not an easy task to say, in a general paper, what are the best depths, as there are so many circumstances to be considered, all of which have weight in determining this question. In the next paper will be given, in a general way, such depths as are likely to be of avail in most of the farm lands under cultivation.

#### THE PROPER DEPTH OF DRAINS.

So many discussions have arisen on the question of depth, and a great deal having been written on this subject, by many good authorities and engineers of experience, any endeavour to recapitulate the arguments or lay the case, even in a general way, before the reader, could not be instructive, were it attempted, for they embrace scientific questions which interest an engineer more than an agriculturist.

The object, as formerly stated, being how to get rid of the surplus surface water, the question now before us is to consider at what depth we can best accomplish the end. Where there are no special considerations, this can be obtained by having a covering of 3 feet over the drain-pipes, where tiles are used; this depth has been found by experience to be the most economic for soils such as tenacious clays, silts or more porous soils. This depth has been found to be most suitable to ensure full advantages from the drains, as a less depth does not allow proper filtration for the water. If two drains in one field, one very shallow, say 18 inches or 2 feet deep, and another the depth above mentioned, were to be watched after rain, the shallow drain would be seen to be running quite muddy, while the deep one, would be running clear. Thus the shallow drain would be running off the manure that might have been lately placed on the field before it had time to do the soil good, while the deep drain would have allowed it all to have been retained in the soil. Shallow drains are also liable to get choked up in sandy or silty soils, from small particles of sand getting into them.

Some classification of soils is often made as follows:—

I. Compact or heavy soils, embracing clays of a compact, tenacious, stiff, adhesive, friable or free soft nature.

II. Medium soils, embracing loams of clayey, marly, gravelly or friable nature.

III. Porous or light soils, comprising light gravelly, marly, or sandy loams, and sandy soils, whether light or deep, fine or gravelly.

Many engineers recommend and practise the laying of drains in these soils, at depths and distances apart, according to their class, as follows:—in the first, at 2 feet 9 inches deep, and 6 yards apart; in the second, at 3 feet 3 inches deep, and 8 to 10 yards apart; in the third, from 4 feet to 4 feet 6 inches deep, and from 15 to 22 yards apart.

The experience of late years has shown, however, that the depth of 3 feet 6 inches below the surface of the ground is ample for the grip to be cut for, of the above classes under usual circumstances, and from 8 yards in stiff clays to 10 yards in light and porous soils is a sufficient distance to ensure thorough working of the drains. There are times and cases where it would be advantageous to put in deeper drains, but they, from circumstances, such as wet subsoil or springs, come under the province of the engineer, while a greater depth than 3 feet 6 inches is not likely to do so much good as to warrant the extra cost of deeper digging; a shallow drain of 2 feet or less is useless, as it only runs off the water from the surface of the land too quickly; and in this country, where the frost frequently penetrates 2 feet in depth, the drain would be affected, and probably burst, every season, flooding the field and destroying a portion of the crop, and costing as much to put it to rights every year, as would probably have laid it deeper at first.

It is very requisite in draining land that a proper system be carried out in each field, that the work of each drain be properly apportioned to its capacity, so that a regular and increasing crop may come, and an adequate return be made for the time, labour, or money that has been expended. It is a foolish theory and useless expenditure of money to try to believe a few drains here and there in a field are ample for the wants of a crop; they only do good to the places where they are laid, or to a short distance on each side, they make no appreciable return for the expenditure, and frequently end in discouraging any further attempts.

The best plan to fix the positions of the drains, after they are laid out, is to run a plough down the line of the proposed drain; this does not take long to do, and makes a mark that will last a long time before it is obliterated.

The *Country Gentleman* says that all heavy oats that have been introduced have degenerated after a few years to the old standard.

### Carrots and their Cultivation.

The carrot (*Daucus*) is a genus of the plants of the natural order (*Umbellifere*). They are mostly natives of the countries surrounding the Mediterranean Sea. The common carrot (*D. Carota*) is a biennial plant, common in Britain and most parts of Europe, also in the Caucasus. It is universally grown not only in Europe, the European colonies, and America, but also in China, Cochinchina, &c. The field cultivation of the carrot is carried on to a much greater extent in some parts of France, Germany, and Belgium than in Britain or America; but it is increasing in both countries. The carrot appears to have been cultivated at an early period in Flanders and Germany, and to have been introduced into the gardens of England in the beginning of the sixteenth century. The orange carrot and its varieties are the most common in England, but the large white and yellow carrots are more esteemed on the continent; they are supposed to contain more saccharine matter, and to produce a greater bulk of nutriment on the same ground. The white carrot will also grow on heavier soil. In this Province both kinds are grown, but the white seems to be rather the favourite variety. Though the carrot will grow in almost any soil, they prefer a light or rather sandy soil, and often succeed well on a peaty one. The best crop of carrots I ever saw was grown on what had been a piece of a cedar swamp.

According to Stephens, the nutritive matter contained in 25 tons or 56,000 lbs. per acre of carrots—consists of husk or woody fibre 1,680 lbs.; of starch, sugar, &c., 5,600 lbs.; of gluten, &c., 840 lbs; of oil or fat, 200 lbs; and of saline matter, 800 lbs.

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

In preparing the ground for carrots, the best way is to manure and plough the land in the fall, and if there is time subsoil it at the same time, as carrots delight in a deep mellow soil. Then cross-plough the land in the spring as soon as it can be done. After it is in order, and after harrowing and cultivating, and rolling too if required, drill the ground up in drills, say about thirty inches wide—not that carrots require so wide a drill for their growth, as 18 to 24 inches would be wide enough for that; but room is required to clean the carrots—so that they can be easily cultivated between the rows.

If the ground had not been subsoiled in the fall, we would drill up the land, and then run the subsoil plough up one drill and down another as deep as we could, and then drill up the land anew, so that the seed would be sown directly above where the subsoil plough had run. There is a marked difference in the length of the carrot when thus treated, and when the ground is drilled up without any subsoiling. Carrots are often sown by

hand; but if the seed is properly cleaned they can be sown with a drill, care being taken that the drill does not choke up. I generally use a light roller, attaching the seed drill to it, thus rolling the drill I am sowing, and the last one sown. In this way the seed is well covered, and the drills left fine and smooth. The carrot is a slow seed to start, so that the weeds are generally before them, and require to be checked as soon as possible. So soon as the young carrot can be fairly seen, a drill cultivator should be run through them. Up one drill and down another will be sufficient, then take a sharp hoe, and pare the sides of the drills as close to the young carrots as possible, walking backward—and paring half the drill on each side, so that the weeds may not be trodden into the fresh loose earth, but die as quickly as possible. When they are well pared off thus, all the weeds left in the row (which need not be much more than an inch wide) will not hurt the young plants much, till they are sufficiently strong to thin out. In thinning and weeding them, use a small sharp hoe about four inches broad. It may be made out of an old cradle scythe, as by this means one can thin and clean them much faster than when all the weeds in the row are pulled by hand. After they have been thinned they ought to be gone through again—some time after,—hoeing out all the weeds and any carrots that may have been left too thick. Carrots, like all other root crops, are the better for having the ground stirred frequently between the rows; indeed, they would be all the better if cultivated once in a week or ten days, if time can be found to do so.

Though carrots grow slowly at first, they grow rapidly in the fall, and may be left in the ground as long as there is no danger from frost. I have pursued different ways of taking them up, according to circumstances; sometimes when they are white carrots, standing well up out of the ground, the harvesting has been done in this way: with a hoe, cut off the tops, and draw them off out of the way; then take a subsoil plough, with the side plate taken off, and run it close alongside of the rows of carrots loosening and raising them up, so that they can be thrown into a cart or waggon without any further trouble. If the ground is clear and mellow, this is perhaps the quickest way. Another plan is to run the subsoil plough alongside the row of carrots, and then pull them up and cut off the tops. This method has to be pursued with orange or red carrots, as they do not grow at all above the ground like white carrots. But where the ground is stony, or there are stumps in it, or where a subsoil plough is not at hand, I have never found any better way than taking a common plough, and going as close as possible to the row of carrots, so as not to damage them, and then pull them over to the ploughed furrow, throwing them in heaps, and leaving

room to pass again with the plough. In this way they have to be pulled out of the way on the next row. It is best to plough two furrows for each row of carrots, one pretty broad, so that the furrow next to the row of carrots may be as deep and as close as possible. These have been the methods pursued on my farm; if there are better or quicker ways of taking them up, I shall be glad to hear of them.

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

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

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

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

W. R.

Cobourg, March, 1869.

### Ploughing Land.

There has been so much controversy on this subject, and such an immense difference of opinion, that one hardly feels justified in adding their mite to the stock of facts and theories already so abundant. Yet useful suggestions may fitly be advanced in view of the lessons taught by the introduction of steam power into field operations. Steam machinery has, during the past few years, done much to subvert some of the old established theories of the past century. Almost all the great steam plough manufacturing firms now universally consider the "grubber," as they term it (that is, an instrument not unlike a succession of cultivators, but much stronger and larger), one of the best instruments in existence to prepare fallow land for a crop. This machine is drawn by steam power deeply across a field. It does

its work to about twelve or fourteen inches deep, and the teeth, sometimes eight in number, are about one foot apart. When the work is completed one way, the land is grubbed again the other, leaving it broken up into lumps and left as rough as possible. Experience has shown that land thus broken up is more perfectly freed from weeds by germination, and more exposed to the action of the atmosphere, than by any other method. By the action of the grubber, the largest surface possible is exposed to the air, and the soil is certainly thus more calculated to receive by absorption all that the air is capable of giving, than by simply turning over, with an ordinary plough, the furrow slice, which, according to agricultural ploughing matches, constitutes the *ne plus ultra* of good ploughing, especially if the furrow slice is quite unbroken, and laid smoothly one against the other, so as, in truth, to expose as little as possible of the surface to the action of the air and the elements. Such ploughing is advantageous in sod land, where, of course, it is absolutely necessary. But farmers do not generally consider what other courses of husbandry may be open to them. Almost all fallow land, except sod, would be far more benefited by the action of the roughest ploughing, provided it was repeated often, than by the smoothest furrow slice ever laid at a ploughing match, and a deep scarifying with a grubber like that described would be an admirable assistant towards working our fallow lands in summer. To do this effectually we require a more powerful propeller than the muscular force of horses. Steam is and must be the only alternative during our generation at least. Afterwards, some new motive power may be found to supersede steam, but at present there is none. Our enterprising fellow-townsmen and machinists, Wm. Hamilton & Son, have turned their attention and machinery to perfect a light rotatory engine, capable of doing the work required, and yet not to exceed in weight and size one quarter that of the ordinary engine in use. If their efforts are crowned with perfect success, on a scale sufficiently large for agricultural purposes, there is little doubt that before three years we shall see the iron horse superseding that of flesh and blood on the farm as well as the railway, and we say most heartily, "So mote it be."

There can be no reasonable practical difficulty in Canada against the use of steam ploughing and cultivating by steam machinery generally. We have all to gain and little to lose by its advent. Our seasons are so short that the one month in the spring is generally altogether insufficient for our wants, and we rarely have more than from the middle of April to the middle of May to complete our farm work, if we wish to be early. How much, therefore, would it tend to the benefit of Canada if, by steam power, as much could be done in one day as is now done in four or five.

### Pasturage.

We think farmers, in general, are in too great a hurry to turn their stock into the pasture fields in spring. The grass should have a chance to get well grown before being depastured by stock, otherwise it will never attain anything like the productiveness it is capable of, and much of it will be either killed out, or cease growing as soon as the summer heats come on. Besides, the poaching of the ground by stock that are turned on early in spring, is very destructive to grass, and the little food they can then obtain when the grass is just sprouting, serves scarcely any other purpose than to scour them, and they soon fall off in flesh, while had they been kept in the yard for a few weeks longer, a smaller amount of hay or other dry food, than what they need in cold weather, would suffice to keep them in condition, till the grass had become well grown. The middle of May is quite early enough, in favourable seasons, to turn stock into the pastures, and care should be taken to give them the driest pastures first, even though the grass should be shorter in them than in those on a moister soil. Sheep can pick up a good deal of food around the fences of fields that are being prepared for spring crops, and in the lanes or by-ways, where they would perhaps do little injury in poaching the soil in comparison with larger stock, and be less apt to wander about. Cattle are difficult to restrain within bounds, when once they get out of the yards in spring, unless they have an abundance of grass, and will watch every opportunity to break through a weak spot in the fence, into the fall wheat or early sown spring grain. If one or two animals amongst them are inclined to be breachy, they soon set a bad example to the others, and then the farmer and his men are kept on the jump all the time to drive them out of the crops, and fix up broken fences, which may give them work all the summer in endeavouring to save the crops they have been at so much labour and expense to get in. It is remarkable how determined a breachy animal is to break through at the very same spot every time it gets a chance, no matter how well the breach may have been repaired.

Horses should be the last stock allowed in the pasture fields. If they are working on the farm, they are better able to stand the strain on them if kept stabled and fed on dry provender, while young colts are not only easily scoured, but become so restless on gaining their liberty in the fields, that they seem to delight in driving all the other stock from one corner to another, much to their injury as well as that of the pasturage.

There is no excuse, this year at least, for turning stock early to grass, as the hay crop of last season was a tolerably abundant one, and the mildness of the past winter has en-

abled stock to keep in condition with a less amount of it than is usually required.

The best plan is to have four or five pasture fields at least on a farm, give the cattle the first feeding of each field in succession for a week or two, beginning with the driest; let the sheep and horses follow, and when the grass is eaten down tolerably clean, shut up each field in succession, so that by the time the cattle are through with the last one, the field first fed off will have the grass in it recuperated and ready to be again pastured. Horses not only bite closer than cattle, but will eat some grasses they reject; sheep bite still closer than horses, and eat up nearly all weeds, and many plants that are rejected by either cattle or horses. Hogs should never be allowed in a pasture that is intended to be eaten by any other stock; they will utterly defile the grass, and if kept on clover or other grasses, should have a field or paddock entirely to themselves, and be well ringed in their noses to prevent them from rooting up and destroying their pasturage. If the orchard has been seeded to grass, which it ought to be if in full bearing, it would be the place to keep the hogs in until after harvest, when they can get the range of the stubbles, if desired. In about two or three weeks after haying is over, the aftermath will have grown sufficiently to enable the stock to be turned into the hay fields, and afterwards on the stubbles, where they can remain long enough to enable the pasturage proper to get on a good growth of grass for fall feeding till the snow comes. Where clover is most abundant in the hay crop, it will give good pasturage till the first hard frost comes, after which all stock should be taken off, and in no case should the grass intended for hay be cropped close, if it is intended to cut another crop the next season. It is a most slovenly and unsightly practice to have the droppings of cattle and horses in solid masses on the pastures, to grow up into hassocks of coarse grass. As soon as the stock is removed from one field to another, the droppings left by them had better be broken to pieces and scattered finely over the surface.

### Relative Cost of Root Crops.

A subscriber asks, "Having all necessary implements on hand, which can I raise at the least expense—potatoes, mangolds, carrots, or turnips?"—

He does not seem to desire to know which crop will prove most profitable, but only which is least expensive as regards actual cost of preparation and cultivation of the soil.

Undoubtedly, potatoes would require the least amount of outlay for work and manure, if grown as most farmers grow them. Carrots would come next, as they ought to have the benefit of manure that has been applied to the previous crop. Mangolds would re-



quire short manure, distributed broadcast and ploughed in. Turnips require the land to be extra well prepared by culture, the manure to be put in drills and covered over into ridges. Turnips are the most expensive of the crops above named to raise, as they require a great amount of care and attention to ensure a successful crop, except perhaps when they can be grown on the burnt-over surface of newly cleared land. Potatoes will cost more for seed, especially if the new and expensive varieties are to be planted. Mangolds and carrots can be sown early enough to have the principal work of thinning out, weeding, and horse-hoeing, done before labour gets scarce and high-priced, while turnips require the most attention at a time when the hay and grain harvest is at its height, and the farmer is apt to be distracted with so much work on hand, and so neglect or put off attending to his turnips till it is too late to bring them round so as to ensure a good crop.

We believe that were potatoes grown with as much care and manuring as turnips usually get, they would produce five hundred bushels per acre, instead of one hundred, as is now generally the case. A farmer in Pontiac county, Quebec, writes that he has never failed to obtain 400 to 500 bushels of potatoes per acre for several years past. He selects the earliest and best potatoes of the variety he wishes to grow, in the fall, and lays them away for seed. He fall ploughs the land 8 inches deep, and cross-ploughs it in spring 4 inches deep, thus leaving the seeds of weeds, &c., at the bottom of the seed bed. He plants about the 12th of May, cuts his seed into from three to six pieces each, a week before planting time, and is careful not to have the eyes sprout before planting. He has the ground well harrowed and levelled, marks rows both ways two and a half feet apart each way, by means of a wooden rake with four large teeth in it, each the required distance apart to mark the rows. He drops three pieces of potato at each cross mark, and does all the afterwork by means of a plough which he runs both ways between the rows; and harvests his crop of potatoes fifteen to twenty days ahead of any of his neighbours. He grows potatoes on the same land for three years in succession, and then puts in wheat, of which he always gets a good crop after potatoes. The varieties he grew were Peachblow, Pink-eye, Irish Melvine, and China White.

We hope yet to see the sugar beet in some measure taking the place of turnips, as it is a much easier and more certain crop, not being so liable to suffer from insects or drought, and will give as much weight of food per acre, when properly grown.

The *Utica Herald* gives three rules for renovating old pastures: 1. In winter, lime them in the wet places. 2. In summer, mow them where bushy. 3. Keep sheep on them, and feed the sheep with beans and oil-cake.

## Flax Culture.

To the Editor.

Sir.—Now that spring is fast approaching, farmers will be laying out their plans and deciding what crop they shall sow in their respective fields. With wheat at the present price, many, I have no doubt, will change their minds, and instead of putting in their ten or twenty acres of spring wheat, will probably sow instead, barley, oats and cereals of various kinds. And while we are all most anxious to make the most of our lands, flax presents itself as another of the crops well worthy the attention of the farmer, from the fact that it is bringing as high a price, when ready for market, as it did during the American war: and it only fluctuates in price like all other products.

Farmers have often been urged through the press to sow this crop, each on at least a couple of acres on his farm. This would soon be the means of flax mills for scutching being established in every part of the country.

From the experience of every man that has tried flax, in this country, it has been found to answer best when it is early sown, so that it may get a *clear month* before drought overtakes it. To those who have not made the trial before, I would say it is desirable to put flax in a piece of the cleanest and richest soil on the farm—clay loam is preferable to any other when the soil is deep and friable. On such land you may safely sow two bushels of seed to the acre.

If you want to seed down, do so by all means, with flax; there need be no apprehension about the clover plant being removed on pulling the flax. On the contrary, it moulds the plant and causes it to spring up with more vigour and freshness.

Let not the pulling deter the farmers from growing flax any longer, as they can as readily obtain a machine for pulling purposes as they can a reaper for taking off their grain, and at the small cost of \$75 or \$80 each.

I should have said, while speaking of the proper kind of soil to sow flax on, that nothing can beat a piece of old lea, and if ploughed in the autumn, it may be sown in the spring with great certainty of a good crop. Let the ridges be made as wide as possible, with as few furrows as you can get along with, as the plant invariably grows more in length along the edges of the furrows, and it is most desirable to have it all as near one length as possible.

A word to the Scutch Millers before closing. They should be allowed to compete at the annual Provincial Shows, by producing the quantity required, 100 lbs of clean scutched flax, of the crop of the preceding year, as there never is time to prepare flax for the exhibition in the autumn, and this has been invariably the cause of so few samples being shown. A false impression has gone abroad with some of our flax millers, that I have been an exhibitor and always carried off the prizes at the Provincial Shows. This

I most distinctly deny, as the books of the Board of Agriculture will show. I have only exhibited small samples for the benefit of the farmers, and a collection of Canadian samples for which I had the honour of receiving a medal and diploma at the Paris Exhibition last year. I have acted as judge every year since 1861, except last year, but never received a dollar of prize money.

This important new branch of Canadian industry is yet destined, I believe, to prove entirely successful, and add materially to the resources of the country.

JOHN A. DONALDSON.

## Early Potatoes.

To farmers near the city, and owners of suburban lots, it should be a matter of some consideration to be able to raise early potatoes, an article that always finds a ready sale at high prices, when brought to market before the first of July. It does not, as a general rule, pay to grow them at a distance from the market, nor for those who have large farms to look after to leave their work and their hired help to themselves for a whole day, in order to peddle out a wagon-load of early potatoes: but these should at least grow a few for early use at home. For a very early potato we must have a short-stemmed, quick-growing kind, that does not blossom, of which there is none better than some of the early English varieties, such as the Ash-leaved Kidney, Early Handfield, Myatt's Prolific, and Early Shaw. Seed of these varieties can be procured from most of the large seedsmen. They are all small-sized, quick growers, maturing in from six to eight weeks from planting. For an early crop, potatoes may be planted as soon as the ground is dry and warm, say by the middle of April, and to save them from being cut off by an untimely frost at night, it is a good plan to spread strips of matting, or straw, over the young plants at night and on cold days. The straw may be raked off, to remain between the rows during the day, and again replaced at night, if there is a probability of frost occurring.

As a matter of course, it would be useless to attempt to grow early potatoes with any prospect of success, unless the soil is rich, light and warm. Coarse barn-yard manure would be useless to the crop, but a dressing of well-rotted compost, or guano, thoroughly incorporated with the soil, would prove advantageous in stimulating growth.

For a medium early kind, to send to market during July and August, the Buck-eye, Early Goodrich, and perhaps the Early Rose, and two or three others of the new varieties just now being brought out by speculators, will prove the most desirable. They grow to a larger size than the very early English sorts, so require more time to grow before they are fit to eat, for it must be borne in mind that a large potato, half-grown and unripe, is not such wholesome food as a smaller one, of a variety that attains maturity early and at a small size.

### How to make Superphosphate.

W. Taylor wishes to know how to dissolve bones for manure.

The usual way with manufacturers of superphosphate is to burn the bones till they are calcined and brittle, grind them to powder, and then add sufficient sulphuric acid to dissolve the mass. This, however, while it greatly cheapens the cost of producing superphosphate, lessens its value more than one-half, as the juice and gelatine in and on the bones, which form an essential part of their manurial value, are driven off by burning, and nothing but the mineral elements remain. Bone dust is the ground bones without the sulphuric acid added, and would be equally, if not more valuable than superphosphate, if they were very finely ground without being first burned.

A home-made article of greater value than much of the commercial superphosphate may be made by breaking up the bones as small as can be conveniently done. When broken, place them in an old box or barrel, add to them half their weight of sulphuric acid, and cover up to prevent the fumes escaping during the process of dissolving. Stir daily for two or three weeks after. When the whole mass has become soft, and the bones dissolved, which takes some time, add sufficient dry muck, sawdust, burnt clay, or other absorbent, to render the mass friable and dry enough to be easily applied to the land, which is generally done by drilling it in with the seed when sown; or, if applied to grass or grain crops, by sowing broadcast like plaster. One hundred pounds of the home-made article will go as far as, and prove of more value than two hundred pounds of what can be ordinarily bought from the manufacturers. Bones may also be rotted, as it were, by covering them with a heavy coat of unseasoned wood ashes, and sprinkling water or urine over the heap; or, still better, putting them into a hole in the ground and keeping them soaked with the drainings from the barn yard.

### Gas Lime.

"Grantham" enquires the value of gas lime, or the refuse from gas works, as a manure, and if it would be suitable as a top-dressing for wheat, or grass lands, and as a manure for turnips; also what quantity per acre should be applied. Gas lime, when obtained fresh from the gas works, is strongly alkaline, and is also caustic, so that its application is destructive to vegetable life. If composted with other manures it destroys their value. It contains properties that are poison to vegetables, but after being exposed to the action of the atmosphere for some time, its properties become in a measure entirely changed, and it may then be used as a top dressing to grass lands, on which it is said to produce a good effect, as,

in addition to lime, it also contains a large proportion of gypsum. In England it has been applied to grass lands at the rate of four tons per acre, put on in winter, or before the spring rains come on, and is said to have given great vigour to grass in old pastures, while on hay it increased the crop both that season and the next.

Applied at the rate of eight tons per acre it was found to entirely destroy and prevent all vegetation for three years successively. It might be used to advantage in this way on land badly infested with Canada thistles, or other weeds that are difficult to extirpate. It would, we imagine, be very unsafe to use it as a top-dressing for wheat, or as a manure for turnips, unless, indeed, it had been so long exposed to the air as to lose all its caustic and deleterious qualities; and all the good qualities it contains can, we think, be obtained to more advantage, and at less risk and expense, in ordinary lime and gypsum. It is said to contain some other substances that, on exposure to atmospheric influence, become valuable as plant food. But what these substances are we cannot discover, and should be very cautious in applying gas lime in any form to our field crops.

### Salt for Crops.

"A Constant Reader" sends the following queries, which, before offering any reply, we submit to our readers, that those who have used salt on their crops may state the results of their experience:—

- 1st. What variety of soil is most benefited by an application of salt?
- 2nd. What quantity of salt is it most profitable to apply to an acre?
- 3rd. What variety of crop is most benefited by salt?
- 4th. What is the best time to apply salt to land?
- 5th. Ought it to be applied alone, or ought it to be mixed with, say, plaster or ashes?

The *American Farmer's Magazine* says the question with regard to timber is no longer how to get rid of it, but how to get enough to supply our wants. It thinks the motto should be, "Preserve the forests, and set out young trees."

A correspondent of the *Journal of Agriculture* says he finds his clay loam ground increased more in productiveness by the use of eight bushels of salt to one bushel of plaster to the acre, than from the application of animal manure. Others have been equally benefited by the application. Perhaps a judicious mixture of both would secure the best results.

Mr. Dempsey, of Abury, county of Prince Edward, states that from ten bushels' sowing of Dan O'Rourke peas, he harvested, last season, one hundred and forty bushels. This

is the first that he ever grew of them, and he feels safe in recommending them to every farmer. From 36 bushels' sowing of Golden Vines, he only harvested 70 bushels. Last season was not very favourable for peas, and many crops were not harvested in that section.

**COLOR OF EARLY ROSE POTATO.**—The colour of the Early Rose Potato is a dull blush or rose-colour, not "bluish," as printed in your recent issue. The printer has been equally unfortunate in our friend Mr. Simmers' catalogue of seeds, who has it of a "dull black" colour. Similar mistakes occur in many other published descriptions of this potato which have come under notice. J. F. C.

L'Original.

**CHINESE YAM.**—We have received several letters of enquiry recently respecting this esculent. It appears that a communication on the subject, in the last volume of the *CANADA FARMER*, has been copied into a work entitled "How to Make Farming Pay;" but we judge from the tenor of the enquiries addressed to us that neither the name of the writer nor the editorial note appended to the communication has been given in the extract. We distinctly disclaimed any endorsement of the extravagant laudation in which the writer indulged, and we would now add, as a further caution, that we have since learned that this champion of the Chinese Yam is also a vendor of patent medicines!

**POTATO SETS.**—A correspondent in the *Country Gentleman*, in an article on potato culture, has the following sensible remarks: "I have noticed several articles in your columns lately in regard to size of seed. The question appears to be, shall we plant large, small, cut or uncut seed. There is almost always too much seed planted—too many eyes to the hill. We might as well expect to raise large ears of corn with ten or twelve stalks to the hill, as large potatoes with the same amount of vines in a hill. I have tried every way of seeding, and with me the best is to select large, smooth, well developed tubers, discarding deep-eyed and prongy specimens, for I believe in potatoes, as well as in other things, "like begets like." This is best done at digging time. Put them away by themselves. I have found it best to bury (for if put in cellar the temptation to use them is great), and not open until planting time. I then know that I am all right as to seed. Cut them to one eye in a piece, and put but one piece in the hill; plant in drills three feet apart, and hills eighteen inches apart in the drills, and at digging time you will find but few small potatoes. On no account plant the very small potatoes. Cook them and feed to the hogs. I believe that the main cause of potatoes running out is planting small or medium seed, and continuing it year after year.

## Stock Department.

### Periods of Gestation.

The following table and remarks are extracted from an article in *Blain's Encyclopædia* :—

PERIOD OF GESTATION IN DOMESTIC ANIMALS.	SHORTEST PERIOD.	MEAN PERIOD.	LONGEST PERIOD.
	Days.	Days.	Days.
Mare ..	322	347	419
Cow ..	240	283	321
Ewe ..	116	134	161
Sow ..	109	115	113
Goat ...	150	156	163
Bitch ..	55	60	63
Cat ..	48	50	56
Rabbit..	20	28	35
Turkey..	21	26	30
Hen ...	19	21	24
Duck ...	28	30	32
Goose..	27	30	33
Pigeon.	16	18	20

According to the observations of M. Teisclair, of Paris, in 582 mares, the shortest period was 287 days, and the longest 419, making the extraordinary difference of 132 days, and of 89 days beyond the usual term of eleven months. The cow usually brings forth in about nine months, and the sheep in five. Swine usually farrow between the 120th and 110th day, being liable to variations influenced apparently by their size and by their particular breeds. The true causes which abridge or prolong more or less the period of gestation in the females of quadrupeds, and of the incubation of birds, are yet unknown to us.

In most cases, therefore, between nine and ten months may be assumed as the usual period, though with a bull calf the cow has generally been observed to go about 41 weeks, and a few days less with a female. Any calf produced at an earlier period than 260 days must be considered decidedly premature, and any period of gestation exceeding 300 days must also be considered irregular; but in this latter case the health of the produce is not affected.

### Farmer vs. Horsedealer.

Perhaps in no pursuit do we find more ingenuity, sharp practice and fraud displayed, than in horse-dealing; and men who in every other respect would scorn to do a dishonest action, or take undue advantage of another, will endeavour by every means in their power to dupe even their own brother, when it becomes a question of buying or selling a horse. I don't mean this as original, for the same idea must have occurred to any one who has ever heard a horse case or seen the report of one in the newspapers, but I think it a fitting prelude to the little incident which I have to relate—an incident which loses none of its interest from the fact that

fraud on the one hand is defeated, without any corresponding fraud (beyond a little harmless deceit) on the other part.

The hero, as I may call him, of my tale, Tommy Oaksley, is a farmer in North Lincolnshire, England, and with his usual business he occasionally mixes a little horse-dealing. A plain, simple countryman, he possesses a stock of shrewd native intelligence which, as in this instance, often defeats the "little game" which his appearance invites an unscrupulous stranger to attempt. It seems that a London horsedealer was engaged in buying up horses from the country, and amongst others, Tommy was favoured with a visit from one of his agents, and sold a fine bay horse for about £80 sterling, giving the usual warranty that it was sound wind and limb, &c. In the course of a week or so, Tommy was amazed at receiving a letter from the Londoner (whom, for the sake of brevity, we will call Smith), to the effect that the horse was unsound, and was standing in his stables at his, Tommy's, expense, and that if not removed by him within a week, it would be sold by public auction, and he would be sued for the loss incurred by such re-sale, if any. This, I may say, is a very common dodge, as the recipient of such a letter will in most cases return part of the purchase money rather than incur the trouble and uncertainty of an action at law, proverbially more uncertain in a horse case than in any other form of litigation. Tommy, however, knew a trick worth two of that, and the remainder of the story he shall tell in as nearly his own words as possible, for assuredly I can give no adequate idea of his rich native Doric, still less of the expressive nods and winks which accompany the narrative, as told by himself.—

"Well, thou knaws, I didn't scarcely knaw about this, 'cause the boss wer' rait eniff when I sowd him, so I thowt ther' wer' a bit o' gillery about it, so ez I hed a bit o' time to mysen like, and hed gotten things raitled up at whoam, I thowt I'd joost gang my ways up to Lunnon an' see after it mysen. Well, I goas up; but when I get theer, I thowt I wudn't let on my name, so I goas to t'place, an' I axes to see Mester Smith. A chap towd me he wern't in, and axed me what I wanted. I towd him I cum to look after a boss. I'd gotten an order fer a pair, and hedn't nobbut gotten one on 'em, an' I wanted to get one to match it. 'Well,' sees he, 'come wi' me an' I'll show thee what we hev.' So we went roun', and he axed me what kind of a boss I wanted to match, so I towd him as near as I could, thou knaws, an' I med it like t'one I'd sowd. Well, we looked, first at one and then at another, but I sed I cudn't see one as suited me, an' when we got to mine, I joost looked at him like, an' sed, 'That's more like,' but I didn't seem keen, an' we went an' seed another or two. Presently we comes back to mine, an' I sed, 'Well, I likes t'looks o' that un' most o' enny I've seed'; so t'chap sed,

'Wilt hev him out?' I ses, 'Ay, thee can trot him out a bit, it wean't hurt him.' So they browt him out, an' I soon seed ther' wer nowt amiss wi' him, an' just then another chap comes up an' they ses, 'Here's t'gaffer, an' they tells him what I wanted. He ses, 'You're lookin' at a fine boss theer. He's about as good as I hev.' I ses, 'Ay, he'll do if he's as good as he looks.' 'Well,' he ses, 'he's all that.' So, ses I, 'What's t'price?' an' he sed £120. I towd him it were a goodish bit, an' ses I, 'If I give you that, can you warrantee him sound?' 'Yes,' ses he, 'of course I can; he's sound wind an' limb: I can write you one now.' 'Ay,' ses I, 'then what dost thou mean by this letter?' an' I pulls his letter out o' my pocket. So, I, 'That's t'boss thou ses theer is 'nt sound, an' now thou tells me he's all rait.' 'Well,' ses he, 'here's been some mistak' here.' 'I think ther' hes,' ses I, 'but it's thoa's med it, fur it's i' thy writing. I suppose thou wean't let me tak' t'boss away wi' me.' 'No,' ses he, 'not wi'out thou gives me t'money fur him.' 'Well,' ses I, 'thou can keep him, but don't tell me he's not sound agin.' 'No,' ses he, 'thou's done me this time: I suppose there wean't be anything mere thou wants, so I'll wish thee good day.' 'Stop a bit,' ses I, 'there's one other little thing yet; thou'st brot me up here fra my work, an' thou't hev to pay me for my time and trouble, an' my expenses too.' He sed he couldn't see it. 'Mebbe not, my lad, mebbe not, but I can tho,' ses I. An' the long an' short of it were, he hed to give in, and I med him pay my railway fair theer an' back, an' my hotel bill, an' summit for my lost time too. He grumbled sorely, but I thowt it wren't so bad to get a day or two's sprec i' Lunnon wi'out costin' me owt, all thruff a chap's tryin' to do me about a boss. They've some smartish chaps i' Lunnon, but they mustn't try to come t'owd sojer over us poor countrymen that how neither. We're not all on us such fools as we look.'

Toronto.

LEX.

### "It Won't Pay for Me."

A false idea, pervading the minds of many o' our farmers, in reference to keeping good stock well, not unfrequently finds vent in an expression like this, "Ah, well, it must cost a deal to keep these animals in such condition. It may pay very well for Mr. F., but it won't pay for me." And so these deluded men with a sigh, try to console themselves with the thought that it is beyond their reach to make stock-raising pay as Mr. F. does, simply because, as they fancy, he is richer than they are. At the same time, it is probable that they have an equal amount of stock in proportion to their land, the only difference being that instead of selecting the best of the kind, as Mr. F. does, they take the animal which costs the least money. Instead of using only the best pure bred mates, they use any scrub which happens to roam the

street, because it is the cheapest, they say. In summer they pasture their cattle on the summer fallow and wood lot, while in winter they allow them to trample their food in the snow about the straw-stack. Very unlike Mr. F., who is always careful and attentive that his stock are provided with the best of food and proper shelter. Now, there is an old maxim, which farmers would do well to heed more, "Whatever is worth doing at all is worth doing well."

It seems to me that if the class of farmers of which I have been speaking would follow the advice of Sam Slick, and "cipher" more, they would soon see the fallacy of their ideas in reference to stock-raising. Experience has proved that it costs no more to keep a good beast than a poor one, and frequently not so much, while the profit is often nearly double.

Every one will readily admit that it will require a certain amount of food to supply the ordinary requirements of animal life, whether the animal be in good condition or bad, so that it follows, if the animal is once put in good condition, it costs no more to keep it thus than in a half-starved state. Now, if by carefully selecting the best, and supplying them with proper food and shelter, we can produce the same weight in two years that we can by careless treatment in four years, it requires no great scholar to determine which pays the best. Is it not an immensely foolish notion that what pays one man will not pay another, similarly situated? I claim that it is a reason why numbers of our farmers are so poor, that they acquire these prejudiced notions against stock-raising, and insist on perpetual cropping, until eventually they find themselves and their farms in a like state of poverty. It does pay, and it will pay every farmer to keep the best stock of the kind and keep them well. The stock will pay them in a direct way, and indirectly they will be paid in richer manure, and, as a consequence, more fruitful and productive fields.

FARMER JOHN.

**Sheep Competition.**

To the Editor.

Sir,—I wish to call the attention of farmers to the mode of offering prizes for sheep in this Province. In the case of turnips, it is the practice to compete for the best dozen or two; hence a man, by the extra culture of a small patch of land, may succeed in obtaining a prize, whilst his general crop may be below an average. The consequence is that in some counties farmers annually raise a fund among themselves, and prizes are awarded according to the crop per acre. And as it is with turnips so it is with sheep. By extra care and toil, one lamb may be raised that will succeed in obtaining a prize, whilst the remainder of the flock may be altogether inferior. But we have no prizes offered to

test the quality or value of a crop of lambs from a whole flock of sheep, or the product of one ram.

I am of opinion that nothing will advance the good breeding of sheep sooner than a spirit of rivalry among breeders; and for this purpose I have put up and placed in the hands of Peter Grant, Esq., of Hamilton, President of the Wool Growers' Association of Ontario, the sum of \$100 towards a sweep-stake fund for competition among the sheep-owners of Ontario, on the following conditions:—

1st. There shall be at least eight entries of \$100 each. Entry to consist of one ram, and this year's offspring of such ram from 30 ewes at least.

2nd. The prizes to be awarded as follows: It is supposed, by way of illustration that there will be 8 entries only, which would amount to \$800. Twenty per cent. of this sum to be awarded to the rams, and eighty per cent. to the lambs, in the following manner (less judges' expenses).

PRIZES FOR RAMS.

1st prize	40 per cent.	of \$160	.....	\$64
2nd do	30 do	do	.....	48
3rd do	20 do	do	.....	32
4th do	10 do	do	.....	16

PRIZES FOR LAMBS.

1st prize	40 per cent.	of \$640	.....	\$256
2nd do	30 do	do	.....	192
3rd do	20 do	do	.....	128
4th do	10 do	do	.....	64

Total..... \$800

3rd. The rams to be exhibited, shorn or unshorn, in the city of Hamilton, at the Sheep and Shearing Exhibition to be held there on the 24th May next, and the decision of the judges to be then given, and the lambs to be shown on each farm, and the decision of the judges to be given on or before the 10th day of June following.

4th. Judges to be appointed at said Shearing Exhibition.

5th. All entries to be made with Peter Grant, Esq., of Hamilton, and entry money deposited with him, on or before the 24th May next.

6th. Any farmer making entry and failing to exhibit or allow the judges to inspect his flock, shall forfeit his stakes.

By inserting the above in your next issue, you will oblige,

J. T. NOTTLE.

Binbrook, March 15th.

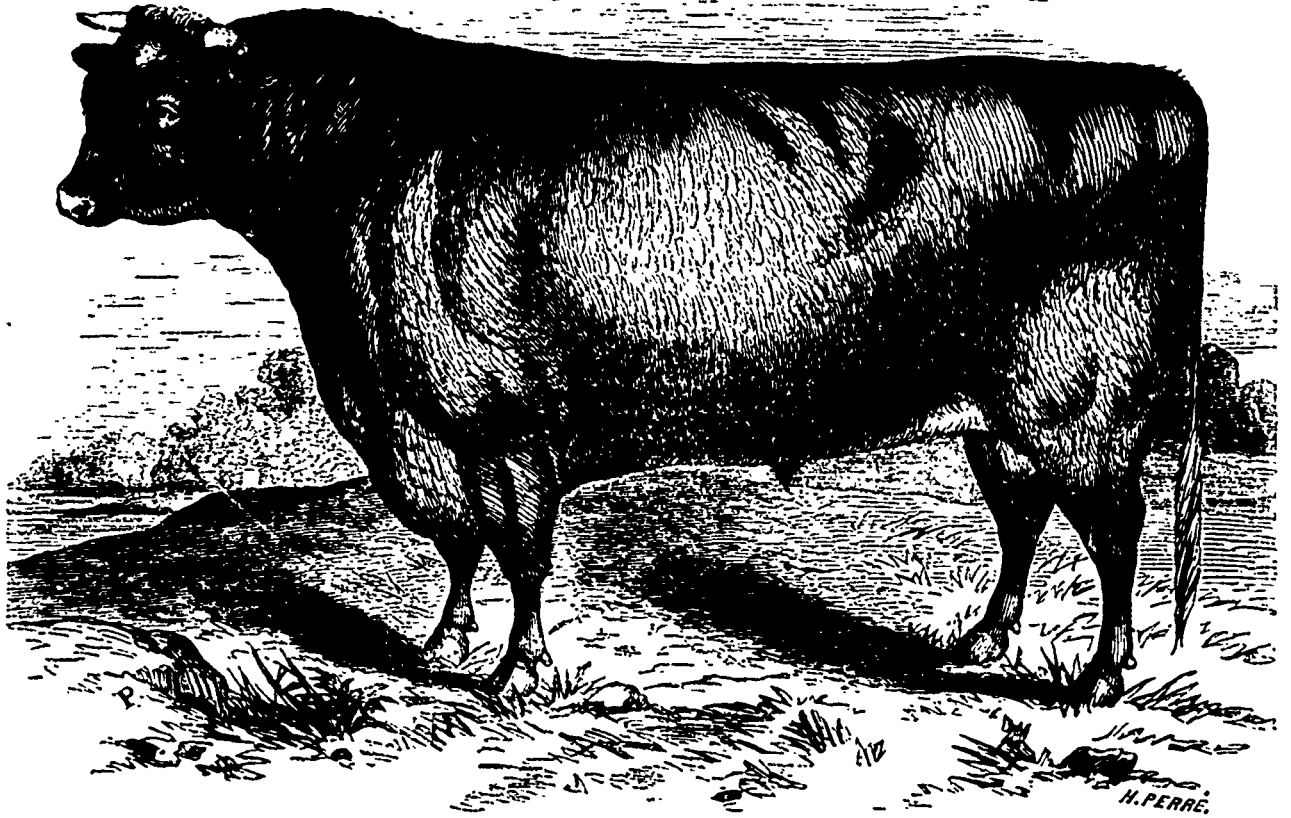
**Poisoning of Sheep with Nitre.**

Mr. Fricston, of Witham Common, near Grantham, England, is reported to have lost 140 sheep from their being drenched with large doses of nitre, saltpetre, or nitrate of potash. This irritant salt is stated to have been given by mistake for the etherous body, sweet spirit of nitre. Saltpetre is generally

regarded as a comparatively harmless substance, possessing about the same activity and similar properties to common salt. In ounce doses it is used for horses with their Saturday night mash. It is a useful saline diuretic. In Mr. Dun's volume on "Veterinary Medicines," it is stated that two pounds of nitre dissolved in six pounds of water, and given to a healthy horse, acted both on the bowels and kidneys, but that its operation ceased in about twenty-four hours — p. 392. Some French authorities have, however, produced fatal effects on horses with less than a pound of nitre, whilst two or three drachms, unless shortly got rid of by vomiting, kill dogs. A pound of nitre has been given to an ox with impunity. We know of no experiments with sheep, but judging from the effects of the saline on other animals, we suppose that two or three ounces would only cause increased activity of the bowels and kidneys, by which channels the salt would be expelled from the system without doing serious or permanent injury. Possibly the sheep reported to have been poisoned may have been in a weakly condition when they got the nitre—a conclusion justified by the fact that they had been ill, and prescribed for by the professional man who ordered the sweet spirit of nitre.

**SALES OF STOCK.**—Mr. John Snell, of Edmonton, has sold to Dr. Brown, of Henry county, Kentucky, one yearling Cotswold ram, and one yearling Southdown ram; to Mr. J. Callaway, of the same place, a young Berkshire sow, and to Mr. Busb, of Clark county, Kentucky, a young Berkshire boar.

**SHORTHORN HEIFERS.**—We learn from *Bell's Weekly Messenger*, that Captain Gunter's Wetherby herd has received valuable additions by the birth of a Duchess Heifer and a Duchess bull on the 25th of February. "Fourth Duke of Thorndale" was the sire of both, and also of two other calves during the same week. We also learn that our enterprising countryman Mr. Cochrane has purchased from Mr. Pawlett two yearling heifers, "Rose of June," and "Princess," for 100 guineas each. Mr. Beattie is about once more to visit England with the view of making fresh purchases for Mr. Cochrane. Amongst other recent sales of that gentleman's stock, the imported bull calf, "Captain Graham," calved on the voyage from England in July last, has been sold to Mr. George Greig of Beachville for \$500. He is a fine promising calf of Booth blood, sired by "Prince of the Realm" out of "Pink Thornlea," by "Baron Booth." Mr. Cochrane's Shorthorn herd has recently been increased by the birth at Compton of sixteen or seventeen calves, all sired by "Eleventh Duke of Thorndale." During the last month fifty cotswold lambs had been dropped in his valuable flock of that breed. Probably their number has been further increased since March, the date of our last report.



"GRAND DUKE OF MORETON," the Property of F. W. STONE, Esq., Moreton Lodge, Guelph.

### "Grand Duke of Moreton."

We have great pleasure in presenting to our readers the accompanying beautiful portrait of Mr. Stone's fine short-horn bull, "Grand Duke of Moreton," an animal that has gained the highest distinction in his class, and who, with his sire, Third Grand Duke (17,993), has contributed much to raise Mr. Stone's herd to its present eminent position.

This splendid bull was awarded the first prize in his class at the Provincial Exhibition held at Kingston in 1857, and the first prize at the Hamilton Show of the Provincial Exhibition in 1868; also the diploma for the best short-horn bull of any age, besides a number of prizes at other shows. He is considered by many first class judges to be the finest short-horn bull in America, and equal to any they ever saw, combining with an even outline, good constitution, colour, symmetry, docility, gait and size. He is, moreover, a first-class stock-gover, standing at present at the head of the Moreton Lodge herd of short-horns.

His sire, Third Grand Duke (17,993, E. H. B.), was a winner of many prizes; namely, at the United States Exhibition, held in

Chicago in September, 1855, he was awarded the first prize of \$30, as the best two-year old imported bull. At the Provincial Exhibition, held in Kingston in 1859, he gained the first prize of \$21, and the first prize the same year at the county of Wellington show. In 1860, he gained the second prize at the Hamilton meeting of the Provincial Exhibition, and the first at the Wellington county show in 1861. At the London meeting of the Provincial Exhibition he was awarded the first prize as the best aged bull, taking also the silver medal and two diplomas as the best bull of any age or breed, and as the bull shown at the head of the Prize Herd of Durhams. He subsequently gained numerous other prizes at different shows.

The dam of Grand Duke of Moreton was awarded the second prize at the Hamilton Show of the Provincial Exhibition in 1868—the only time she ever was exhibited—and then at a great disadvantage, having run in the woods, without any other feed than she obtained there, until within three months of the show.

Below we give the pedigree of the subject of our illustration:

Grand Duke of Moreton, No. 321 Canadian H. B. and No. 5732 American H. B. Red

Calved 25th February, 1864. Bred by Frederick Wm. Stone, Moreton Lodge, Guelph, Ontario, Canada; got by Third Grand Duke (17,993, E. H. B.), (2,292, A. H. B.); dam, Maid of Guelph, by Twelfth Duke of Oxford (17,712, E. H. B.) (2,315, A. H. B.); gr. dam Martha (imported), by Dick (19,120); gr. gr. dam Magdalen 1th, by Sir Isaac (9,645); gr. gr. g. dam Magdalen 3rd, by Victory (5,566); gr. gr. gr. g. dam Magdalen 2nd, by Miracle (2,321); gr. gr. gr. g. dam Magdalen 1st, from Sir George Crewes.

INDIAN CORN FOR HORSES—A correspondent from New Brunswick makes some enquiries respecting the comparative merits of Indian corn and oats as food for horses. We believe that oats contain rather more nutritious matter of nitrogenous or flesh-forming quality, and that corn possesses more saccharine and starchy compounds, and is therefore better adapted for fattening. The question which should form the staple food must be determined by the relative cost. In corn growing countries we should give the preference to that grain, but should not feed it exclusively, an occasional change to oats being very beneficial. No doubt if steamed or crushed, the feed is more digestible and nutritious, and generally, therefore, more economical than whole grain.

## Veterinary Department.

### Digestive Organs of the Horse.

Those organs called the essential organs of digestion consist of the stomach, the small and large intestines, and their accessory organs, the liver, the pancreas and the spleen. The whole of these viscera with the exception of the posterior part of the large intestines, are situated in the abdominal cavity, and are covered and also partly held in their position by the peritoneum, which is a fine serous membrane that lines the inner abdominal walls, and is also reflected over the viscera contained in that cavity. The stomach of the horse is very small in proportion to his size, and is in contact with the liver, and the muscular partition (*diaphragm*) that separates the abdominal and thoracic cavity. The walls of the stomach are formed of an external or serous coat, a middle or muscular, and one side of its inner coat is composed of a cuticular membrane, whilst the other is called the villous, and it is in the villous part, (so called from the presence of a number of little projections or villi), which is the right side of the stomach, the gastric juice is secreted; the oesophagus opens into the left side by what is called the *cardiac* opening, and the other opening is the *pyloric* orifice, which communicates with the commencement of the small intestines. These are upwards of seventy feet long, and are disposed throughout the cavity in a convoluted manner. The first part is called the *duodenum*, and in it the food is partly converted into a milky fluid called chyle. This process is called chylification, and is brought about by the secretion from the inner membrane, together with the secretions from the liver and from the pancreas, the ducts, or outlet tubes of which open into the duodenum about five inches from the pyloric orifice of the stomach. The small intestines terminate in the large, which are very strong and capacious, and their coats are further strengthened by longitudinal bands.

The liver is the largest secreting gland in the body, and is divided into three large lobes, and two lobules, small or accessory lobes—its chief substance is of a reddish brown colour, and is formed of lobules which are made up of hepatic cells, bile tubes, networks of blood-vessels, &c. This structure is covered by a fibrous coat, which also penetrates the substance of the liver, passing in between the lobules. The blood-vessels bringing to this organ are the hepatic artery, and the portal vein. The former is the nutritive vessel, whilst the latter is the functional, and conveys the blood from the stomach and intestines. It is from the portal vein that the bile is secreted, which is a thin fluid of a greenish yellow colour, and exceedingly bitter. In the horse, the secretion of bile is constant, but is most active during

active digestion; and as soon as secreted, is poured out by means of the excretory duct into the commencement of the small intestines. In the ox there is a gall bladder, in which the bile collects during abstinence.

The pancreas, in structure, very much resembles the salivary glands, being made up of lobes and lobules, and the secretion from this organ issues by its excretory duct, which opens into the duodenum with the biliary duct; the pancreatic fluid is somewhat similar to saliva.

The spleen is attached to the greater curvature of the stomach, and is an organ largely supplied with blood-vessels; it is what is known as a ductless gland, having no excretory duct.

### Glanders—Danger of Infection.

To the Editor.

Sir.—Seeing a paragraph in your journal on "Glanders in the Human Subject," I am induced to send you a brief account of a similar case that came under my own observation:—

In the year 1822 a man came under my care (as dressing pupil at Guy's Hospital, London), who was suffering from an attack of glanders. He was in the habit of dealing in "screws" and diseased horses. In sponging and cleaning the nostrils of a glandered horse, he got some of the discharge in a chap on his thumb. About the second or third day after, he was taken very ill, and was at once admitted into the hospital. He was 30 years of age, and previously to this illness was a strong, healthy man. On his admission into the hospital he was suffering from severe inflammation of the thumb, and of the absorbents all along the fore and upper arm, from great constitutional disturbance, fever, and delirium. As the inflammation and fever subsided, a chain of small abscesses formed along the course of the inflamed absorbent vessels, extending from the base of the thumb to the arm-pit, but more especially from the thumb to the elbow, followed by an unhealthy ulceration along the whole line of disease. After many months of severe suffering, the poor man eventually recovered. He was repeatedly seen by Sir Astley Cooper, and the other medical and surgical officers of the institution. The disease did not affect the nasal membrane. Some weeks after the commencement of the disease, and after the establishment of ulceration, a small quantity of the purulent discharge was inserted by the point of a lancet into the nasal membrane of two donkeys. On the second day they became very ill, and died on the sixth or seventh day.

I have briefly communicated these facts, more especially for the sake of the opportunity which it affords me of cautioning and earnestly warning all those who may have much to do with horses to be very careful how they "handle" them, when suffering

from any nasal discharge. A man should never touch a glandered horse, if he have at the time any sore, scratch or chap on any part of his hands. Indeed, he ought not to do so without having his hands protected by gloves. He should also avoid standing too near the horse's head, as he is apt in snorting or sneezing to scatter the discharge around him, some of which might possibly fall on the membrane at the commencement of the nostril, thereby causing the disease, and much suffering, if not even death; or it might fall on the conjunctiva of the eye, producing inflammation of the most destructive character.

As a proof of the subtlety of the poison of this terrible disease, and as a caution to those engaged among horses, I may relate the following well-authenticated anecdote, recorded in an English paper some years ago:—

A farmer, going his usual rounds one morning to inspect his stock, observed a favourite horse in an adjoining field showing symptoms of distemper. The horse, on seeing his master, trotted up to the fence, according to his custom. There was a narrow lane between the two fields, and while the farmer was looking to discover what was amiss, the horse snorted or sneezed, and some of the mucus was borne by the breeze over the two fences and across the little lane on to the farmer's face. In a few days the usual symptoms set in, and the man died of glanders, as did also the horse. There being no known abrasion of the skin on the man's face, it is highly probable that this was a case of infection through the mucous membrane of either lips, eyes or nose.

F. E.

### Ontario Veterinary College.

The termination of the Winter Session of the Toronto Veterinary School is an important epoch with the most advanced students, who then present themselves for the ordeal of the final examination for their diploma. This examination was held in the Agricultural Hall, on the 30th March. The gentlemen who acted in the capacity of examiners on the occasion were Mr. Varley, of the 13th Hussars; Drs. Thorburn, Rowell, and De Lahooke, of Toronto; and Mr. Wilson, V. S., of London. Some of the former students now practising their profession in various parts of the country were also present. The examination included the usual branches of veterinary instruction, was fair and thorough, and as good a test of the proficiency of the candidates as such a trial could be; and the gentlemen who gained their diplomas acquitted themselves very satisfactorily, reflecting great credit on the valuable institution in which they had pursued their studies, as well as on their own application and acquirements. The names of the successful candidates were C. H. Sweetapple, Toronto; W. Stubbs, Caledon, Co. Peel; Thos. Baker, Galt; W. Evelyn, Yarmouth Centre.

It is encouraging to learn that the school continues in a prosperous condition. It is a most valuable institution, and calculated to be of increasing importance and service to the country. The names and addresses of the students given below will show that those who avail themselves of the instruction given by this College come from all parts of the country.

**SECOND YEAR'S STUDENTS**—C. H. Sweetapple, A. Hunter, Toronto; W. Stubbs, Caledon, Co. Peel; Thomas Baker, Galt; Thomas Hope, Ayr; W. Evely, Yarmouth Centre; D. G. Sutherland, Stayner; D. McIntosh, Elora.

**FIRST YEAR'S STUDENTS**.—Joseph Craig Elliot, James Mayhew, Arthur Thompson, Sand Hill; B. Richardson, Flesherton; W. Kidd, Listowell; David Cumming, Milto; James Cesar, Kilmanagh; Josephus Biley, T. H. Lloyd, King; Robert Young, St. Louis deGon., Quebec; John Bryce, Mohawk, Co. Brant; Alexander Harthill, New Jersey.

**AGRICULTURAL STUDENTS**.—Albert H. Gladstone; Stephen Wells, Napanee; Benson Palmer, Mohawk.

**PRIMARY EXAMINATIONS**.—Mr. Sutherland, Stayner; Mr. Hope, Ayr; Mr. McIntosh, Elora.

In the evening the professors, students and friends of the school met in the English Chop House, King street, and partook of a *recherche* repast. Professor Smith occupied the chair, and was supported by Dr. Richardson and the Rev. Dr. Barclay. The Vice-Presidents were Dr. Buckland and Dr. Thorburn. There were present Ald. Boxall, Mr. J. Bond, Dr. Delahooke and Mr. J. H. Wilson, V. S., London. After the usual patriotic toasts, Dr. Thorburn proposed the Agricultural and Arts Association of Ontario coupled with the name of Dr. Buckland. The Doctor in responding stated that it was now 20 years since he had become connected with the agricultural affairs of Canada, and from what he had seen he was more than ever convinced that agriculture underlies the prosperity of Ontario. The Association last year had undergone a very material change. Formerly it was a Government Board; now it was a Representative Council, and he hoped the storms they had recently gone through would serve like the thunderstorm to pacify the atmosphere. He trusted that next day, when he met the Agricultural Association at London, he would be able to satisfy them as to the progress the veterinary science was making amongst them; as last year at their college there had been an average attendance of thirty-five students. The Doctor then referred to the importance which live stock was taking in the trade of the country, and with this in view he hoped the Government would give even more attention to the Veterinary School than they have hitherto given. He hoped that next session a more extended sphere would

be given to the studies of the students attending the Veterinary School. He then referred to the popular prejudices the Graduates of the School had to contend with, and he hoped yet to see the day when the people of Ontario would see that it was only men who had mastered the principles of nature and induction who were really capable of meeting and contending with disease, whether in connexion with man or beast. The Doctor concluded by proposing "The Toronto School of Medicine." To which Dr. Richardson replied. The following toasts were then given:—"The Veterinary School of Medicine;" "The Examiners;" "The Graduate Students;" "The non-Graduates;" "The Graduates of former years;" "The Students who have passed the Primary Examinations;" "Our Guests;" and "The Press" and "The Canada Farmer." After singing "Auld Lang Syne," the meeting separated.

Mangers should be low, and stables well ventilated and well lighted. Many horses are made blind by being kept in the dark.

Fonnder is caused by bad shoeing, or constitutional disturbance—not by frost, as a correspondent suggests.

Prof Gamgee says regularity in feeding, and the use of sound corn, oats, and well-cured hay, are the best preventives of colic in horses. As a cure he recommends injection of tepid water in the intestine, and a ball of five or six drachms of aloes. He says, above all things do not bleed a horse when attacked by colic.

**VETERINARY QUERIES**.—"A Young Farmer" sends a few miscellaneous queries, among them the following:—"What is the cause of 'Snot' in sheep? Also, what is the cause and treatment of lice on cattle? What should be given to a mare in foal, that is troubled with white worms?" We do not know to what disease he refers in the first query. For information on the second, we refer him to the last number of the CANADA FARMER. To remove worms in horses, give one drachm of tartar emetic daily, continuing the treatment for ten or twelve days. It may be conveniently given in bran mash.

**STURDY IN SHEEP**.—A subscriber writes as follows: "There is a disease of sheep in this district which is not unfrequent. I shall endeavour to describe the symptoms, hoping that the description will be so far intelligible that you can inform me what it is, and the remedy, if any. The first symptoms, in a case of my own, were a jerking or twitching all over the body of the sheep. Soon after the sheep refused to eat, and showed an inclination to run backwards, frequently running against different objects, being apparently blind. Later, it became unable to stand, lolling the head backwards and around over the body." Ans. The symptoms are somewhat analogous to those of "Sturdy" or "Gid," and clearly indicate a disease of the brain, most probably not amenable to remedies. F. F.

## The Dairy.

### Spring Work in the Dairy.

With the opening of spring all dairies will become a scene of bustle and preparation for the ensuing summer's work, whether the object be to make butter or cheese, or to furnish milk to the cities and large towns. This last operation is now becoming the most profitable use to which a dairy can be put, where it is near enough to the milk consumers, or to a railway that will convey the milk with regularity and despatch, at reasonable rates, to the city. A word about the cows first. They must have good food and water, and plenty of it, from the time they calve till grass becomes abundant. A cow always is in her best flush of milk just after calving, and if she is then stinted or neglected, and so falls off in her yield of milk it cannot easily be again restored. Many a good milker becomes unprofitable through the summer from this cause, and it is well not to have cows come in earlier than the middle of May, unless the farmer or dairyman has a full supply of such food for them as will keep up the flow of milk until grass comes in. Besides hay, they should get roots which should invariably be fed just after milking in the morning and evening, giving none at noon or any other time, if it is desired to avoid having an unpalatable taste imparted to the milk or butter. If roots cannot be had, chop the hay fine, steam or boil it, and add meal, either of corn, wheat, or peas. Where butter making is the object, only such cows should be kept as give rich milk, rather than an unusual quantity of it, while for cheese making or supplying city milk, quantity rather than quality is the desideratum.

We believe too little attention is paid to the matter of raising cows for the butter dairy. Perhaps no one particular breed is better than another for the dairy, as cows giving rich milk may be found among all breeds, as well as among our native stock, and crosses upon it; but by proper management a good development of milking qualities may be established and perpetuated in a herd of dairy cows.

The necessity of perfect cleanliness in every department of butter-making cannot be too often urged. The want of it is the great cause of so large a proportion of inferior butter being brought to market, and to such an extent is carelessness shown in this respect by many of even the better class of farmers' wives, that even when really good butter is brought to market it will not command an extra price, unless the seller has an established reputation for furnishing an article of perfect purity. The wealthier classes are getting to be very dainty in regard to the butter they consume, and pay very high prices for an article that they know to be

good. We have seen it stated that there are farmers near some of the large cities in the States, who have for years obtained a dollar for every pound of butter they have made, simply because they have got a reputation for making an article that can be depended on for its perfect cleanliness and purity. Now that there is a glass manufactory at Hamilton and another at Montreal, there is no reason why glass milk pans should not come into general use. They can be made nearly as cheap as pottery, are no more liable to break, and though not equal, perhaps, to tinned iron for durability, they are more easily kept clean, and being perfectly smooth, without any joints, do not imbibe or retain any stale milk or other matters that can impart an ill flavour to cream.

Cows should not only be milked with perfect regularity as regards the hours of milking, but they should be milked to the last drops; and if hired girls or men are employed to milk the cows, the dairyman, farmer's wife, or whoever has charge of the dairy, should go round with a small tin pail, and milk each cow dry before the work is to be considered complete, and they are allowed to return to the field or enclosure. The udders should be washed with tepid water before milking, so long as the cows remain in or about the byres and yards, but after they are put on pasturage it will seldom be found necessary to do more than wash the teats occasionally. The habit acquired by many servant girls of dipping their hands in the milk while milking the cows, is a disgusting Irish practice that should not be tolerated. Cows are just as easily milked with dry hands, and if they are not, the teats should be softened in tepid water, and great care taken to allow nothing to drop from them or the hands into the milk pail, while the operation of milking is going on.

The point as to whether cream should be churned while sweet, or allowed to become sour first, we do not intend to discuss; but we may remark that when on a visit to Devonshire, England, some years ago, we found the general practice was to churn cream while sweet, and it is pretty well known that the Devonshire butter is considered the best made in England.

We believe that, after all the care in the way of cleanliness in the management of the milk and cream, the state of the churn often mars the prospect of obtaining first-rate butter. A really good churn has yet to be invented. They are generally made of wood, which, as we all know is porous, and a wooden churn imbibes and retains some of the buttermilk or particles of butter, which soon become rancid, and impart a flavour to the next churning, notwithstanding all efforts, by means of boiling water, to get rid of them. Glazed stoneware, which is used in England for the purpose, would be better than wood; and churns of glass, we think, might be made and used with great advantage. Cream

should be gathered as free from milk as possible, when it is put in the cream-pot, and the strippings should not be added to the cream, but be placed in a pan by themselves, and the cream gathered from them, the same as with the rest of the milk.

Never churn whole milk if you want to have good butter; that is an Irish invention to obtain buttermilk in plenty, and gives a disagreeable cheesy flavour to the butter, though it may produce more of it, by reason of some of the casein in the milk being added to the butter.

### Cow Keeping in Vermont.

In travelling through Vermont, I was most pleased with the peculiar old-fashioned homesteads that exist all through that state, especially in the hilly parts, and some friends of mine living there were eloquent on the subject of home and the old farm habits, under which they were all brought up. The custom seems to be, for the elder boys to leave home for the west as soon as the younger ones are able to take their places at work. The family with whom I was staying was similarly situated with most others. The elder had been away in California for some years, and, at the time of my visit, was on a return trip to the "Old folks at home," who were delighted to see him. He was full of western anecdote, and praises of the farming interest, out in the Far West. Wheat yields in that favoured climate 50 bushels an acre; Barley the same or more; oats, peas, hay, and almost all farming products in about the same proportion. Gold digging he had tried but once, and much preferred the usual farm life. He related some thrilling adventures and narrow escapes in the dangerous avocation of a miner. All, however, failed to produce any desire on the younger branches of the family to move westward. Their occupation was cow keeping and butter making for the city markets, which seemed to pay well. Both boys at home were over 21, and as such were entitled to wages, and the father was paying them the same as the two hired men, namely, \$240, American money, and their board, each year; for this they had to look after and milk 50 cows through the summer, and do the ordinary work of an old farm during the winter. The father used to sell off most of the cows in the fall, (unless of extra quality for milking purposes) for feeding in the eastern distilleries, and purchase others in the spring, about April, that had been wintered on the prairies away west, and were then worth about \$50 to \$60. The same cows readily brought \$40 to \$45 in the fall following, at which time they were usually about half fat, or, to say the least, in very good order. The product of 50 cows averaged for the seven months of spring, summer and fall, about three gallons of milk each day. This I thought high, but was assured they did so especially on my informant's farm, who being forehanded could

purchase where or when he liked. On my return to Canada, he travelled with me west to make arrangements for a supply of cows with some western drovers for next April. The cows on his farm at home were fed on the high lands that were seeded with clover during the early part of spring, and were not turned into the bottom or meadow lands until the extreme heat of summer had set in. Part of those low lands are mown for hay, but the principal portion was used for pasture. As the fall scarcity of feed began to be felt, it was my informant's practice to have a few acres of Western corn, that had been sown broadcast on a well manured piece of land, and sufficiently thick seeded to keep down the weeds, come in for soiling. The corn was about 4 feet high when cutting first commenced, but it rapidly gained in growth, and was usually 8 feet high before the main demand for it commenced. If planted in drills, some plaster and ashes were drilled in along with the seed, but usually the corn was broadcast, sown very thick, and on rich land. I was informed that about 4 acres would be ample feed between the time the grass failed and frost commenced. As soon as the frost was sufficient to turn the points of the leaves, the remaining corn was cut up and built into conical shocks, all green as it was. Four acres in addition sufficed for all winter purposes, for such of the cows as were reserved as extra milkers for another season. Straw of course was used, and some hay, but not in large quantities. The whole was cut up into chaff, and mixed and fed in that state, and the cattle did exceedingly well, some of them milking all through the winter until near calving time, the spring following. The corn was never housed; the outside got weather-stained, and of course some of it was spoiled, but for the most part the broad leaves formed a roof impenetrable to rain, and the inside was always green and good. The whole was cut up together when used. I thought the example worth our imitation in Canada, and I was particularly cautioned not to grow the Canada variety of corn, it being too small, but to sow the ever-green or common sweet corn, or western giant horse-tooth, which has proved the best of all for fodder. It was necessary to sow very thick, about two bushels per acre, or the corn attained a too woody state for good fodder; of course but little ever bore any corn, hardly enough for seed; if the sweet corn was sown, and if the horse-tooth variety was used, not one stalk in a thousand had any ears on it. The labour connected with the 50 cows was done by the two sons above mentioned, who milked for the morning and evening made butter, and did all the dairy work; women never pretended to do any of the merchant butter making; the boys churned twice each day, and sometimes three times. During the summer the cows are milked twice, and some of the best three times at first, but in winter once was found sufficient. I condemned the single milking each day during winter, but was told that without slip it answered very well, as only a supply for the house was expected. C.



**Cooling Milk.**

X. Y., from Bracebridge, writes, "In perusing the reports of the Dairymen's Convention I see it recommended that milk for making butter should be cooled by artificial means. I always understood that cream will not rise after the milk becomes cold, consequently the milk should cool gradually. Perhaps you can inform me which is the better way."

In recommending the cooling of milk it is not intended that it should be made cold. The utmost that can usually be accomplished in summer time is to reduce the temperature somewhat below 60. It is not likely that any practical difficulty will arise from cooling milk too rapidly. A free exposure to air and the removal of animal odours are essential points, which will perhaps be best secured, where separating the cream and making butter are the objects, by a gradual cooling; but for making cheese on the factory plan it is generally necessary to reduce the temperature as quickly as possible.

**Charcoal in the Dairy.**

The power of milk to absorb noxious gases and odours from the atmosphere is known to every dairymen, and this power extends also to all the productions made from milk, be they cream, butter or cheese.

Much of the bad flavour in butter and cheese is not caused so much by anything derived from the cow, or the food which she eats, as by odours imparted either to the milk after it is drawn or to the cheese after it is made, and before it is put in the cloth and rendered impervious to atmospheric influences. Hence the necessity of the greatest efforts being made not only to keep the dairy and every utensil used in a state of perfect cleanliness, but also the attendants should be in every way cleanly in person, and the air kept pure and uncontaminated by any odours whatever. To do this, charcoal, finely powdered, is probably the best and cheapest substance that can be used. It is capable, when fresh, of absorbing ninety times its own volume of ammonia or other gases, which can again be driven out of the charcoal by the application of heat. How much charcoal is necessary, and where it can best be placed in the dairy, so as to absorb all noxious gases, are points yet to be established by experience, and we only throw out the idea in order that dairymen may make a note of it, and find out for themselves the best ways and means of employing charcoal as an absorbent deodorizer in the milk room, the cheese room, or any other part of the dairy establishment.

A correspondent of the Boston *Calligrapher* says that warts on cows' teats may be readily removed by washing frequently in alum water made by dissolving two ounces of alum in a pint of soft water.

**Entomology.**

**Tiger Beetles.**

When we think of the thousand and one noxious insects that prey upon the crops and fruit and vegetables in this country, we are very apt to doom the whole race to indiscriminate slaughter, and wage a war of extermination upon insects of every order, class, and kind. But by doing so we commit a very great mistake, for we not only destroy the innocent with the guilty, but we slay also our best friends with our bitterest enemies. In order that our readers may be able to recognize these friends and spare their lives, we propose devoting a portion of our space from time to time to the description of their appearance and habits, and presenting woodcut likenesses in addition. We would, indeed, that we could render their *cartes de visite* as familiar to the people of Canada as are the portraits of their relatives and friends that fill the albums on every parlour table.

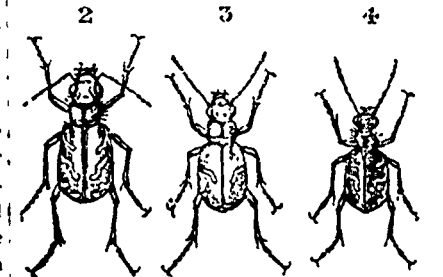
Insects that are directly useful to mankind by the products that we derive from them are sufficiently familiar to every one, and require no description here, such, for instance, as bees, Spanish flies (*Cantharis*), silkworms, cochineal, &c. We shall pass on, then, to those that are indirectly useful, taking up first of all those that prey upon noxious insects, and keep in check many of our greatest misances.

We begin with the Beetles, partly because this order of insects is usually placed in the first rank by entomologists, and partly because many of them are large and conspicuous, and easily recognized. The first family of beetles is the *Cicindelidæ*, of which we have only one genus, *Cicindela*, in Canada. This name, derived from the Latin, signifies a glow-worm, or bright shining insect, and is applied to them on account of their brilliant metallic colours, which sparkle in the sunshine. In English they are commonly called tiger-beetles, from their fierce disposition and habit of leaping upon their prey. They feed entirely upon other insects, both in the larval or grub state, and when they attain to the winged or beetle condition. Their favourite haunts are warm sunny banks, sandy roads, railway tracks, or other spots exposed to the full glare of the sun, and free from vegetation, which would impede their movements. Some species, however, frequent grassy places on the borders of woods and among scattered trees. At the approach of the passer-by they suddenly take wing, and fly with great rapidity for a few yards before him, alighting again as suddenly as they rose, but always with their heads turned in the direction of the approaching danger. The same individual may be started up again and again, but after a few alarms, when he begins to find himself the object of a particular pursuit, he craftily eludes fur-

ther persecution by making a long and circuitous flight back to his former station. By carefully marking where he goes, and going quietly back, we have often succeeded in finding the desired specimen careless and off his guard, and captured him even without the aid of a net. In cloudy or stormy weather they hide themselves in some convenient retreat, but they soon re-appear with the returning sunshine.

The eggs are laid in the earth, where the grubs that are hatched from them also spend their lives. These grubs or larvae are very curious creatures, and well repay a little observation. It would be difficult to describe their form so as to render them easily recognizable to the reader, but the accompanying cut (Fig. 1) will afford a sufficiently good idea of their appearance. It will be seen that they have a pair of tremendous curved jaws, three pairs of legs, and a pair of very curious recurved hooks or spines on the 8th segment towards the tail. They are of a yellowish white colour, with a brownish horny head. They live in deep round holes, about the diameter of a small lead pencil, the orifice of which they usually close with their heads. No sooner does any unsuspecting insect approach sufficiently near than it is seized by a sudden effort, and carried off to the bottom of the hole, there to be devoured at leisure. The larva lives in this manner throughout the summer, and is supposed to pass through its pupa state in the ground during the winter, appearing in the beetle form early in the following spring.

The beetles, of which over a hundred different species are known to inhabit North America, and about a dozen have been found in Canada, are provided with sharp cutting jaws, three pair of long slender legs, which enable them to run with great rapid-



ity, and a pair of membranous wings, concealed beneath the handsome wing-covers, when not in use. They feed upon small insects of every description, and must destroy uncalculable numbers. The accompanying figures of some of our commonest species will enable the reader to recognize them without difficulty.

Figure 2 represents the Common Tiger-beetle (*Cicindela vulgaris*, Say), which is found in great numbers all over Canada and the United States. It is a little over half an inch long, and about half as broad, of a dull purplish colour above, and a bright brassy green beneath. On each wing-cover above



are three whitish lines of irregular shape, as seen in the figure. It is very common on roads and sandy banks throughout the summer.

Figure 3 represents the Purple Tiger-beetle (*C. purpurea*, Riv.), a very handsome metallic purple beetle, nearly the same size as the preceding, in company with which it is often found. Sometimes it is greenish instead of purple. This is one of the first beetles to come out in the spring. We have taken it in numbers in April, and once as early as the 17th of March, before the snow had all gone.

Figure 4, the Hairy-necked Tiger-beetle (*C. hirticollis*, Say) is another common species that bears a general resemblance to *C. vulgaris*, though smaller, and with the neck covered with whitish hairs, as the name implies.

A most beautiful species is the Six-spotted Tiger-beetle (*C. sex-guttata*, Fabr.), a most brilliant metallic green insect, with six tiny white spots on its wing-covers. It is sometimes found in gardens, but more usually in partially shaded places, where it chooses as its post of observation some projecting stone or log. It is rather difficult to capture, being exceedingly active in its habits, and is not nearly so common as the preceding species.

As all these beetles live upon other insects, and devour enormous numbers of those that are injurious to us, we must beg our readers, one and all, to abstain from their destruction in future, and rather encourage them about their farms and gardens.

### Currant Bush Caterpillars.

To the Editor.

Sir,—You would confer a great benefit on this part of the country, at least, if you could find out and publish some receipt that would rid us of caterpillars through the ensuing summer. There is a small kind that has been very destructive for some years past to currant and gooseberry bushes.

A SUBSCRIBER.

Peterborough, March 8.

NOTE BY EDITOR.—We have so often described the caterpillars that infest the gooseberry and currant bushes of this country in the columns of the CANADA FARMER, that we hoped all our farmers and gardeners knew all about them by this time. It seems not, however, and so we must once more repeat our "twice told tale."

There are two kinds of caterpillars that attack these bushes and strip them of their leaves; they are about equally destructive, and the same treatment is effective for both. One is the larva of a moth, *Eltopia ribearia*, and is what is called a measuring worm, or looper, because, having its legs only at the ends of its body, it is obliged to loop itself up in the form of an inverted U, and looks as if it were spanning or measuring the surface over which it is moving. It is of a yellowish colour, with whitish sides, and is covered with numerous black dots, each

emitting a single hair. It is solitary in its habits, feeding separately from its fellows on a single leaf; it possesses the power of letting itself down by a silken thread, and may often be seen thus dangling in the air, and when at rest it frequently attaches itself by the legs at one end of the body to a leaf and stretching out the other end, looks very like a dead twig. The moth it turns into is pale yellow, with a few dusky spots on the wings, which expand about an inch and a half. This caterpillar attacks all varieties of currant and gooseberry bushes, including the black currant, the Buffalo or sweet flowering currant, and the various kinds of wild gooseberry.

The other worm, or false caterpillar, is the larva of a saw-fly, (*Nematus ventricosus*) and differs from the preceding in the following particulars:—It has 20 instead of 10 legs, is generally in company with a number of others on the same leaf, has its tail slightly curled round, never hangs by a thread, and is of an apple green colour, and covered with tiny black warts except after its last moult, when it loses all the warts and becomes of a delicate pale green colour, with some bands of pale yellow towards the head and tail. In its perfect state, it is a transparent-winged fly, with a honey yellow body. It lays its eggs in long rows on the ribs of the leaves beneath, generally selecting those nearest the ground; we have counted upwards of 200 eggs on a single leaf. It attacks all the cultivated varieties of the gooseberry and currant (except the black currant), and rapidly denudes them of their leaves.

The most efficacious remedy for both these pests is the following:—Mix an ounce of powdered white hellebore in a gallon of water, and sprinkle the infected bushes with the mixture by means of a watering pot. Some dissolve a quarter of a pound of alum in the water first, while others use a larger quantity of hellebore; but the simple receipt we have given has been found to answer very well. As soon as the leaves are well out in the spring, the bushes should be closely inspected every few days, especially about the lower leaves, and the remedy applied the moment any of the worms are detected. As there is more than one brood during the summer, the same vigilance must be kept up throughout the season.

### Curious Doings of Ants.

We lately gave a brief history of an Ants' nest, and some curious stories of their habits. We now, according to promise, narrate a few more accounts of their marvellous habits—gleaned, as before, to a great extent, from Dr. Packard's *Guide*.

The House-building Ant of Mexico (*Ecodoma Mexicana*, Smith)—the females of which are eaten by the natives!—displays remarkable intelligence. A Mexican gentleman, F. Sumichrast, states that they may be seen in immense numbers, transporting the leaves of trees. "The ground at the foot of the tree, where a troop of these workers is assembled for despoiling it of its leaves, is or-

dinarily strewed with fragments cut off with the greatest precision. And if the tree is not too lofty, one can satisfy himself that a party of foragers, which have climbed the tree, occupy themselves wholly in the labour of cutting them off, while at the foot of the tree are the carriers which make the journeys between the tree and the nest. It is especially in the clay countries that these ants build their enormous nests, so that one perceives them from afar by the projection which they form above the level of the soil, as well as by the absence of vegetation in their immediate neighbourhood. These nests occupy a surface of many square yards, and their depth varies from one to two yards. Very many openings, of a diameter of about one to three inches, are contrived from the exterior, and conduct to the inner cavities which serve as storehouses for the eggs and larvæ. The central part of the nest forms a sort of funnel, designed for the drainage of water, from which, in a country where the periodical rains are often abundant, they could hardly escape without being entirely submerged, if they did not provide for it some outlet. The system which reigns in the interior of these nests is extreme. The collection of vegetable debris brought in by the workers is at times considerable; but it is deposited there in such a manner as to cause no inconvenience to the inhabitants nor impede their circulation. It is mostly leaves, which are brought in from without, and it is the almost exclusive choice of this kind of vegetation which makes the *Ecodoma* a veritable scourge to agriculture. At each step, and in almost every place in the elevated woods, as well as on the plains; in desert places, as well as in the neighbourhood of habitations, one meets numerous columns of these insects, occupied with an admirable zeal in the transportation of leaves. It seems that even the great law of the division of labour is not ignored by these little creatures."

Another species of this house-building genus of ants is (according to H. W. Bates) one of the most destructive animals of Brazil, on account of its immense numbers, eternal industry, and its plundering propensities. "Its immense hosts are unceasingly occupied in stripping trees of their leaves, and those most relished by them are precisely the useful kinds. They have regular divisions of labourers, numbers mounting the trees and cutting off the leaves in irregularly rounded pieces the size of a shilling, another relay carrying them off as they fall." "The heavily laden fellows, as they came trooping in, all deposited their loads in a heap close to the mound. About the mound itself were a vast number of workers of a smaller size. The very large-headed ones were not engaged in leaf-cutting, nor seen in the processions, but were only to be seen on disturbing the nests. I found, after removing a little of the surface, three burrows, each about an inch in diameter; half-a-foot downward, all three united in one tubular bur-

row about four inches in diameter. To the bottom of this I could not reach when I probed with a stick to the depth of four or five feet. This tube was perfectly smooth, and covered with a vast number of workers of much smaller size than those occupied in conveying the leaves. They were unmixed with any of a larger size. Afterwards, on probing down into the burrow, up came, one by one, several gigantic fellows, out of all proportion, larger than the largest of those outside, and which I could not have supposed to belong to the same species. Besides the greatly enlarged size of the head, &c., they have an ocellus in the middle of their forehead. This latter feature, added to their startling appearance from the cavernous depths of the nest, gave them quite a Cyclopean character."

The Rev. Hamlet Clark, a well-known English entomologist, lately deceased, states of another species that at Constanca, Brazil, the proprietor of a plantation used every means to exterminate it, and failed. "Sometimes in a single night it will strip an orange or lemon tree of its leaves. A ditch of water around his garden, which quite keeps out all other ants, is of no use. This species carries a mine under its bed without any difficulty. Indeed, I have been assured again and again by sensible men that it has undermined in its progress through the country the great river Paraiiba. At any rate, without anything like a natural or artificial bridge, it appears on the other side and continues its course." Mr. Lincoecum corroborates this extraordinary statement in an account of a Texan species, which he has observed for eighteen years. He states that "they often carry their subterranean roads for several hundred yards in grassy districts, where the grass would prove an impediment to their progress. On one occasion, to secure access to a gentleman's garden, where they were cutting the vegetables to pieces, they tunnelled beneath a creek, which was at that place 15 or 20 feet deep, and from bank to bank about 30 feet." Their lives are thought to be dependent upon access to water, and they are believed to choose places where it is accessible by digging wells. "In one case, a well was dug by a Mr. Pearson for his own use, and water found at the depth of 30 feet. The ant well which he followed was twelve inches in diameter."

Our Canadian species of ants, though they do not perform such prodigious feats as those in the tropics, are yet very interesting, and worthy of observation. One large black and red species makes long roads or paths in the woods, radiating in all directions from its nest. These roads are sunk about an inch below the surface, with rounded sides, and a smooth hard bottom, along which swarms of ants hurry backwards and forwards, intent upon their several avocations. Usually the road is open to the air above, but sometimes it is continued underground for some distance, and leads to a pine-tree or other storehouse of food.

"Go to the ant, thou sluggard; consider her ways, and be wise: which having no guide, over-seer, or ruler, provideth her meat in the summer, and gathereth her food in the harvest."

## Poultry Yard.

### The Andalusian Fowl.

To the Editor.

The Andalusian or Blue Spanish fowl was imported last season into Canada, by Mr. Allan McLean Howard, then President of the Ontario Poultry Society. They arrived late in the season, but some few birds have been raised by him. A description of the bird may be of service, as the points to be attained have been differently stated in various works on poultry. All agree in its being a hardy, useful, non-sitting variety—in fact, having all the qualities of the Black Spanish, being more hardy, and consequently better adapted to the climate of Canada. Although well acquainted with the breed, and also with the eminently successful exhibitor of them, the late Mr. Coles, of Fareham, Hants, I have never kept the variety, and have therefore consulted different publications on poultry to obtain a definite opinion as to their points, which I hope may prove final and satisfactory. The first difficulty appears to be in the color of the face.

In the *Collage Gardener* for 1857, it is stated that it should have some white in its face. In the same publication for July 1858, it is stated that the "face should be red; if ear-lobe is the same, so much the better." Again, "W. H." Exeter, says—"face red, ear-lobe red, or if white not pendent." In 1859, the same publication says "face red," and in 1860, the red face is corroborated.

Bailey on fowls (5th ed.)—says "Deaf-ear, white; face not required to be white."

Mrs. Fergusson Blair—"Face, white."

The Poultry Book for the Many—"Cheek, white."

Wright's Poultry Book—"Face, red."

Mr. Taylor, or Tegetmeir, says—"Face, white."

Mr. Coles—"Face, red."

From these statements it will be seen that four are in favour of white faces, as in the Spanish fowl, and six in favour of red: but that the white faces were only advocated in the early stages, when the breed was not well known. My own opinion, thus gathered, is that the face should be red, and the ear-lobe white, but not pendent.

The color is the next point. The *Collage Gardener* of 1857, gives color of cock "blue; hackle, saddle and tail shaded with dark brown." This is again repeated in later issues.

Bailey says—"Blue, shaded with darker tints."

Mrs. Fergusson Blair—"Bluish grey mixed with black."

The Poultry Book for the Many—"Bluish grey, margined slightly with a darker tint: hackles, glossy black."

Wright's Poultry Book—"Slaty blue, slightly laced, with a darker color; neck hackle and tail feathers glossy black."

Miss Watts says—"Blue, sometimes laced and shaded with black."

Mr. Taylor—"Bluish grey, or dove color, each feather slightly margined with a darker tint. Hackles, glossy velvety black."

Mr. Coles says—"The plumage varies from dark slate color, bordering on black, to a dove colour. The hen, blue grey."

From these statements I gather that in the first instance the varieties had brownish hackle, but that now the nearer the approach to blue black or black in the hackle and saddle and tail, and the clearer the blue, the better—forming a contrast to the black, or darker hackle or saddle. In the hens the contrast should not be so great, but the neck hackle should be slightly darker than the rest of the body.

The legs and feet should be blue, quite free from feathers, comb large, single, evenly serrated and upright in cock; large, single, and pendent in hen. Wattles well developed: ear-lobe white; face, red.

The cock's weight, about 7 lbs., and hen's, 5½ lbs.

The Andalusian lays a great quantity of large white eggs, and is a very good table fowl.

Mr. Coles stated that they do well in a confined space, and from personal inspection of his runs, they were certainly limited. Mr. Coles obtained a number of prizes, exhibiting always in the "any other variety" class, and as far as my memory serves me, the birds shown were not laced, although he had some that were so. Provided we do not sacrifice size, I individually should prefer the color as uniform a blue as possible, forming a contrast to the dark hackle and saddle, which should have more of a black than a brown tinge.

The characteristics and disqualifications are much the same as laid down for the Spanish fowl in the Standard of Excellence."

F. C. HASSARD.

DAK BAHMA POULTRY.—Mr. Varley, of the 13th Hussars, has sold his remarkably fine lot of Dark Brahmas, partly imported birds from the best stock in England, and partly raised in this country during the past year. Some of the latter, especially, were remarkably fine, and bid fair to surpass their British parents. The weight of one of the cockerels of 1863, about nine months old, exceeded twelve pounds, and another of the same age weighed over ten pounds and a-half. The Pullets weighed between eight and nine pounds. These are extraordinary weights for birds of their age. The imported birds were from the stock of Mr. Boyle, the most eminent breeder of Dark Brahmas in the "old country." The purchaser of Mr. Varley's lot was Mr. Shepperd, of Chicago, the Secretary of the North-Western Poultry Association, and the price, given for twelve was \$120—pretty well for chickens, though, had they been sold in separate pairs, they would have brought a still higher price.

## Apiary.

### Fertilization of Queens.

THE KOHLER PROCESS MADE USEFUL.

Bee-keepers having but a single stock of Italian bees, and wishing to Italianize their whole apiary, consisting of several stocks of black bees, may find it to their advantage to adopt the Kohler process.

It will work to advantage after this manner. When the season arrives for setting out the bees, place the Italian stock in a convenient and favourable situation, and feed it daily a few spoonful of honey or syrup, made after the formula given in the *Canadian Bee-keeper's Guide*, which will stimulate breeding, and the early production of drones. As soon as drones appear, and swarming time approaches, examine the Italian stock, capture the Queen, and give her to another stock, first destroying the black or native queen. The bees in the Italian stock, being deprived of their queen, will build a number of queen cells. On the tenth day after the removal of the Italian queen, the queen cells may be cut out and given to the native stocks, first capturing and caging, or destroying the old queens. It is a good plan to cage them and lay them on the frames at the top of the hive, in case the queen cell given them should be destroyed, as about one out of eight or ten will be. The cells should be carefully cut out, and carefully introduced near the brood or centre of the hives. All drone brood in the native stocks should be destroyed by shaving off the caps, so as to disturb the larvæ. One or two queen cells should be left in the Italian stock. Every stock into which a cell has been introduced should be closely watched, in order to see on what day the queen is hatched, and the day marked on the hive. The next day after the queen cells have been introduced they should be examined, and if any are destroyed, the old queen, if caged on the top of the frame, should be released. On the fourth day after a queen is hatched, carry the hive containing her into a cool dark cellar, being careful to give the bees plenty of ventilation, also the Italian stock containing Italian drones. This should be done on the night of the fourth day, or, at the latest, fifth day after the queen is hatched. All the stocks in which the queen has been hatched four or five days should be carried in. The next day, in the afternoon, when all or nearly all of the common drones have ceased to fly, the stocks should be brought out and placed on their respective stands, and to each stock should be given half a teacupful of warm honey, or other bee-feed. This will, after their confinement, cause the bees, including the drones and young queens, to rush out of the hives, when fertilization is quite sure to

take place. This may be repeated as often as there are young queens to be fertilized. Care should be taken that no drones are in the hives containing the young queens.

J. H. THOMAS.

Brooklin, Ont.

### Wintering Bees.

To the Editor.

SIR,—It appears to me that more bees are lost in attempting to get them through the winter than from all other causes. Much of this may arise from the hives not being in a proper condition as regards stores, but more generally from want of a proper repository. There cannot, therefore, be a more important subject for the consideration of bee-keepers than the mode of wintering.

At a meeting of the Montreal Agricultural Society, noted at page 363, volume 5, CANADA FARMER, it was stated that a cellar was the best place, and that it was immaterial if damp and unventilated. This is not the generally received opinion, and my own experience would lead me to demur.

The plan which I should like to adopt, and which I cannot doubt would be successful (where the number of hives kept would make it worth the attempt), would be to put up a house specially for the purpose. In this pine country, I think sided logs decidedly preferable to any other—the walls first well chinked and plastered, then lathed and plastered inside, and boarded or lathed and plastered outside, and furnished with double doors. This would preserve an equable temperature, without affording a harbour for rats and mice. As to height of ceiling, means of ventilation, and manner of disposing of hives in the house, I shall feel obliged for any suggestions you or any of your readers may offer. I am of opinion that the ceiling should be high, and that the floor should be fully a foot above the surface; and that, where there are from fifty to a hundred hives, they may be placed in tiers one above another.

NOVICE.

Carleton, Ontario, Feb., 1869

NOTE BY EDITOR.—No doubt, a very damp cellar is objectionable; but a cellar well drained, having the bottom covered with water-lime cement, and walled up with brick, would probably not be very damp. A building such as you describe would answer every purpose, provided an equable temperature could be preserved. The temperature of a building above ground is far more likely to be affected by changes in the weather than a cellar. The ceiling should certainly be high—at least eight or ten feet. The more roomy the building, the less ventilation would it require. All that is required to winter bees successfully, if they have sufficient stores, is to house them where they will be undisturbed, and at a temperature of from 35 to 40 degrees.

### Artificial Swarming.

In the current volume of the *American Bee Journal*, page 180, I observe a communication from "Briar," of Ontario, Canada, in which it appears that he was induced to try a mode of artificial swarming as given by "Belmont," in vol. 3 of the *American Bee Journal*, page 63, the results of which "were not at all satisfactory."

I am somewhat surprised that my Canadian bee-keeping brother "Briar," with his knowledge of the science, should have adopted a mode so inconsistent with long-established facts, for it is well understood that bees having no queen will build drone comb, and that the old queen goes with the first swarm. Therefore, any mode of artificial swarming that takes a swarm away from a hive and puts it into an empty hive, or one nearly so, without taking the queen with it, is contrary to their nature and habits, and sure to be productive of evil.

Now, if "Briar" will take one or two cards of comb from a strong stock, with the adhering bees, and place them in an empty hive, then remove the old stock some two or three rods distant to either side, or even less, and place the empty hive, now containing the two cards of comb, adhering bees and queen, where the old one stood, he will find the results to be quite satisfactory. The effect of this operation is the same as natural swarming. A swarm of bees are taken from the old hive with their queen, and introduced into a new hive. The old stock is in the same condition as if the swarm had issued naturally, excepting that it has lost a card or two of comb.

J. H. THOMAS.

### Artificial Pollen or Bee-bread.

It often happens, from various causes, that the supply of bee-bread is exhausted or becomes worthless during winter, and in many localities the bees are unable to gather any until quite late in spring. Hence, in such stocks, breeding is retarded for the want of this food for the larvæ. This want may be supplied in the following manner:—

Take, say two shallow dishes, or boxes two or three inches deep, and a foot square, are quite as good. Put into them Indian meal, oatmeal, rye, or buckwheat flour, whichever is most convenient, to the depth of half an inch or more, over the bottom of the dish. In the centre of each put a small piece of honey in the comb, and place the boxes near the hives on a warm day. If any of the stocks require pollen or bee-bread, they will be attracted by the honey and take the meal, which will answer the place of natural pollen until that article can be gathered. If they have a supply, or can find natural pollen, they will not take the meal; but if they require it they will take it readily. It should be covered up, or carried into the house, when the weather is wet or stormy. An extract from a correspondent in one of our exchanges, records his favourable experience with this plan. J. H. THOMAS.

Brooklin, Ont.

## Correspondence.

### Home on the Farm as It Ought to Be.

To the Editor.

SIR,—I have a faculty for collecting information when travelling. Agriculture is my hobby, and greatest pleasure, and my conviction is strong that if ever Canada is to become rich, the means most certainly will be found in agriculture, in one shape or another.

Merchants may boast of their imports, and politicians take pride in the government of their surplus; but were it not for the farmer, neither of them would have much to glorify themselves in. Let any one carefully examine the physiognomy of the merchant if the wheat crop fails, or our neighbours do not want our barley, cattle or horses. A most palpable depreciation in his self-satisfied air is apparent, even with one bad crop—how much to be increased with two or more, we all have had opportunities of seeing. The fact is, farming in Canada is the main stay, and really pays a better interest to the landlord than a similar investment in England. It is a fact much to be deplored that in every populous section there are not the pretty residences of gentlemen which are everywhere to be seen in the old countries. One great reason for this is doubtless, the want of cultivated and congenial society in rural districts, for those who really like country life and habits. Many are deterred from making their residence at a distance from cities by the idea that they will find no one else in the neighbourhood with whom they can associate on terms of equality as to education and manners. Now, I maintain, there is or should be no occasion for any such feeling. Agriculture is quite as intellectual an occupation as commerce and a great deal more honest in many cases—quite as honourable as any of the professions, and a great deal more healthful. Common schools and agricultural societies are doing much, but the remedy does not lie altogether with either of them. We must look for it in a general amendment of the manners and conduct of the farmers, their sons, their wives and daughters, and last, not least, in an entire alteration of the external of the homestead.

Let any old country man with half an eye for the picturesque travel through the country in Canada, and you will constantly hear the remark, "There are some good houses and plenty of beautiful farms, well situated, and in many cases on good roads; but as a rule there are never seen the neat, trim lawn or shrubbery, with neatly kept walks, that we so often see in England, and which adorn many residences in the towns and cities." In Canada, no one thinks it worth his while to spend any time on the garden, except just to "make garden," as they call it, in the spring. It is then abandoned to the

overworked wife or daughters, to be weeded or not as they can find time; but never afterwards, as a rule, to be touched by any of the male part of the family. Now this should not be. Few things tend so much to make "home" as a neat, trim garden, lawn, and clean tidy back-door yard. The few requisites for keeping everything in order can always be found if people are only convinced of the necessity. My garden and lawn are pretty large, and many a time I have swept the walks before breakfast was ready. One hour will suffice to do a great deal in once a week, and there are more than ten hours wasted, often much more. The fact is, the will is wanting, and also the inducement; for were it otherwise, and if friends were expected to call and take tea, and walk in the garden, admiring its neatness and order there would be plenty of time found without loss, to keep it in presentable condition. But none of the neighbours have a better and no one cares. Whereas, the first great step towards making home happy is to have something at home for absent members of the family to look back to with pleasure, and in which the inmates of the household take common interest and pride. And more, much more even than this, is the inducement for our sons to emulate the parent—to construct and keep in order a pretty spot, where his hopes are centred, where his wife lives and is happy, where his children are born and brought up to lead the happy independent life their father did before them. Let no one imagine hard work is more arduous or trying to the body than mental exertion. It is a most serious error. Unless where capital is plenty and business certain and good, the life of a business man is more wearing and trying to body and mind, and I had almost said "soul," than that of any well conducted farm, with even an ordinary amount of appliances. The value of these appliances and means, though quite enough for comfort on the farm, would be as nothing when employed in business, in which men of capital are already engaged, with whom the ambitious young man who embarks in trade must necessarily compete.

In short, let those who are born and bred to agriculture be contented with it, and believe their condition good and honourable, and let their energies be turned to improve and enlarge their interests on the farm; and let those who are in their turn born and bred to trade follow it, and either make fortunes or us, judging by trade returns, 91 out of every hundred invariably do first or last break down.

### Farming as a Vocation.

"A Constant Reader," Windsor, asks, "Do you think it would be advisable for a person who knows nothing practically of farming, to undertake to farm, with a start of a good farm of say 75 acres cleared, good buildings, and enough to stock it pretty well, in a good section of country, nine miles from one of

the best markets? I have a large family growing up, and see so many useless young men seeking some poorly paid clerkship. That I often think the best thing for me to do would be to educate my sons for an agricultural life, which I consider as honourable an occupation as any known."

We unhesitatingly say, Yes. Not only is it advisable, but our correspondent will show wisdom in bringing up his children in a knowledge of the noble science of agriculture. Many of our best and most successful farmers commenced without having the least practical knowledge of farming, and we know of many younger sons of well-to-do squires and large tenant farmers at home, who came out to Canada from comfortable and elegant mansions, and have gone on Canadian farms with a will to work, and a determination to succeed, that in a very few years has placed them in the first rank among agriculturists.

Men of education, with good sense and powers of observation, cannot fail to become good farmers, although perhaps at first they may buy experience rather dearly.

As agriculture advances in importance as a science, that class of men who live by tilling the soil in the old-fashioned way of a by gone age, must either become more enlightened, and educate their children up to the requirements of an advancing age, or they must sell off their farms and fall back from their position of proprietors in the soil to that of the class from which they originally sprung, the hewers of wood and drawers of water, while their places as landholders become filled by men of more brains and discernment.

It would be well, perhaps, for our correspondent to hire a steady, intelligent man, who is well posted in the practical details of the work of a farm, to manage it the first year; and if his boys are old enough, and willing to work, he would be able to get along very well with his own family for workmen after that time, and would find that a life of labour, provided they do not overwork themselves, is a life of health and happiness, and that he and his family are in the enjoyment of every comfort a reasonable man can desire. A few really good agricultural books and papers would greatly help to a knowledge of farming.

SMALL THRESHING MACHINE.—A correspondent wishes to know where he can procure a small threshing machine, about four-horse power. Can any of our manufacturers give the desired information?

SORGHUM TARTARICUM SEED.—Our correspondent, "Briar," sends the following: perhaps some of our readers may be able to supply his want. "Through the kindness of Major Bruce, I last spring received a small quantity of Sorghum Tartaricum seed, which I treated according to the directions given at page 99, vol. 5. It was carefully put in, being

desirous of economising the seed. I, however, only saw one plant; this, with the dry weather that followed, might have been owing to the "only just" covering. The seed was planted 22nd May, and it was the 5th of September before it headed out, and consequently did not ripen. Can you inform me where a little seed might be had for the coming season, as I should like to try it again?"

**FULL PEAS, &c.**—A "constant reader" and others write to us desiring information as to where to obtain the "Crown," "Daniel O'Rourke" Peas, &c. The latter variety cannot now be had for less than \$3 per bushel. Parties writing to us about seed grain, &c., should send us their names and address in full, not for publication, but to give us an opportunity of communicating with them if necessary.

**SORGHUM SYRUP.**—"Briar," writing from Carleton, says:—"From a communication at page 296, vol. 5, it appears that the growth of Sorghum has been successfully attempted in the western part of the province. Considering that Indian corn usually ripens here, and presuming that the Sorghum would be fit for cutting before the ripening process had commenced, would it be unreasonable to expect to succeed in its cultivation here? Is it of slower growth than Indian corn? Do you know of any small treatise on its culture and on the manufacture of syrup? I cannot doubt that the making of syrup would be attended with some difficulty in the vicinity of an apriary."

**NOTE BY ED.**—Though in some favoured localities the Chinese-sugar cane may be grown to a limited extent in Ontario, we doubt whether its cultivation can be at all generally introduced with any prospect of success. From our own experience with the crop in Central Illinois, we should judge that our Canadian summers are scarcely long or hot enough to mature the plant. The only work on the subject that we at present remember, is one written by Alcott, and published by A. O. Moore, New York. The price, some years back, was \$1.

**HINTS TO LEARNERS.**—A correspondent sends the following brief but sensible advice to young men, who come to Canada with their experience of the country and of farm life yet to learn. We commend the timely counsel to all whom it may concern:—"First of all ascertain what would be a fair price to pay for your board in the country, in order to gain a farmer's experience. Then take care that it is an experienced farmer you live with—one who has been in the country some years, possesses a good sized farm, and is practically acquainted with agriculture in all its branches—that you may profit by his knowledge in everything about a farm. Do not be made a drudge of by being employed in what a boy ought to do about the house, for if you do you will, on leaving, have paid your money for learning to be a servant, in-

stead of a farmer. This is certainly profitable to the farmer, but downright robbery towards the pupil. A young man, under the circumstances, can do as he likes about working on the farm. Of course, he need not pay so much if he does. There are so many unprincipled people that parents ought to be very careful when they send their sons to a distance from home, either from the old country or Canada, to find out if the farmer with whom they may reside has had experience, and whether their sons are to be made servants or farmers of."

**ADVERTISEMENTS FOR THE CANADA FARMER** should in every case be sent in to the office of publication not later than the 7th of each month. Particular attention to this notice is requested, as advertisements received after the above date will be too late for insertion.

**BOUND VOLUMES OF THE CANADA FARMER.**—The bound volume of the CANADA FARMER for 1868 is now ready, and can be obtained from the office of the Globe Printing Company—Price, \$1 30 Each of the back volumes for the years 1864, 1865, 1866 and 1867, can also be procured at the same price.

## The Canada Farmer.

TORONTO, CANADA, APRIL 15, 1869.

### The Helping Hand.

It is quite possible, by injudicious assistance, to weaken a man's self-reliance and independence of spirit; but there are occasions in most men's lives when the helping hand is sorely needed, and when a little timely assistance will turn the tide, lift the depending out of hopeless misery, or enable the inexperienced adventurer in untried scenes and circumstances to avoid dangers and losses, and put him in the right track to ultimate success. In one way or another, this friendly aid is especially welcome to the man who has taken the important step of leaving his native home and country, when first he arrives, a stranger in a strange land, upon the scene of his new hopes and ventures. Help in such a case is at once most grateful to the recipient, and politic, as well as humane, in the giver. In this country, particularly, one of our chief requirements is "more labourers in the field," and on all hands it is felt that public influence and public money would be well expended in directing hither a portion of the surplus population of the "old country," and rendering some measure of assistance to the immigrant on his arrival.

This important subject has been constantly and forcibly urged upon the Gov-

ernment, but hitherto with most discouraging results. Continually we are told that something is to be done, but nothing seems to be accomplished, and public expectation in this most pressing and serious matter, is doomed to repeated disappointment. The recent Emigration Conference of *teco*, about which we heard so much, appears, from all that we can learn, to have been as abortive as any previous show of action. But the matter is too important to be allowed to rest. The Legislature must still be importuned on the subject; yet we should not remain satisfied with complaint and clamour against the authorities of the land. Something may be done by individual and associated efforts among the people themselves. In many respects our neighbours in the United States show us a good example in this matter. Not only is the Government liberal and active in promoting immigration, but the whole community seem alive to the importance of the subject, and co-operate in the work. In Texas we hear of a corporate society to whom, in addition to the ordinary inducement of free land grants, the Government allows \$40 for every immigrant they introduce into the territory. In Wisconsin wide districts have been settled by Norwegians, attracted thither by the representations and friendly aid of their kindred, who have arrived before them. The Germans too, as well as the Irish, besides giving an immense amount of private assistance to members of their families in the fatherland, have formed themselves into societies for the purpose of aiding their countrymen to emigrate and join them in the land of their adoption.

A somewhat similar step, we are glad to learn, has been recently taken in Canada. The Germans in Hamilton have founded an Emigration Society for the purpose of aiding their brethren from Europe to come over to this country, providing for them on their arrival, and directing them to suitable employment. We commend the example to other nationalities amongst us, and believe that much good might be done in the same direction by such public bodies as the St. George's, St. Andrew's, or St. Patrick's Societies, or by the formation of altogether new organizations for this special object. Private individuals may also do not a little in disseminating correct information, and recommending this country to the favourable notice of those who are contemplating a removal from their old homes across the Atlantic, and are anxiously making enquiries whither they shall direct their steps.

Our vicinity to England gives us great advantages over other colonies of the Mother Country, and we certainly ought to absorb by far the largest proportion of British emigration. The United States are our chief rivals here. They are fully alive to the importance of the subject, and spare no efforts to attract new settlers within their lines. But we believe that if correct information

respecting the social condition, resources, and agricultural wealth of Canada were more widely diffused, we should retain within our own borders a large number who now pass through to the Western States. In an article on "Westward Emigration" published lately in the CANADA FARMER, and which we were glad to see copied into some of the prominent English journals, we drew attention to some of the advantages which this country offers in comparison with the neighbouring States. We believe that the liberality of the American Government in free grants of land presents the chief inducement to emigrants. No doubt, also, the facility of immediate and profitable farming on prairie land is another great consideration. The system of free grants is now happily introduced into Canada, and if we have not the prairie land to offer in this immediate region, we can point to a vast territory westward, with prairie tracts of unsurpassed fertility, now inviting occupation. It should be remembered also that the open country does not in every respect surpass the timbered district. The absence of timber is in many ways a serious drawback, rendering building and fencing materials very expensive, and depriving the region of the shelter and other important benefits derived from forest growth. We are favoured with a fertile soil, a pleasant and invigorating climate; we have ready access to the seaboard, good markets, a healthful commerce, just laws, and free institutions, and we can without reservation speak well of this country as an inviting home to the British emigrant. To those who come among us with a will and determination to help themselves, we should at least give a cordial welcome, and if needful, be ready to extend a "helping hand."

### Look Ahead.

The hurry of spring work for the farmer is close at hand; and it is one of the disadvantages of his calling, felt more especially in this country of long winters and short summers, that so much of the work comes together. Nevertheless, a wise forethought and timely preparation will enable the thrifty farmer to overcome this difficulty, to be ready for everything in season, and while taking life apparently more easily than his worried neighbour who is always behind-hand, to accomplish much more, and to make his farm pay. Economy (not parsimony) of labour, time and money, are absolutely necessary to profitable farming, and to secure this nothing is more essential than a regular system, well matured before-hand, and duly provided for. A few hints to the inexperienced, or to those who have hitherto not paid sufficient attention to the matter of fore-handness, may not be unprofitable.

It is most important to have the work of the whole farm laid out for the season, though some persons need a caution not to attempt too much. Do not expect impossibilities from your farm hands, make some allow-

ances for unavoidable interruptions and rainy days. Hire at the beginning of the season, if possible, as much help as you may require. To trust altogether to casual assistance (often worthless and high-priced), for harvest operations, generally leads to vexation, disappointment, and heavy loss. In deciding what crops to put in, be sure and arrange for a sufficient amount of green fodder for the stock. It soiling altogether is not your practice, at least have some green food ready for seasons when pasturing is either inconvenient or fails from drought and other causes. Oats and vetches, for horses, corn for cattle (especially milch cows), and rape for sheep, will be found most serviceable in keeping up the healthy and thriving condition of the stock. Let all required arrangements be made for the comfort of breeding animals and their young.

Fences should all be in order before the pressure of spring work begins. The annoyance and loss of time and valuable produce by inattention to this matter can only be fully appreciated by those who have experienced or watched the inroads of breachy cattle, and all the vexatious consequences.

See that all the implements are in good condition and ready for use. Many a half-day and more is lost in an errand to the blacksmith's or carpenter's shop when all the delay might have been saved by a little timely repair.

It seems almost needless to say a word about the necessity of securing good seed early, yet we know farmers who put off even this essential matter till the day for sowing is actually upon them. They then lose much time in supplying their wants, are often obliged to be content with an inferior article, and, perhaps, induced to put the seed into the ground without proper cleaning and preparation.

In addition to matters affecting chiefly the work in the field and among the stock, the considerate farmer will see to certain domestic arrangements which will tend greatly to the saving of time and the comfort of the household, such as the preparation and convenient laying out of the kitchen garden, with easy access from the house; proper contrivances in the poultry yard, to prevent the hens from selecting their nests in out-of-the-way and inaccessible places; and some arrangement that shall preclude the necessity of any one, often some young girl or delicate woman having to trudge weary distances through wet fields, and in all weathers, to bring home the cows at milking time. Cows are creatures of habit and of excellent sense, and can easily be trained to come with wonderful regularity from their pastures into the farm-yard. A little salt or small allowance of extra feed by way of *bonne bouche* regularly supplied at home, will save all the seeking and driving which in some families consume a large amount of time, and entail no inconsiderable risk of cold or even more serious illness. Cows should be milked un-

der cover, each fastened in its proper place, and not at large in an open yard.

Another matter should not be neglected. The supply of fire-wood should be ready cut, under shelter, and conveniently accessible. For want of forethought and timely attention to this indispensable provision, a man's time is sometimes taken up in the busiest season, in cutting wood for the kitchen fire, when he ought to be in the field; or a woman has to use the axe, or put up with chips or damp wood, at the risk of her limbs, her temper, and the spoiling of the day's dinner, not to mention more serious troubles.

These few hints point out some of the ways in which the systematic and considerate man will arrange his own work and that of those about him, so as to make the most of the time and means at his disposal. They may seem small matters, but the profits of farming are not so great as to allow anyone to neglect these little things, which often make all the difference between the thriving and unsuccessful farmer.

### Wild Lands.

That there is yet plenty of land scattered about among the older settlements in Canada, that still requires the process of being cleared and brought into cultivation before it can become of any intrinsic value, and add to the ability and resources of our country as a food-producing one, is undeniable. Unfortunately, much of it has passed out of the hands of the Crown into those of speculators, who have too long been permitted to hold their lands at prices that render them utterly beyond the means of the emigrant or hard working backwoodsman to pay, even on a twenty years' purchase time. The principal idea with these owners of wild lands has been that the timber on them would increase sufficiently in value as firewood, from year to year, to enable them in a few years to make a thousand per cent. on their original cost.

But this is likely now to prove a chimera, as the discovery and working of the Welland peat beds, the cheapness at which coal is likely to be supplied from Nova Scotia, as well as from Pennsylvania, coupled with the fact that our railways will not carry firewood as freight at any price, is resulting in driving the speculators to see that they are gaining nothing by holding on to their wild lands at such extravagant prices, and they are now beginning to offer them for sale, though with a lingering, longing desire to obtain a realization of some of the great profits they once fondly hoped for, they can only come down cent by cent, till the pressure of taxation is tightened to a degree that will force them to see that it is their interest to let them go at what they are honestly worth to the actual settler.

Some of these lands doubtless still have some heavy timber on them that is valuable

to make into lumber or ship timber, but such lands are not the ones the actual settler desires to expend his labour upon in making the wilderness bloom like the rose. Those that are of the greatest value when cleared from the timber growing upon them, are usually such as have a growth of hard wood trees, fit only for fuel.

Taking the country through, there is enough of wild land within 40 miles of railways and lake navigation, still awaiting the advent of the coming man that is to clear, and subjugate them to the plough, to absorb the labour of all the immigration we shall get for years to come without any necessity for having to go back towards the north pole. So soon as the tendency of our legislation is such as to compel the speculator and absentee owner of wild lands to pay his fair share of taxation in the way of making good roads, through or past his property, equally as good as the connecting ends that pass cleared farms, and forcing him to sell, or be taxed at his own valuation of his property, we may expect to see the rising generation of sturdy farmers become willing to begin as their fathers did, in carving out a home from the forest, instead of running off to the city, or emigrating to the Western States. They cannot be induced to go towards the polar regions in any case. Many a young man could, and would, buy a 100 acre wild land lot at \$3 to \$6 per acre, with a reasonable prospect of paying for it in a very few years, in situations where if \$8 to \$15 per acre is demanded, he well knows it would be but throwing away his labour for the benefit of others to attempt to both pay for and clear up the land, even with a life to do it in.

As we have said before, land has no intrinsic value of itself in a new country. It is only when it becomes productive and capable of adding something to the resources of the country that it has any value whatever; and instead of confining their attention to the fact of young men crowding the cities or leaving the country, it would be well if the press would use its influence to put down speculating in wild lands.

### Editorial Notes.

Carbolic acid is being found out to be a very useful preventive and remedy in various afflictions to which stock are subject. It is also sure destruction to insect life of all kinds, while at the same time it does not seem to injure vegetation. Flies may be kept away from cows and horses in summer time by sponging the animals every morning with a weak solution of carbolic acid in water. Scab may be eradicated from sheep by dipping or washing them in the solution, which for that purpose must contain one part of acid to fifty parts of water. It should be applied twice, the second time ten days after the first. Experiments might be made

with this substance for destroying insects on fruit-trees, or preventing them from infesting the trees. It is also a powerful disinfectant, and might be used for that purpose in dairies. It is cheap, but the stuff that is commonly sold under the name is tar oil, containing but a small proportion of carbolic acid, and is utterly useless. The genuine article must be used with caution, and largely diluted with water, which must be thoroughly intermixed at the time of application, as the acid is very powerful, and rises on the surface of water when left standing awhile.

Velocipedes are getting to be quite the rage among city and town folks, and much inventive genius is being expended upon the construction of these vehicles, of which there are already a variety of patterns, varying in price from \$25 up to—well, we won't say how much—but they can be made costly as well as cheap. Should they be found practicable on our common roads, and come into general use, they will work a revolution in the habits of the people, and enable every merchant, tradesman and professional man, to have his house and family in the country, away from the dust, dirt, bustle and unhealthiness of the city, which he will be able to ride to and from at the rate of speed of a fast horse, at no expense beyond the trifling outlay for his machine. Already it is proposed to offer prizes at agricultural shows for the best velocipedist, and turn race courses into velocipedal uses giving prizes or stakes to fast riders instead of fast horses.

We cannot see any reason why our farmers should leave their stubble fields brown, bare and useless, during the late summer and early autumn months. It would be an easy matter to grow a supplementary crop, either as feed for stock, or in order to plough under, and thus add something to the fertility of the soil.

For the former, late turnips might be sown broadcast, late cabbages planted out, rye, vetches, or, in fact, anything that would grow rapidly and give a good bite of food for stock, without drawing much from the soil, could be easily produced with very little trouble.

For a green crop to plough under, buckwheat or rye would answer well, the former to be grown on land that is to be turned over early in the fall for a succeeding spring crop, the latter on land that is to be undisturbed through the winter, where it would give a good feed for sheep late in the fall and early in spring, then to be manured and used for root crops or corn the succeeding summer.

We are as yet a good deal in the dark in regard to the relative value of the several different kinds and patterns of ploughs now in use here. Ploughing matches are common enough, but seem to be got up and conducted more with the object of testing the

skill of the ploughman than the value of the implement they use. What we want is not so much men that can, by dint of great care and a very steady, slow team, run a straight even furrow at the right angle according to the depth, but an implement that will enable a very mediocre workman to handle it easily, and make good yet rapid work. Our ploughing operations are too slow, under the mistaken idea that it hurts the team to go rapidly over the ground. Recent trials have shown that the draught of a plough is not increased in proportion to the rapidity of its movements through the soil. A plough drawn through the soil at the rate of 1½ miles an hour, cutting a furrow slice fourteen inches wide by seven inches in depth, required a draught of 48½ pounds, while the same plough, cutting the same furrow, at the rate of 2½ miles per hour, gave a draught of only 500 pounds, or nearly double the work done for an increase of labour equal to about 6 per cent.

### Notes on the Weather.

The past month, March, has been the coldest we have had this winter. In fact, it has been unusually cold. The snow covered the ground, and sleighing was fair till the end of the month, and up to this date, April 5th, there is little sign of spring, except that some of our early spring birds, as the robin and lesser fly-catcher, are to be seen about the gardens and thickets. The weather has been fine, on the whole, during this month, there being 18 clear days, 11 cloudy days, and 8 days on which snow or rain has fallen. The highest temperature was 47° on the 27th—the lowest, 8° below zero on the 5th; and it went below zero on 6 days of this month. There is but little frost in the ground, and the fall wheat, where seen, looks tolerably well, though it is yet too early to tell how it has been affected by the repeated thaws and freezings in January. Hay is getting scarce and high in price, as it has proved very light, and inferior in quality, from the drought of the last summer, and so more of it is found to be necessary to keep up the condition of stock. Much wheat still remains in farmers' hands, as the price has ruled so low that they sell anything else they can, and may yet see some advance in wheat by the time spring seeding is done, though the speculators and produce dealers will make great efforts to keep the price down till what they have purchased through the winter is ready to be shipped to distant points.

**BONE-DUST**—Is one of the most profitable manures the farmer can use on his corn, potato or root crops, yet the price asked here for it is altogether above its intrinsic value. Every farmer should save the bones lying about, and reduce them to powder when enough have accumulated. We hope yet to see a bone mill in every township.



### Fishing and Game Law.

A correspondent desires information respecting the periods of the year during which it is lawful to shoot or capture the various kinds of fish and game which are under the protection of the law.

With regard to fish, the Act provides that salmon may be taken between the 1st of May and the 31st of July in the Provinces of Ontario and Quebec, and between the 1st of March and the 15th of August in New Brunswick. The season for fly-fishing, however, extends in each case one month longer, commencing on the same day respectively. It is not lawful to take any young salmon or gillse, weighing less than three pounds.

The season for trout fishing extends from the 1st of January to the 1st of October, and the mode of capturing the speckled trout in Ontario is limited to angling by hand in all lakes and streams, excepting tidal waters.

Whitefish and salmon trout may not be caught by nets between the 30th of May and the 1st of August, nor in any manner between the 19th of November and the 1st of December, in the Province of Ontario. The prohibition against net fishing in Quebec extends between the 31st of July and the 1st of December. All nets or other apparatus for catching fish must be raised so as to allow a free passage to the fish, between 6 o'clock on Saturday evening and 6 o'clock on Monday morning. Close seasons for bass, pike, pickerel, maskinonge, and other fish, may be fixed by the Governor in Council to suit different localities.

The provisions relating to the capture of the various species of game are as follows:—

Deer may be shot only during the months of September, October and November. They may not be trapped at any time.

Hares may be killed from the 1st of September to the end of February.

The close season for wild turkeys, grouse, pheasant and partridge extends from the 1st of January to the 1st of September, on and after which to the end of the year they may be shot.

Quail shooting is allowed from the 1st of October to the end of the year.

Woodcock and snipe may be shot from the 12th of August to the end of February.

Ducks and water-fowl may not be killed during the four months between the 15th of April and the 15th of August. During the rest of the year they may be hunted and shot, but not trapped: and no night lights or "sunken punts" are allowed in duck-hunting.

No eggs of game birds may be taken or destroyed.

The fur-bearing animals, such as the beaver, muskrat, mink, sable, otter and fisher may not be taken between the 1st of May and the 15th of November.

### Book Notices.

THE AMERICAN NATURALIST—A popular illustrated Magazine of Natural History, published at Salem, Mass., by the Peabody Academy of Science, \$1 (U. S. currency) per annum.

The first number of the third volume of this deservedly popular magazine is now before us, furnishing us, as usual, with an entertaining miscellany in various branches of Natural History. The principal articles are:—Shell Money, The Botany of Central Illinois; The Chimney Swallow; The Structure of the Pitcher Plant; The compressed Eel-pout; Salt and Fresh-water Clams; The Senses of St. and Snell (in the wild turkey and deer); An Afternoon in Nicaragua, etc. besides a number of short notes, reviews and correspondence. It is beautifully printed on wonderfully good paper, and is well illustrated with a full-page plate on Clams (not "a plate of clams," epicurean reader!) and a number of accurate woodcuts.

The current number, which may be taken as a fair sample of the work, provides something to suit every taste—lively articles for those who take up Natural History as a relaxation for their leisure hours, and graver papers of a deeper character for the studious consideration of the scientific naturalist. Any one, indeed, with any fondness for the wonders and beauties of the varied works of the Creator, whether in earth, or air, or water, must derive entertainment and instruction from the perusal of this magazine. We ourselves always look forward with eagerness to the arrival of each monthly number and esteem it as one of the most valuable of the periodicals that now-a-days teem from the press. It is just the kind of book that parents of clever children, whether boys or girls, should provide for the completion of their education in an agreeable manner; for the development of a taste for Natural History in any of its manifold branches is, we hold, one of the surest ways to keep boys from frequenting billiard rooms and drinking saloons, and girls from wasting their time and enervating their minds in mere fashionable frivolities or sentimental nonsense.

The two volumes already issued are valuable additions to any library, and are just the books that we should select to take with us were we setting out for a summer tour to the sea-side or upper lakes, or going to enjoy a holiday in the country. May we ask those of our readers who have any fondness at all for natural objects, to take our word for it, and subscribe to the *Naturalist*, and we guarantee that they will not be disappointed when the end of the year comes round; or if they will not do that, to take the more cautious plan of sending thirty-five cents and getting a specimen number?

LE NATURALISTE CANADIEN.—A monthly bulletin of researches, observations and discoveries relating to the Natural History of Canada. Edited by the Rev. L. Provancher, Portneuf, P. Q., (published at No. 8, rue de

la Montagne, Bas Ville, Quebec: Price \$2 per annum.)

Should any of our readers, who have passed their eye over the foregoing notice of the *American Naturalist*, be so super-loyal as to have a conscientious objection to transferring their hard-earned dollars to the pockets of any "down east Yankees," even though they obtain more than an actual *quid pro quo* by the operation, here is a chance for them! A real native Canadian periodical on Natural History, at half the price (and half the size) of its American contemporary, bids for their patronage and encouragement! Now, there is no excuse for shutting up the purse or buttoning the pocket—one or the other you must have, so take your choice; if you won't have the Yankee Magazine, you are bound to go in for the Canadian, just to prove your patriotism! But to those of our readers who are not quite so bigoted in their loyalty, we would say—subscribe for them both, and you will get the worth of your money. For we can honestly transfer to the new publication before us the substance of our remarks on the one from over the border. As its title imports, it is written in French. "That will do, you needn't say another word," says some old country reader, settled in Ontario, "I can't abide French, and what's more, I can't read a word of it." "The more shame for you," we retort; "if you cannot read French, it is high time you learnt, or at any rate have your children taught, for it is the language of a million of your fellow-countrymen; and when your boys and girls are learning to read and parse, don't worry them with the mythical adventures of *Telemaque* or the dry *Histoire de Charles XII.*, but give them the entertaining and instructive pages of *Le Naturaliste Canadien* to translate, where they will learn no exploits of fabulous or defunct heroes, but true records of the live animals and beautiful plants of our beloved Canada."

The two numbers so far issued, contain a valuable illustrated article on the life and habits of the Beaver—our national emblem; an account, with wood cuts, of the potato disease; a general view of Natural History; some account of Insects—the favourite branch of study of the talented Editor; and various other papers. They are all written in a lively and entertaining style, and so far as we can judge, in good Parisian French, free from any *patois* or provincialisms. We heartily recommend the work, and trust that the praiseworthy enterprise of the Editor may be crowned with the most abundant success.

MINNESOTA MONTHLY.—This is a new agricultural periodical, just added to the list of our exchanges. It is neatly got up, in the form of a magazine of 32 pages octavo. The reading matter is seasonable, lively, and of practical interest. It is, we believe, the first agricultural journal attempted in Minnesota. We heartily wish for it a successful career.

**POULTRY SHOW.**—We again remind our readers that the Ontario Poultry Association will hold their Spring Exhibition in the Agricultural Hall., Toronto, on Wednesday and Thursday, the 21st and 22nd of this month. The show is expected to be particularly good.

**CANADA FARMERS' MUTUAL INSURANCE Co.**—We have received the annual report of this increasingly prosperous and popular company, showing that their affairs are in a healthy condition, and that notwithstanding the increasing competition in the country, they have during the past year more than held their own. The company has been in existence seventeen years, and has issued during that time 41,916 policies. Thomas Stock, Esq., of East Flamboro', was, at the annual meeting in February, re-elected President.

**UNITED STATES PUBLIC LANDS.**—We have received from the United States Consul at Windsor a copy of the abridged Report of the Commissioner of the U. S. General Land Office. The abridgement is an octavo volume of nearly two hundred pages; it contains an immense amount of most valuable information in a condensed form respecting the public lands in the various states and territories of the American Republic, giving an account of the extent, climate, soil, productions vegetable and mineral, the state of agriculture, and other matters of interest to intending settlers in the various districts. The volume, which is well got up, clearly printed, and neatly bound in cloth, is accompanied by a large and beautifully executed map prepared from the most recent surveys. The distribution of such a work is one of the praiseworthy means by which the Government encourages immigration and adds yearly to the teeming population and resources of the country.

**TO CORRESPONDENTS.**—Our cordial thanks are tendered to the numerous subscribers who have responded to our invitation, and sent in valuable and welcome communications, all of which shall, as far as practicable, receive due attention: but, from want of space and other causes, we cannot give every one as prompt an insertion or reply as the writers might wish. They must not, however, infer from the unavoidable delay that their letters are rejected. In some cases, several communications are received on the same subject, or enquiries are made respecting matters which have quite recently and repeatedly been explained. To insert all such correspondence would, of course, involve a tedious repetition. In some instances, private answers are solicited, but we cannot undertake to comply with such requests. We regard the correspondence, however, as the life and soul of an agricultural journal, and shall do all in our power to encourage the efforts and meet the wishes of those who write for our columns.

## Horticulture.

EDITOR—D. W. BEADLE,  
CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

### The Farmer's Kitchen Garden.

The first operation to be carried out in the garden in Spring, is to fork over the beds of asparagus, and sow thereon a pretty heavy coat of common salt\*. A spade should never come near asparagus. Also fork over the strawberry beds, unless that has been done before mulching them with straw in the fall. The roots of rhubarb should have an abundance of manure forked in around them. Next, have the whole garden dug or forked over, and the manure admixed. We find it better to do the whole thing at once, and afterwards make the beds for each variety of vegetable as it is needed; they do better sown on soil that has been warmed up by the sun, rather than that which is cold and freshly dug. For beets, carrots, parsnips, and all deep-rooted plants, the soil should be made deep by trenching in the fall, if possible.

**EARLY PEAS** can be sown as soon as the ground can be dug. The *Daniel O'Rourke* is our favourite, though *Carter's First Crop* is a very good kind; plant the seeds in double rows, six inches apart, and three feet between each double row.

**POTATO ONION** sets may next be put out; they do best on a rich light soil, and are usually planted in rows 12 inches apart. Sow onion seed in drills, a foot apart, on well-prepared strong soil; sow pretty thick, and afterwards thin out the plants to 6 inches apart, using the young onions for salad if you like them that way; an ounce of seed will sow a bed 40 feet long by 4 feet wide. The *Danvers Yellow*, *Strasburg*, and *White Portugal* are the best onions we know of.

**RANSHIES, SPINACH, and LETTUCE** may be sown early, broadcast—of radish, a small bed at a time every two or three weeks, to keep up a succession. The *New Zealand* spinach is a fine variety, standing the drought well, and growing to a large size; it should be sown thinly, and the plants allowed plenty of room to spread in; by cutting the outer leaves for greens as they are wanted, a constant succession of growth may be kept up all the season. Lettuce, to be had in perfection, should be started in a very moderate hot-bed, and afterwards transplanted, if large solid heads are wanted: but for general use the curled varieties sown broadcast do very

\*NOTE BY THE EDITOR.—Great care must be taken when forking over the bed of asparagus not to injure the crowns of the plants. The buds start to grow quite early, and a careless operator will soon spoil the earliest buds.

well. We find them not only nice as a salad, but also use them boiled as greens. To get good solid-headed lettuce, the soil must be very rich and well cultivated, and if the plants are not first grown in a hot-bed, and then transplanted; they should be thinned out to several inches apart where they grow. The *Malta Drumhead*, *Neapolitan Cabbage*, *Brown Silesian* and *Victoria* are among the best solid lettuces.

**PARSNIPS** may be sown very early, and yield the finest roots in a very deep, rich, strong soil, that has been heavily manured a year or two previous. Sow pretty thick in drills, 18 inches apart, and thin out to six inches when the plants are well started. The *Hollow Crown* is the only really good parsnip grown.

**CARROTS** need to be sown pretty early to make good roots. They prefer a light soil; for early table use, the *Short Horn* is best; for winter use, the *Studley* or *Long Orange*. Sow in drills 12 inches apart, and thin to 4 inches in the drill.

**BEETS** require a rich soil, mellow and deep. Sow in drills 15 inches apart; drop the seed every one or two inches in the drill, and cover two inches deep. *Early Bassano* is the best for summer use, and the *Long Smooth Blood* for winter stock. It is difficult to get genuine seed, most of that sold being from the common blood beet, which is coarse and full of small roots, in comparison with the *Long Smooth Blood*, which is a very smooth, rich, dark beet. To have nice roots, they should not grow too large or high above the ground; thin out the plants to about 4 or 5 inches in the drills, when they are two inches high. There is a variety known as *Swiss Chard*, grown for its leaf stalks, which are used like asparagus.

**TURNIPS.**—Every one should grow a few early turnips for table use, they will come on quickly if sown broadcast, the last of April, on a rich light soil. Thin out with a hoe as soon as the rough leaves appear. *Nimble Dick* is our favourite. The *White Dutch*, and *Red-top Strap Leaved* are both good sorts.

**POTATOES.**—Although generally a field crop, there are some varieties that are specially adapted for planting in the garden, in order to raise a few extra early tubers ahead of those in the field. To get very early potatoes, plant a few drills of the *Early Goodrich*, *Early June*, or *Ash-leaved Kidney*, about the 1st to 15th April, in a warm light soil, and as soon as the plants are up, cover them at night with straw to keep off the frost; during warm days the straw may lie between the drills till all danger of frost is past. With good management and a fair amount of heat, new potatoes may be had in six weeks from planting the seed.

**CABBAGE.**—A few early plants may be grown in the hot-bed, or obtained from a market gardener; but for the bulk of the crop we prefer to sow a bed of seed in May, on very

rich light soil, and transplanted at our leisure on wet afternoons in June or July. The best kinds are *Wheeler's Imperial* for very early; *Early Wakefield* and *Winningsstadt* for summer; *Drumhead*, *Savoy*, and *Flat Dutch* for winter use.

**CAULIFLOWER.**—This most delicious vegetable is not grown so much as it ought to be, and to tell the truth it is difficult to get genuine good seed that will produce plants that head well. Sow the seed early in May, in a warm border of rich, light soil, open to the sun; transplant about the 1st week in June. For plants that are to head in the fall, the seed may be sown later in a cool, moist spot, and the plants put out in July. The soil in which cauliflower is grown, must be very rich and rather moist, and the earth well drawn round the stem during the growth after transplanting. *Early Paris* is the best for summer heads; *Lenormand*, *Walden*, and *Stadtholder* for fall or early winter use. It is necessary to be very particular to obtain the seed or plants of cabbage and cauliflower from a perfectly honest and reliable grower; otherwise there will be nothing but disappointment when the plants mature.

**CELERY.**—It is of no use to try to raise celery unless the plants are stocky and well grown before being placed in the trenches. Sow the seed in a hot-bed, or early in a rich warm spot; when the young plants are three inches high transplant into drills in the border, setting them about 4 inches apart. After they have grown to six or seven inches high, and become strong and stocky, set them out in the trenches about the middle or last of July. *Turner's Dwarf White*, *Lion's Paw* and *Brighton Hero*, are probably the best varieties, though all we know of are good.

**SWEET CORN.**—Most people like ears of corn boiled, and to get them early and considerably ahead of the field crop, plant a few hills of the *Early Sugar* or *Russell's Prolific*.

**BEANS** cannot well be planted till about the 1st of June. They like a dry, strong soil. *Early Valentine* and *Mohawk* for string beans; *White Kidney*, *White Marrowfat* and *Lima* for shell beans; the last and the *Giant Wax* are pole beans.

**CUCUMBER.**—We have never failed to have a plentiful supply of this fine vegetable in our garden, and use it both raw and cooked. Prepare hills four feet in diameter, and six feet apart, each containing a wheel-barrow full of barn-yard manure; cover with six inches of light earth, and plant a dozen seeds in each about the 1st of June. When three or four leaves have grown on each plant, and all danger from grubs is past, pull up all but 4 or 5 of the strongest. When the plants grow large enough, as if left to ripen the plant is soon exhausted. None of the English kinds can be grown to any advantage except in a hot-bed. The kinds we grow are the *Early Russian*, *Early White Spine*, and another larger kind, the name of which we

do not know. We save our own seed, and find it best to use when 4 or 5 years old.

**MELONS** require the same treatment as cucumbers. There are but few varieties, and all are good. *Early Christiana* and *White Japanese* are new, and promise to be an acquisition.

**SQUASH.**—Same treatment as for melons, only they like a stronger soil; of the summer squashes, *Early bush Scallop*, and *Early Crookneck* are best. For winter use, the *Hubbard* is the only one worth growing.

**TOMATOES.**—This is our favourite vegetable, and we have tried nearly every kind we could get. We find nothing to ripen before the *Early Smooth Red*, and it is of good quality and productive. The *Dwarf Orange-field* we tried for the first time last year, and were well pleased with it. The flavor is sweet and rich, and the plants are so very dwarf, and yet the fruit abundant, that a large quantity can be grown on a small plot, and the plants are stocky, and do not break down with the weight of the fruit. We think this kind could be grown in pots or boxes in the house, so as to ripen much earlier. *Lester's Perfected* we also like very much for flavor and size. The tomato is so long in forming and ripening its fruit that it must be planted out as early as possible after danger of spring frosts is past, and the ground kept well stirred and the plants well watered to make them grow rapidly, and come into bloom early. They may be started in a hot-bed or a box in the house, and if transplanted two or three times before being finally placed in the garden, they will become stocky and full of roots. Except the *Dwarf Orange-field*, all kinds should have the side shoots and branches pinched off just above the last blossom as soon as they show the first ripe fruit, otherwise the plants will all run into bloom and exhaust themselves, leaving a large quantity of half-grown unripe fruit when the first autumn frost comes.

There are many more useful vegetables we might mention, but our article is already long enough, and in conclusion we beg to impress upon all those who desire to have success in growing really good vegetables, the importance of obtaining seed only from a really reliable grower or seedsman.

J. M.

### Orchard Culture.

To the Editor.

The first number of the new series of the CANADA FARMER is now before me, and I read with much interest some portions of Mr. J. T. Duncan's treatise on the culture of the apple. Allow me, however, to offer some remarks on the subject which will produce a most serious difference of opinion amongst farmers who may be on the eve of planting an orchard. I have planted apple trees, pruned apple trees, drained orchards, and have produced good growth, more apples and healthier trees under adverse circumstances than is usually

done. I shall with your permission treat of the subject of growth, culture and pruning of apple trees, in other articles. In this I shall confine myself to endeavouring to encourage my brother farmers to plant apple trees, even under adverse circumstances, and at a less ruinous outlay, and with prospect of more favourable returns than the writer of the essay seems to consider necessary or likely. First, as to the general remarks. He therein states that it will cost \$40 to plant 20 acres, and \$150 per annum each succeeding year as cost of cultivation; rent, \$8 an acre; the expenses the first year, \$470, for each succeeding year, \$310; costing \$1,710 at the end of 5 years. At the end of 11 years, \$3,570 outlay, with a return of only \$3,300. Now, all these amounts to pay out are heart breaking, and in all ordinary cases, to farmers, extravagantly high. Thousands of acres of good land can be had at from \$2 to \$2 50 an acre. The preparation of 20 acres may cost \$10, if planted the way Mr. Duncan does it, which in my opinion is most expensively and poorly performed; while the plan I propose will not cost half the money (exclusive of manure, which he does not recommend as necessary, whereas I have found the use of thoroughly-rotted manure very advisable,) and will be five times as efficient. If farmers are to wait for an orchard until they can afford to have charged against it \$1,710 at the end of eleven years, they will be without apples to the end of the chapter. The true state of the case, however, is not as bad as represented. The land can be made as productive as any other grass land on the farm, except the first year, and occasionally afterwards; and all land must be spared one year for a fallow; and any apple tree that will not produce more than 25 cents each year it is planted at, and until 7 years, has been most miserably treated; but no one can expect a tree to grow so long as the cultivator or plough is used anywhere near it. It will not do so, or if it does "vegetate," it will be a poor stunted thing in comparison with what it ought to be.

Digging a simple hole in the ground as described by Mr. Duncan, is to do what the most old fashioned, careless farmers used to do long since. Holes can be made for trees with the plough in a fallow better than any one can with a spade, and by following my plan as proposed in "Orchard Culture for the million." (See CANADA FARMER, for February, page 70.) his land will be moved upwards of 24 inches deep, and be well drained, and thoroughly manured, and at the same time be equally productive, with any other 20 acres of clover on the farm, if mown, which it may be at first, and for many years except a few feet round each tree; and rely on it each apple tree will save growth on it that will rather surprise any farmer who simply digs holes to plant them in, which only hold the wet like a cup, to the damage and ultimate misery of the tree. Trees well planted on moved land, well drained and well manured,

will do five times as much growing in the same time as those planted in a hole.

It is all very well to say that the soil and situation best suited ought to be so and so, but it seems to me that where one such favourable location exists, probably ten exist without the advantage, and my efforts have been directed to assist the ten, leaving the one with the favoured location to assist himself; moreover, the remedy for unsuitable soils is not given: farmers are told to drain, which half of them cannot afford to do, and to thoroughly work tenacious soils, which will certainly result in failure, if done during the growth of the young trees. In referring again to the productiveness of the land, the allowing the land to lie five years in fallow, without even clover, is not practicable to the ordinary farmer, or to 99 out of every 100 who plant orchards. Again, on this point, I refer the reader to my article on "Orchard Culture for the Million."

Again, as to "mulching," Mr. Duncan advises a quantity of long straw, with a little earth on it, as being well adapted for mulching. I should like him to state how many trees would escape destruction the first winter by being *barked by field mice*, with such a harbour for them at the foot of the tree. The plan may be safe enough in summer perhaps, but no directions are given to remove it when winter approaches, nor does it appear that Mr. Duncan ever thought of the evil.

Certainly, Mr. Duncan advises to avoid the use of the plough, and substitute the cultivator instead; but the cultivator will prove as bad, or nearly so, as the plough in destroying the roots. In pruning large limbs, Mr. Duncan is certainly in error. I can show in my orchard, where boughs of several years' growth have been removed, and the part entirely healed over within a very short time; whereas, if a small projection proportional to the size of the limb removed is left, under the idea that if it is trimmed close the rotten part will extend into the limb, it will never heal over at all. The fact is that all large pruning should be done so that the cut is made as *close as possible to the tree*, so that it may rapidly heal over: because if any projection is left of the limb so removed, the end dies, and the bark from the tree cannot cover the dead projecting part, until it has rotted completely away: you may as well expect your back to heal over a projecting splinter.

In my "Orchard Culture for the Million," I mention the plan of allowing the grass to grow up, and rot down where it grew, as an excellent plan. This is more particularly adapted to old worn-out orchards, very young orchards would perhaps hardly be safe from mice; but if a small piece of tarred wire gauze were fastened round each tree, it would amply repay the cost by the certainty of saving the trees. My plan in planting the trees is to leave a slight depression, say 6 in. deep in

the centre, and about 3 feet in diameter, like a saucer, which I fill up with well and thoroughly rotted manure for the first two or three years after planting; then after heavy rains in the fall, I go over the orchard, and whilst the muck there formed is all wet and soft, tread it thoroughly down all round the tree. This effectually breaks up all mice runs and nests, and frosts soon follow which prevent fresh formation.

### Report on Mr. Arnold's Hybrid Grapes.

TO THE DIRECTORS OF THE FRUIT GROWERS' ASSOCIATION OF ONTARIO.

GENTLEMEN:—Your Committee appointed to visit the grounds of Mr. Chas. Arnold, Sept. 17, 1868, and examine his seedling grapes, having fulfilled their duty, beg to report as follows:

Among Mr. Arnold's seedlings are five new varieties of grapes, which he has fruited for some years past, and which it was our special business to examine. These have been, until of late, known and referred to under the following numbers: 1, 2, 5, 8, and 16. We found that the vines of all these had suffered from the combined influences of the excessive dry season, and the attacks of a multitude of insects, the results of which were apparent in damaged foliage and an unusual deficiency in size of fruit. Growing alongside of Mr. Arnold's seedlings, were the Delaware, Diana, Allen's Hybrid, some of the best of Roger's Hybrids, besides other varieties, all in fruit. These having been subject to the same unfavourable influences, afforded an excellent means of comparison. Judging by the relative size and quality attained by these different varieties, we are of opinion that Mr. Arnold's grapes will, in better soil and situation, and under more favourable circumstances, far exceed anything they have ever shown on his own grounds. Here they have a very exposed position, and a soil scarcely generous enough to bring fruits to any high degree of perfection. It was frequently remarked by members of your committee that any variety which would stand the exposure to which they were here subject, might with safety be recommended as hardy in almost any portion of our province.

No. 1. **ONTARIO**—This is first in regard to size, and we regard it as superior in flavour to any of the other varieties; the berry is large, black, nearly round, with a beautiful bloom; sweet, with a sufficient amount of acid to prevent cloying, and a little of the peculiar fresh flavour of the frost grape. Flesh moderately firm, will bear chewing, yet tender, and breaking readily in the mouth, without astringency. Seed small compared with size of berry, skin thin, and will bear well chewing; bunch large and well shouldered; an excellent dessert fruit; we regard it as superior in flavour to the Delaware as grown by Mr. Arnold.

No. 2. **CORNICOPIA**.—Vine much resembling the Clinton in appearance, but superior in size of berry and bunch, and greatly superior in flavour. Berry small to medium, round, black, sweet with a very agreeable sprightly flavour, reminding one somewhat of a cherry. Flesh melting with a little more acid than No. 1, with a little astringency. Seeds large, bearing nearly the same proportion to size of berry as in Clinton.

No. 5. **ATLANTIC**.—Bunch long, not heavily shouldered. Berry medium size, round, white, with a moderately firm, but readily melting flesh, and an agreeable sprightly flavour something like that of No. 2, yet distinct. Skin thin without astringency, will bear chewing. Much superior to Allen's Hybrids, as grown by Mr. Arnold, and free from mildew.

No. 8. **BRANT**.—Much like No. 2 in bunch and berry. Berry about medium size, round, black, sweet, with a melting flesh and a little more of the frost grape flavour than No. 2. Skin also a little thicker, and slightly astringent. This variety ripens the earliest of any on Mr. Arnold's grounds.

No. 16. **CANADA**. Resembles No. 2 and 8 in appearance, but is a little later in ripening. Berry small to medium, round, black, with a moderately firm flesh, yet tender, and readily breaking up in the mouth; flavour, astringency, and skin very like No. 8. Mr. Arnold assured us that this 16 had not reached its full perfection, and that a few days more would greatly improve it.

We found all the varieties to have ripened their wood well, to be free from mildew, of moderately vigorous growth, and we believe they will prove perfectly hardy without winter protection in most, if not all parts of the Province. We cordially recommend them to the notice of all those interested in grape culture as well worthy of extensive trial, believing as we do, that under more favourable circumstances they would command, both in regard to size and flavour, higher commendations than those we now give. Mr. Bauer's recent and very careful experiments have proved them as valuable for wine as the best grapes in the best years in Europe. Should they succeed throughout our country, as we hope and believe they will, there is a great field before them.

D. W. BEADLE.  
JOHN FREED.  
WM. H. READ.  
WM. SAUNDERS.

**BEECH AND FIR SEEDS**.—A correspondent wishes to know how to grow beech and pine from seed. We would recommend him to follow nature as closely as possible, and plant the beech seeds in the fall, lightly covering with earth. It is more difficult to raise seedling pines, as they are delicate and apt to be killed by too full exposure to sunshine. They should be kept in the shade. The seed should be sown in rich leaf mould.

### The Philadelphia Raspberry.

We present our readers with an engraving of the Philadelphia Raspberry, a variety that promises to be a very valuable acquisition, especially because of its hardiness, a qualification which few good raspberries possess. It is also a most prolific bearer, one of the most prolific in cultivation, which is a great point in its favour. The size of the fruit is full average, and the deep, rich colour, gives it an attractive appearance. The market gardener will, no doubt, find this a profitable sort. A more full account

of its merits will be found in the CANADA FARMER of Aug. 1, 1868, and in the report of the Fruit Growers' Association of Ontario, Appendix G to the report of the Commissioner of Agriculture.

the stools, can be used. Indeed, the desire to get everything as cheap as possible is so universal, and the difference in the quality of plants so little understood, that it might be difficult to find any considerable number of raspberry plants that had been grown a year after being removed from the parent stool.

The cultivation, during the first season after the planting is completed, will consist in keeping the soil well stirred on the surface, and free from weeds. Early in the following spring the plants should be liberally supplied with well rotted barn-yard manure,

vigorous, and capable of supporting the crop of fruit.

In the spring the manuring should be renewed; and it may here be stated, once for all, that this manuring should be performed every spring, and that he who does it with a liberal hand will be liberally rewarded in the quantity and quality of the fruit. At this second spring, and in each succeeding spring while the plantation continues, the bearing canes should be shortened, in a point that will enable them to stand upright beneath the weight of the fruit. This point can only be ascertained by observation and



of its merits will be found in the CANADA FARMER of Aug. 1, 1868, and in the report of the Fruit Growers' Association of Ontario, Appendix G to the report of the Commissioner of Agriculture.

### On the Cultivation of the Raspberry

II.

Plants that have been removed from the parent stool and grown one year, will be the very best for planting, particularly when it is desirable to bring the plantation into an early bearing as possible. If time be a matter of no moment, then the weaker and cheaper sprouts or canes, just taken from

and cultivated during the summer in the same manner as in the first summer. There will usually be some fruit this season, borne upon the canes that grew during the first year. As soon as the fruit has ripened, the canes that produced it should be cut off at the ground and removed. They are of no further use, for in the fall they will die, and by removing them as soon as the fruit is gathered, more room, light and air, are given to the young canes that have come up during the season, and which are to bear the fruit next year. And of the young canes of this season's growth it is always advisable at this time to cut away the weak and very slender canes, leaving only those that are stout and

experiences, the length to be cut off depending upon the length and stoutness of the canes. If the canes be not shortened in, only the buds towards the extremities will break and grow, and thus the weight both of foliage and fruit will be towards the top of the canes, the more readily bending them down to the ground and causing the fruit to be soiled and destroyed. When the canes are properly cut back, say to three or four feet high, according to their strength, the buds will break nearly throughout the entire length of the cane, thus distributing the foliage and fruit more evenly, and diminishing the liability of the fruit to become injured or soiled with earth.

The selection of varieties will depend upon the object the planter has in view. If it be merely to supply his table with a succession of the largest and highest-flavoured sorts, without expectation of pecuniary returns, he will make choice of a very different selection from what he would were he planting for the market in hopes of making a profit out of his fruit. In planting for market, it is desirable to have these raspberries that are the most hardy, the most productive, and at the same time yielding fruit of good, attractive appearance, that will bear to be handled and sent to market without being bruised. For our climate there seems to be as yet no red raspberry that is as hardy, as enormously productive and profitable to the market gardener, as the

**PHILADELPHIA.**—After several years' trial, we do not hesitate to call it the most hardy red raspberry at present in general cultivation. The fruit is of good size, dark red, and sufficiently firm to bear handling and carriage to market. Next to it in point of hardihood is the

**FRANCONIA.**—And this is sufficiently hardy to endure most of our winters without material injury. This variety is also very productive, fruit of very good size, a little larger than the Philadelphia, of a deep red colour, and bears handling and carriage to market remarkably well.

Passing from the red to the black raspberries, we find the improved

**AMERICAN BLACK RASPBERRY**, a valuable variety. This is perfectly hardy at twenty degrees below zero, and yields a good crop of fruit, which is of a black colour and very firm, bearing handling and carriage to a distant market. It is a variety of the common black raspberry of our wood lots and fence rows, improved by judicious selection and cultivation.

A new variety of black raspberry has been recently introduced, which promises to be a yet greater improvement. It is the

**MAMMOTH CLUSTER RASPBERRY**—It has not yet been fruited by the writer, but gentlemen of unquestioned ability and integrity speak of it as being much larger in berry and far more productive than any other black raspberry. It is perfectly hardy, and is said to ripen just after the American Black Raspberry.

These varieties will probably prove the most reliable, productive and remunerative to the Canadian cultivator.

But the amateur will need a few more varieties, for though the above are the most profitable, they do not possess all the finest qualities of size and flavour. And first of all in flavour, and in value for the family table, we place the well-known

**BRINCKLE'S ORANGE.**—The berry is of large size, of a beautiful orange yellow and superior flavour, while the plant is tolerably hardy in the milder parts of the country, and with winter protection will thrive in all parts.

**PASTORFF** is a large, purplish red berry, of very good quality, very productive, and quite as hardy as Brinckle's Orange.

**VICE-PRESIDENT FRENCH** is a bright crimson fruit, of good size and very fine quality esteemed by some as the best of the red varieties.

But for size of fruit, combined with great productiveness, the **HONNER** exceeds all other varieties, while the flavour is at the same time excellent.

These varieties are the best that have been tried in our climate, and will, beyond doubt, give good satisfaction to the careful cultivator. There are a number of new varieties that give promise of value, but have not yet been sufficiently tested here to be positively recommended. Among these we would mention the

**CLARKE**, which is very highly commended on account of its hardiness and abundant fruitfulness; fruit large and light red.

**NAOMI** is large in berry, red, fine flavour, and will probably prove to be about as hardy as the Franconia.

**YELLOW CANADA** raised by Mr. Charles Arnold, of Paris, is no doubt perfectly hardy, it having been thoroughly tested by him at Paris, and having stood through two winters in the grounds of the writer near St. Catharines entirely uninjured. It is very productive, ripens early, and is probably the only perfectly hardy yellow variety in cultivation, and well deserves extensive trial.

**ARNOLD'S RED** is also one of Mr. Arnold's seedlings, which will, no doubt, prove to be perfectly hardy, exceedingly productive, and a very valuable sort for Canada.

These varieties, raised by Mr. Arnold, are also autumn-bearing raspberries; that is, they bear a second crop of fruit in the fall. There are several varieties of fall-bearing sorts, which have been some time in cultivation, but they did not seem to possess any other quality that rendered their cultivation desirable. Beyond the mere novelty of having raspberries in October and November, there is no object in having the fruit ripen at that time, for we have already been satisfied with raspberries by the summer crop, and in the fall are enjoying our pears, grapes, and other fruits of the season. If any one wishes to have them, we would recommend, besides those of Mr. Arnold's raising, the red

**MARVEL OF FOUR SEASONS**, which is very productive, and bears a large, bright red fruit.

We cannot close this article without remarking that Mr. Arnold's raspberries are the result of careful hybridizing, that to such painstaking, careful cultivators we are indebted for many of our choicest fruits, and that there is yet room for further experiments with the hybridization of raspberries. The largest size and highest flavour of fruit, combined with the greatest productiveness and perfect hardihood of plant, are yet to be achieved.

### New and Rare Plants.

**ACER PLANTANOIDES RUBRUM.**—A very ornamental variety of the Norway Maple. A deciduous tree, having the leaves of a beautiful bright red with yellowish veins, changing to a deep blood red with red veins as they become older. The fruits are green. It is cultivated in the parks of St. Petersburg, and also in Germany.

**QUERCUS ROBUR CONCORDIA.**—A beautiful golden-leaved variety of the common oak, with which it agrees in habit and in foliage, except that the leaves are of a rich golden-yellow tint, and much superior in beauty to those of *Q. Robur Aurca*, another golden-leaved *Q.*

**DORCOFERAS HYGROMETRICA.**—A very pretty dwarf herbaceous perennial, forming rosettes of irregularly rounded oboval softly-hairy leaves, from among which rise numerous naked scapes, bearing a few pale violet-coloured flowers, which are whitish at the throat, the segments of the limb more or less reflexed, the flowers being five-lobed, and somewhat resembling those of the violet. It has been sent from Mongolia by M. David, to the Jardin du Museum at Paris.

**PLECTOPOMA NAGELOIDES ACREO-ROSEUM.**—A charming ornamental house perennial, having erect branching red stems, clothed with ovate-toothed leaves, and bearing numerous large Gloxinia-like flowers of a marbled rosy-lilac colour, yellow in the throat, and dotted both over the throat and the lower limb with minute bright carmine spots. It is a hybrid, raised in the establishment of M. Van Houtte, of Ghent, where so many splendid Gesneraceous plants have been originated.—*Gardener's Chronicle.*

### Asparagus.

This now popular vegetable is a native of the salt marshes of Europe and Asia. The seed may be sown either in the spring or autumn, in drills about one inch deep, and the rows wide enough apart to admit of hoeing, about a foot. An ounce of seed is sufficient for a drill fifty feet in length. Keep the soil mellow and free from weeds during the summer, and in the fall or succeeding spring the plants may be set out in beds, about a foot apart each way. The beds should be narrow, so as to admit of cutting to the centre without stepping upon them. The plants may be allowed to remain in the seed bed until two years old. Before winter sets in, cover the beds with about four inches of manure. A good many varieties are advertised, with but little difference. Salt is an excellent manure for asparagus, and an efficient assistant to the cultivator, keeping down the weeds with very little labour.—*Vick's Guide.*

**ANOTHER NEW POTATO.**—We are informed that Mr. Breeze has originated another potato, which is said to be superior to his *Early Rose* and everything else. Price only *Fifty Dollars* in greenbacks for each potato!

### New Evergreens Worthy of Trial.

There are some evergreens that give great promise of succeeding well in a large part of this province, but until they have been tried by a number of cultivators, and the results of their experiments made known, they cannot be spoken of with certainty. In the hope that some gentlemen will make such experiments, we name a few of the best.

**THE CORSICAN PINE** has succeeded well in America. Its long waxy leaves are of a bright green, and the tree grows quite symmetrical and perfect in shape.

**THE MUGHO PINE** forms a small tree, its leaves are a dark green, and it seems to be perfectly hardy.

**THE MOUNTAIN PINE** is another dwarf species, seldom attaining to twenty feet in height. It comes from the Alps of central Europe, and cannot fail to be hardy here.

**SABINE'S PINE** is said to be one of the most beautiful of all the pines. It was found growing on the Cordilleras of California, in latitude 40°, and only 1,600 feet below the region of perpetual snow. Its form is straight and tapering, and it is clothed with branches down to the ground.

**BURIAN PINE** forms a remarkably graceful tree, with a dense, compact habit of growth. It has been called the "Drooping Fir," from the drooping character of its foliage. It has proved perfectly hardy wherever it has been placed.

**LOVELY SILVER FIR** (*Abies amabilis*)—This was found on the mountains east of Frazer's River, in latitude 50°, and so far as it has yet been tried, is entirely hardy, and is much admired.

**THE GREAT SILVER FIR** is highly spoken of as a strong vigorous grower, with very handsome deep green shining foliage, and exhibiting great hardiness and adaptability to this climate.

**THE SIBERIAN SILVER FIR** is a small growing variety, usually attaining a height of about thirty feet. It grows remarkably dense and compact, and has been found exceedingly hardy.

**THE SWEDISH JUNIPER** is a native of the north of Europe, and grows about twelve feet high. It will probably be hardy here.

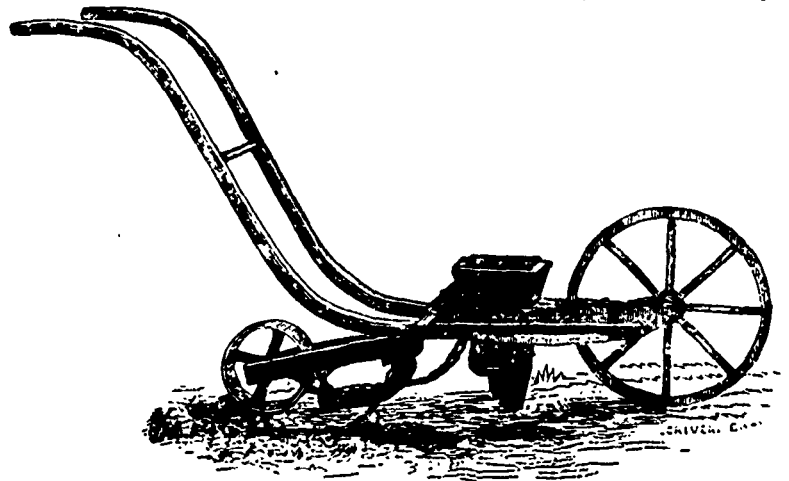
**LAWSON'S CYPRESS** has succeeded well in England, and is such a beautiful tree that it deserves to be thoroughly tested here. Care must be taken not to stimulate it into a rank growth—a caution, indeed, to be observed in the care of all evergreens—lest the wood fail to ripen perfectly, and the young shoots suffer from the winter.

**NOOTKA SOUND CYPRESS**, distributed under the name of *Thuopsis borealis*, will probably prove hardy, and adapted to a great variety of soils, and if so it will be a great acquisition.

If any one desires to study the subject of evergreens and their cultivation, he will find it fully treated in Hoopes' Book of Evergreens, published by Orange Judd & Co., New York. It is a recent publication by a gentleman who has devoted much time and attention to the cultivation of evergreens, and who is thoroughly informed upon the subject of which he treats. It brings into a convenient compass the present state of

### New Hand Seed Drill and Cultivator.

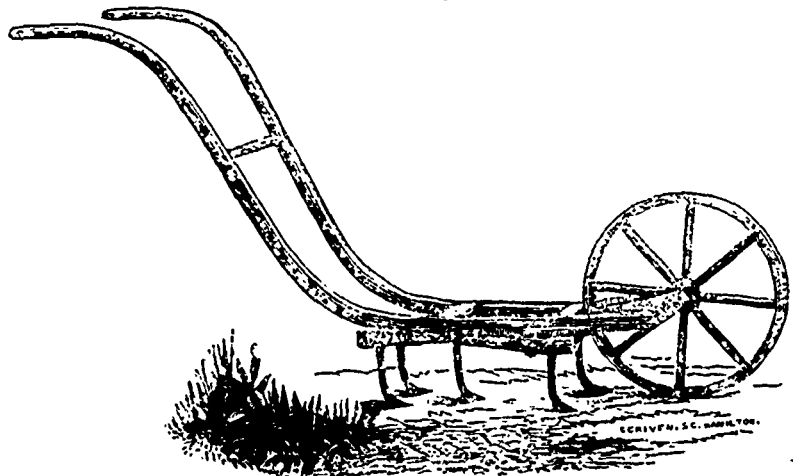
Mr. Fleming, of Toronto, in conjunction with Mr. Bruce, of Hamilton, has introduced a new implement, under the name of the "Dominion Hand Seed Drill and Cultivator," which promises to be a useful acquisition to the horticulturist. Its main purpose is that of a drill for small seeds, such as onions, beets, carrots, turnips, &c. It is simple in



AS A SEED DRILL.

knowledge with regard to native and foreign cone-bearing trees, and their value for ornament and planting in the middle and northern States. The subject of evergreen planting is one that deserves attention, not merely on account of the great beauty and highly ornamental appearance of many of the varieties, but because of the great protection which they afford to our dwellings and other buildings from the sweep of our winter winds. We most earnestly commend the practice to our fruit-growers, whose orchards and gardens need the shelter; and to our enthusiastic stock-breeders, whose fine-bred

construction, and is said to do its work well, dropping the seed with regularity, covering and rolling the drill after the sowing. The same implement, by a change very readily effected, namely, taking off the hopper and roller, and substituting a cultivating attachment, can be used to perform the necessary operations of weeding and stirring the ground. The accompanying illustrations represent the machine in each of its forms, as a drill and as a cultivator. The price is moderate, \$12 50. For further particulars, we refer the reader to the advertisement in the present issue, or to the proprietors of the



AS A CULTIVATOR.

sheep and cattle would feel the comfort of a well-planted hedge, or judiciously located clumps of evergreens, breaking the fierceness of the frosty winds from their barns and sheds.

machine themselves. The implement can be seen at either of their seed stores. Of course it will be understood that this invention is adapted chiefly for horticultural purposes, being designed exclusively for hand use.

**Notes and Queries on the Cherry.***To the Editor.*

SIR,—The cherry is cultivated to a limited extent through this part of the country. The common red cherry is the variety mostly cultivated. Some who have planted the finer varieties are dissatisfied with them, as they do not thrive well and bear little fruit. Some talk about rooting them out, and planting the common red cherry in their place. I think their disappointment arises chiefly from planting unsuitable varieties. I have the Early Richmond, and find it hardy, a good grower, and an early and abundant bearer. In size and quality it is inferior to some other varieties, but it is far in advance of the common red cherry. Taking all things into consideration, it is probably the most profitable variety for this part of the country. I say probably, because I am not sufficiently acquainted with other varieties to speak confidently of their merits.

The Mayduke is highly recommended by horticultural writers, but those who have it growing here complain that it is a poor bearer. Whether this is owing to the trees being yet young, or to improper cultivation, I cannot tell. I would like to get some information about this variety, especially its bearing qualities, and the soil, cultivation, and manures best adapted for it.

I find there are many as well as myself who have a very imperfect knowledge of the merits of the different varieties. Many plant whatever tree-pedlars see fit to give them, and consequently often get unsuitable varieties. I would like to know which are the best varieties adapted to this part of the country.

HAWTHORN.

St. Mary's.

REPLY—The Dukes and Morellos are the most hardy class of cherries. The Early Richmond belongs to this class. The Carnation is a great bearer, and we are surprised to learn that the Mayduke is complained of as a poor bearer, for with us it is very productive. The Belle Magnifique is also a profuse bearer, as is the Donna Maria. These should all do well and bear abundantly at St. Mary's.

**Cranberry Culture in Canada.***To the Editor.*

SIR,—I am desirous to know whether you are of opinion that the cultivated Cranberry will do as well in Ontario as in the neighbouring States. I learn that the cultivation of the Cranberry in the States is very profitable, and if it will succeed equally well in this climate its culture should be encouraged, as we have a good deal of land which I think would be well adapted for its growth and culture.

From what I have read regarding its culture, I learn that in order to succeed, the land selected must have a stream passing through it so as to flood it, and that sand

and gravel must be put upon the muck. Will clay loam or sandy loam do as well, put upon the muck, if the land is well flooded? Can you give me the name of some good author on Cranberry culture?

WM. McCLARY.

REPLY BY THE EDITOR.—There is no difficulty in growing the Cranberry in this Province. It grows abundantly and in several varieties in many of our marshes, and is in no way different from the "cultivated Cranberry," of which our correspondent speaks. Nor is there any reason why the cultivation of the Cranberry should not be profitable in Canada as well as in Massachusetts. There is an article on Cranberry culture in Fuller's "Small Fruit Culturist," and a small treatise known as "Eastwood on the Cranberry." Our correspondent will also find an editorial on this subject in the first volume of the CANADA FARMER, page 106, in which we advise that the purer the sand or gravel is from any admixture of loam the better.

**Cabbage.**

The cabbage requires a deep, rich soil, and thorough working. If these requirements are met and good seed obtained, there is no difficulty in obtaining fine, solid heads. For early use, the plants should be started in a hot-bed or cold-frame, but seed for winter cabbage should be sown in a seed-bed early in the spring. Some varieties seem to do best if the seed is sown in the hills where they are to remain, and this is particularly the case with the Marblehead varieties. Sow two or three seeds where each plant is desired, and then pull up all but the strongest. The large varieties require to be planted about three feet apart; the small, early sorts, from a foot to eighteen inches. Always give cabbage a deep, rich soil, and keep it mellow. For early winter use, keep a few in a cool cellar. The main crop will be better kept out of doors, set in the earth closely, and covered with straw or leaves, with a little earth over all.—*Vick's Guide*,

**Catalogues Received.**

Descriptive Catalogue of Florists' Flowers, &c., cultivated and sold by Downie, Laird, & Laing, Florists to the Queen, Nurserymen, Seedsmen, and New Plant Merchants, 17 South Frederick Street, Edinburgh, and Stanstead Park, Forest Hill, London, S. E., 1869. This catalogue contains a description of their new Pansies of 1869, and their general collection, embracing those with which they carried off the first prize medal at the great International Exhibition in Paris, and three silver medals at the Royal Botanical Gardens, London, 1868; also descriptive list of the very choicest Hollyhocks, Dahlias, Phloxes, Antirrhinums, Penstemons, Fuchsias, Cinerarias, Pelargoniums, Geraniums, Chrysanthemums, Verbenas, Petunias, Roses, New Caladiums, New Golden Coleus, New Double Pyrethrums, &c., &c.

Olm, Brothers' Illustrated Plant Catalogue for 1869, containing a descriptive list of a choice collection of Dahlias, Verbenas, Phloxes, Chrysanthemums, Summer Flowering Bulbs, Bedding and Ornamental Foliage Plants, cultivated and for sale by Olm, Bros., successors to B. K. Bliss, 350 South Main Street, Springfield, Massachusetts.

Annual Descriptive Catalogue of Vegetable and Agricultural Seeds, imported and for sale by W. Sanderson, Market Square, Brantford, Ont., 1869. This catalogue contains a list of the most approved vegetable seeds that are known to be desirable in our climate, and yet is up to the times in those new aspirants for public favour that must be more thoroughly tried before they can be recommended with confidence. Also, a list of agricultural seeds, hardy grapes, strawberries, early potatoes, books on gardening, &c.

Wholesale Price List of the Knox Fruit Farm and Nurseries for the spring of 1869.

Retail Catalogue of Small Fruits, for the spring of 1869. J. Knox, Pittsburgh, Penn. Contains list of Grapes, Strawberries, Raspberries, Blackberries, Currants, Gooseberries, &c., &c.

Descriptive Catalogue of choice and select Flower and Vegetable Seeds, including splendid assortments of Asters, Balsams, Stocks, Zinnias, &c., with the most approved varieties of vegetable seeds in cultivation, for sale by Henderson & Fleming, Seedsmen, No. 67 Nassau Street, New York, 1869. This catalogue is handsomely illustrated with engravings of the new and more rare flowers and vegetables.

Spring Catalogue of New Plants, embracing Dahlias, Verbenas, Roses, Petunias, Fuchsias, Chrysanthemums, Phloxes, Geraniums, &c., &c., grown and for sale by Peter Henderson, Bergen City, New Jersey. Seed Store, 67, Nassau Street, New York, 1869. It contains concise descriptions of many new and choice rare plants, and is profusely illustrated with very neatly executed engravings of some of the more striking and novel varieties.

TILTON'S JOURNAL OF HORTICULTURE for March has a very interesting article on improvement of the Native Plum, illustrated with engravings of several varieties, besides a great deal of interesting horticultural matter.

THE HORTICULTURIST for March is full of interest to the lovers of flowers and fruits. There is a full page engraving of the new Blackberry—the Sable Queen.

THE GARDENERS' MONTHLY for March contains an engraving and description of a new wire grape trellis, whereby the wires are loosened in winter, so that the contraction by cold in winter does not pull the posts over.



### Winter's Work in Lawns.

A lawn should be perfectly smooth. The usual way of making it so is by breaking up and tilling thoroughly. This cannot always be done to good advantage. Sometimes trees and shrubbery interfere, and then at the best it must be up a whole year, and the work done in the summer when other things crowd. In place of breaking up, the *Gardener's Monthly* says:—

"Fine soil hauled on through winter or early spring, and spread over the surface so as to fill up the inequalities, and then heavily rolled in spring, will do as well. A little grass seed may be thrown over before rolling, but even this is unnecessary, as the natural grass will soon come through. Unless the surface soil is very shallow, so much so as to dry out in summer time, many lawns may be better made by this simple process than in breaking it up. As it is, the tough sod has crowded out the annual weeds; but when we break up old ground, the seeds of ragweed and pernicious plants germinate in the ground, and give no end of trouble before a good lawn is obtained. The surface soil of a lawn, however, should be deep, or it will soon dry out in summer, and the lawn lose that fresh green which is most desirable in the driest times."

### Celery.

To obtain good celery, it is necessary that the plants should be strong and well grown. Sow the seeds in a hot-bed or cold-frame. When the plants are about three inches in height, transplant to a nicely prepared bed in the border, setting them about four or five inches apart. When about six inches high, and good stocky plants, set them in the trenches. About the middle of July is early enough. Too many make trenches by digging out the top soil, and only putting a few inches of mould at the bottom, and never obtain good celery. The trenches should contain at least eighteen inches of good soil and well-rotted manure, in about equal portions. Take off all suckers and straggling leaves at the time of transplanting. Earth up a little during the summer, keeping the leaf-stalks close together, so that the soil cannot get between them, and during September and October earth up well for blanching. Those who grow celery for market extensively do not use trenches, but make the soil deep and rich, and plant in rows, earthing up with the plough. Take up the plants late in the fall, just before winter sets in. A little may be placed in the cellar, covered with sand or earth, for immediate use. The best way of keeping is to dig a trench about a foot wide, deep enough to stand the stalks of celery erect, leaving the tops a foot below the surface. Place them in this trench, without crowding, then cover with boards and plenty of leaves and straw. This can be opened at any time during the winter, commencing at one end, and removing enough to the cellar to last a week or ten days.—*Vick's Guide*.

### New Peas.

Mr. Laxton, of Stamford, England, has succeeded in raising a race of early green marrows of great excellence, by his exertions in hybridizing.

WILLIAM L., raised by him, is a wrinkled olive marrow, as early as Sangster's No. 1, and producing very large pods.

MILKUM IN PARVO is said to be a larger form of Little Gem, and in some respects an improvement on that variety.

COMPOSITION FOR WOUNDS ON TREES.—We find nothing better than white lead paint, adding a little lamp black to render it less conspicuous. The edges of the wound where the branch is sawn off should be pared smooth with a knife, and the wound well coated with the paint.

TRANSPLANTING EVERGREENS.—In this country, probably the very best time for transplanting evergreens is in the spring, when the buds are beginning to swell and before they have pushed into growth. When transplanted late in the fall they are very liable to be killed by the winter.

STOVE PLANTS.—It is now universally admitted that stove plants are seriously injured by keeping the temperature too high in winter, as well as by allowing the atmosphere to be too moist at night with a low temperature. To avoid the latter it is preferable to water stove plants early in the day, so that the superabundant moisture may have time to escape.

EARLY TOMATOES.—Those who have not a hotbed will find it to their advantage to sow a few seeds in a box and start them in the house. The best room you can give them is the kitchen, and a nice sunny window where they will have plenty of light. Take care that the plants are not too crowded, but give each plenty of room. A few stocky plants are worth far more than a multitude of long drawn, spindly things.

ORCHARD PLANTING.—The best results in the orchard will be obtained if the ground is well prepared by deep ploughing and thorough draining before the trees are planted, and brought into that state of fertility which would yield a good crop of corn or potatoes. In such soil the trees will make a good vigorous growth, but in a poor or badly drained soil their growth will be feeble and many will die.

THE NORTHERN SPY APPLE blossoms later in the season than most varieties, and thereby escapes frosts that often destroy the crop on the earlier blossoming sorts. The fruit is borne on fruit-spurs interspersed through the tree, and therefore is less liable to be blown off by the winds than those apples which are set on the extremities of the branches. The quality of the fruit is equal to any, and it retains its flavour until late in the spring.

## Natural History.

### Toads.

The articles on general Natural History in this periodical have hitherto been confined almost exclusively to three orders of vertebrata under the popular designation of quadrupeds, birds and fishes. But between the last two there are other by no means unimportant groups of animals, known commonly as reptiles. Naturalists subdivide these into reptiles proper (comprehending snakes, lizards, and other similar creatures) and Batrachians, or the frog tribe. All these varieties of animals, though mostly objects of abhorrence, are deserving of study, and many of them have been woefully misrepresented. Among this class, against which a general prejudice exists, perhaps none are less deserving of their ill name than toads. Being nocturnal in their habits, and seen, therefore, like the bat, chiefly in the dusk, frequenting often damp and gloomy places, being slow in their movements and somewhat grotesque in their appearance, they have come to be regarded as objects of loathing, and even of superstitious dread. They are considered by many not only as creatures of ill omen, but as venomous and positively dangerous to handle. Now this is a great mistake. A more harmless being does not exist. Like all cold-blooded animals, the sensation they give to the touch is less pleasant than the contact of a warm body covered with soft fur or feathers; and moreover, as a means of protection, especially needed on account of their gentleness and helplessness, the skin exudes a somewhat viscid and acrid secretion, which deters more powerful animals from biting them. This secretion is, however, quite devoid of any venomous or irritating properties, and they have no other means of defence, their mouths even being destitute of teeth. They are not only timid and perfectly harmless, but capable of domestication, and show a quick recognition and a certain degree of attachment to their friends and protectors. Their best quality, however, is their great usefulness in destroying immense numbers of noxious insects. On this account they are invaluable in a garden. A writer in the *Iowa Homestead* gives the following interesting account of this much maligned gardeners' friend:—

"He feeds entirely on insects, and mostly at evening twilight, at which time he hunts for his prey. He is not dainty, but swallows bugs, grubs or flies, as they come in his way, or as he chances to find them. There are many insects which seldom go abroad by daylight, such as various kinds of moths, May-bugs and other beetles, and several insects, the larvae of which are called "cut-worms," &c. All of these are devoured by the toad. Later in the season he feeds on crickets and grasshoppers. He is ca-

truly harmless in reference to vegetation, and on the whole we may say he is the most useful of all animals as an insect destroyer. His manner of catching insects is such that the most delicate plant is not injured in the act. His long tongue is thrust with unerring aim and quick as thought on the victim, who vanishes so suddenly that unless the observer pays close attention he can hardly discover the operation.

"Few persons are aware of the great benefit which results from preserving these unsightly animals in gardens. They are particularly useful in gardens where fowls cannot be introduced on account of the injury they would in various ways produce, although they may destroy many insects. The toad neither scratches the ground nor feeds on the crops, and his small size and trifling weight permit him to go anywhere in search of his food.

"As we were walking in the garden last summer, we came across one of these 'squatters', among the squash vines. He was seated near his hole in the wall, surveying the premises, and apparently enjoying the growth of the vegetables, like a philosopher. Have you ever noticed, gentle reader, the benevolent expression in the eye of a toad? If it were not for his uncouth dress we would call him a gentleman. His philosophical mien was catching, and we fell to speculating upon the value wrapped up in that carbuncled jacket. We asked the

question, 'What is he good for? It is said the Creator has formed nothing in vain—nothing without a specific plan and design. Why was this toad made so disgusting, dirt-coloured, wide-mouthed, pot-bellied and moping? There is nothing to inspire affection or terror.' Just at that moment a pestiferous squash bug was crawling upon a leaf. In a moment his eye flashed with intelligence, and quick as thought his long tongue reached the insect, and his capacious mouth closed with a snap not unlike a percussion cap.

"A correspondent of the *Cambridge Chronicle*, a few years ago, put in a plea for toads, and justifies his partiality by the following, which we extract from his communication:—'We have in our garden a small nursery of plum trees, which have nearly been destroyed by the canker worm. Last season we commenced shaking them off. One day we observed many toads about these trees that

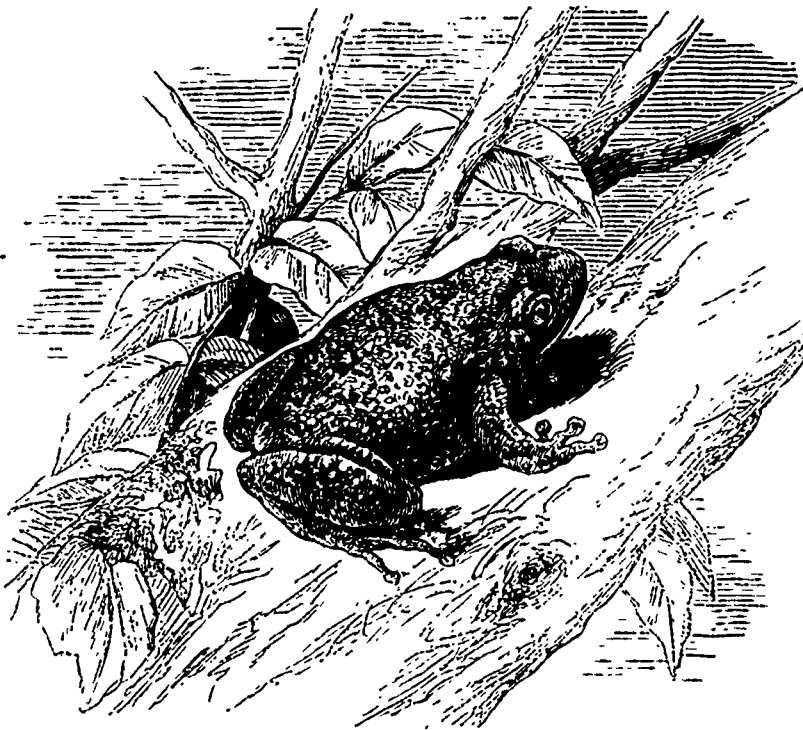
on our approach became frightened, and retired in great haste to their retreats in the neighbouring bushes. Soon, finding that they were not pursued, they commenced hopping back, and caught with avidity each canker worm as it descended on its tiny thread. We counted at one time thirty immediately around our feet. Day after day we fed them on their favourite food, and they became so tame as to follow us, watch our hand, and take the worm from our fingers.

"In the autumn," says another writer, "a pit wherein melons were grown was so much infested with ants as to threaten the destruction of the whole crop, which they did first by perforating the skin and afterwards eating their way into the fruit; and making

are also the virtues of the jewel contained in its head. But he has a jewel—not, however, in his head, as the poet would have it. It is seated in his stomach, instead of his head, and, unlike the oyster, whose pearls are the result of disease, this comes of good health and good digestion.

"That poor, despised, and harmless reptile is admirable in its proportions, and has an eye of such transcendent beauty that, when we find one, we place it on our hand to view it more minutely. Its skin, too, so completely adapted to the subterranean places into which it goes for shelter, is well worth the attention of the philosopher. As this little animal is innocuous, we feel sorry when we see it trampled under foot by inconsiderate people, who have learned from their grandfathers that it is full of venom." Our common Canadian species (*Bufo Americanus*) is, in general appearance, very like the well-known European toad. Its eggs are deposited in long strings, and fertilized like those of the frog; and like that animal, the first stage of its existence is passed in the water, in the tadpole state.

Another species of toad, not so well known as the foregoing, yet not uncommon, is the Tree Toad (*Hyla versicolor*), which spends the greater part of its life and finds its prey among the branches of trees, to which it clings by means of the peculiar conformation of its feet, the toes being tipped with little round pellets. It is extremely



variable in its colour and markings, and has the power, moreover, of changing its hue to assimilate it to that of surrounding objects, in such a manner as to elude detection. This peculiarity is indicated in its specific name—*versicolor*, colour changing. It is said to possess also considerable ventriloquial power, so as to deceive the listener in regard to the direction of the sound of its voice, and render its capture still more difficult—a convenient provision of no small consequence to its safety, as it is extremely noisy, especially during damp weather. These two species are the most common in Canada, but several others are met with in different parts of the continent. We must reserve further notice of the order to another issue. The illustration represents the common tree toad.

several unsuccessful experiments to destroy them, it occurred to us that we had seen the toad feed on them. We accordingly put about half-a-dozen toads into the pit, and in a few days scarcely an ant was to be found.'

"Several years ago a gentleman advertised for toads to put in his garden, for which he paid a small sum each; and if others would follow his example, and thus induce the boys to save the toads alive, instead of killing them, all would be the gainers.

"In proportion to what the toad is capable of doing, there is not a more useful animal to man. In the search of a livelihood he is sure to benefit somebody. He has no bad habits, yet how often do we find him the victim of an ignorant and cruel prejudice.

"The toad has had its full share of marvellous tales. Its poisonous properties are celebrated in many an ancient chronicle, as

Eighteen flocks of wild pigeons passed over London on the 28th March, proceeding in a north-easterly direction.

## On Foot Through New Brunswick.

BY A SPORTSMAN.

The moose (*Alces palmatus*) I have given only a secondary place in the sportsman's notice, and I have done so because in New Brunswick he is hunted in an unsportsman-like way. As I said before, these beasts are unable to travel fast through the deep snow, and in winter, either singly or in parties of two or three, they choose a hill or tract of ground far back in the woods where they browse—moose wood, &c.—abounds. In this space of 10 or 12 acres they remain all winter, unless disturbed; this is called a moose yard. In the months of February and March, when the snow is deep and covered with a crust—which latter serves the double purpose of making the snow-shoing good and of cutting the moose's legs—hundreds of moose are started out of their yards, and run down for the sake of their hides, the carcasses being left to rot. Forty or fifty years ago the moose left this Province and migrated to Nova Scotia, from whence they returned about fifteen or twenty years ago, became very numerous, and were rapidly increasing, until this wholesale slaughter commenced. They are now at a very low ebb, and when once they are all killed off we shall have no more, because the road to Nova Scotia (their great stronghold) has become impassable (to them) on account of settlements, railways, &c. In Nova Scotia there is a society for the protection of the moose; but their safety lies in the fact that in that Province there is rarely snow enough to run them down. The other methods of moose hunting, viz., "calling" and "still hunting," are so very difficult, and require so much skill, that few attempt it. I do not think in New Brunswick there a dozen men who can either "creep" or "call" a moose. Both these methods of moose hunting are capital sport, and I shall have a few words to say on the subject on another occasion; but at present we have to do with the butchering system carried on in New Brunswick. We have excellent laws for their protection, as well as for every other purpose; lots of judges, and shoals of lawyers; but very few of the laws are enforced as they ought to be. In fact, as a countryman remarked to me the other day, we have too much law and not enough justice.

Nothing strikes a person travelling in the woods for the first time in the depth of winter so much as the extreme, I may solemnly, stillness which prevails. No sound of any sort strikes the ear, save at intervals the cracking of the trees, caused by the intense cold. Nor does any track or sign indicate to the casual observer the existence of any animal life. This is explained by the fact that in very cold weather no animals but the cariboo and the "Loup cervier" (*Felis canadensis*) move about much. Even the few birds that winter in the country remain in sheltered spots, in hollow trees, or under the snow. Several quadrupeds that do not den altogether like the bear provide themselves with little homes in hollow trees and elsewhere, and stores of provisions. Among these are the common red squirrel (*Sciurus hudsonus*), the flying squirrel (*Pteromys sabrinus*), the woodchuck (*Arctomys monax*), the skunk (*Mephitis americana*), and two or three sorts of mice. The sable (*Mustela martes*) and the black cat (*M. canadensis*), in districts where they

abound, are rarely seen by the hunter. An old trapper assured me that in the whole course of his experience, he had seen but one sable alive. The rabbit, or rather the hare (*Lepus americana*), is rarely seen—thanks to the snow-white jacket given it in the winter by nature for its protection. Neither is the ormino (*Mustela erminea*), for the same reason. The partridge (*Tetrao umbellus*) and the spruce partridge (*T. canadensis*) live in the trees, or, when they do come down, take a header into the snow and are lost to sight. There is but one exception, the meat bird or moose bird (*Garrulus canadensis*). No amount of cold keeps this most impudent of birds at home when meat is to be got. So far from being afraid of man, he follows him through the woods, comes into his camp through the smoke hole, and almost takes the bit out of his mouth. I have killed one "to encourage the rest," his comrades stolidly looked on, and by-and-bye picked his bones. They eat anything—meat, bread, provisions of any kind—nothing comes amiss to the robbers. Soap they are very partial to. When the hunter stops for dinner and lights his fire, no bird is to be seen or heard; hardly, however, is the frying pan on the fire, when the moose bird makes his appearance, and sits chuckling on a bough within six feet of the pan. He eats the bait out of the traps, or the trapped animal. Moose birds are very numerous in districts where moose have been slaughtered, and eat and fight the livelong day. They make several different sounds, each more discordant than the other! Late in the fall, when the trout go to the shallow waters, the moose bird takes a wrinkle from the kingfisher and catches small trout. I have seen my dog feeding on one end of a dead beaver, and a moose bird on the other. It is generally supposed that birds cannot smell; but the moose bird must be an exception; for in thick woods he cannot see, and how then does he find meat so quickly? On one occasion one of my men caught three in steel traps, and cruelly put them in a box together, where, to use his own expression, "they fit like bulldogs." I told him to kill them at once, as they were all more or less mutilated. On opening the box, however, one fellow escaped, hopping away on one leg and one wing, amidst a shower of missiles. I thought nothing more of the circumstance till about a week afterwards; when I observed another of these birds fly off with as much meat as he could stagger under. I had the curiosity to watch him, and saw him take it to a stump some thirty yards off, where, contrary to their usual custom, he commenced to share it amicably with another bird, whom on closer inspection I recognized as the cripple. I took charge of the poor fellow, and fed him during his convalescence, and have thought better of the meat bird ever since. Two or three of these birds take possession of a camp and drive off intruders; when one is killed another takes his place. On a subsequent occasion I observed the treatment an intruder met with at the hands (or bills) of the two friendly meat birds mentioned above. He came one afternoon very hungry, for a feed of Cariboo. My camp birds were chuckling away on a bough in a state of repletion, but hardly had the intruder dug his bill into the meat when they both went at him, tooth and nail. I never saw a bird get such a thrashing, the old cripple putting in some ugly ones from behind. How the wool did fly! Soon they were out of sight, but the screaming lasted half an hour, and from their pleased expression when they returned I think they killed him.

Occasionally, even in this arctic winter, we have a mild day or two, and then the woods present a different aspect. The

squirrels chatter, the woodpeckers carpenter away at the dry pine trees, the cock of the woods (*Picus pileatus*) flies screaming from tree top to tree top. An occasional "partridge" may now be seen, or the track of a porcupine dragging himself through the snow. The beaver leaves his warm camp, and comes out for a little fresh bark. Even the bear has been tempted out of his den by a very mild day. The pine grosbeak (*P. canadensis*) and the crossbill (*Loxia curvirostra*) show themselves round the camp, and the chickadee (*Parus atricapillus*) adds his little note in approbation of the change.

## Canadian Winter Birds.

(To the Editor).

SIR,—In your last issue I notice a very interesting article on Natural History, communicated by J. McL., relative to the beneficial habits of two of our feathered friends, viz., the "snow bird," and another which he calls the "canary bird;" but being doubtful about the latter name, wishes some one to "enlighten us upon the subject."

The bird referred to is doubtless the lesser red-poll linnet, (*Aegithus linaria* or *Fringilla borealis*) and not the "canary bird," as supposed. The latter does not remain with us in the winter months, although the male bird does, late in the fall, change his colour, so as to nearly resemble the female, which is more of a dark crimson colour.

The lesser red-poll linnet is something larger than the yellow bird, and in colour, at this season of the year, as taken from specimens now before me, is, above, dusky brown, sides striped with the same; beneath whitish, a dark crimson patch on the head; brownish black at the base of the bill, which, in some instances, extends into a patch of the same beneath the chin. The adult male has, in addition, light crimson generally diffused over the breast and rump. It almost exactly resembles the canary bird in its note, flight, and manner of feeding. It rears its young to the north of us, and has been very abundant this and other winters; but rare in others. I have noticed its habits, as stated by "J. McL." It is also beneficial in taking bushels of seed from the weeds that having been neglected, rear their heads above the snow level of winter.

J. J. G. T.

Hamilton, March 13, 1869.

## Anecdote of the Beaver.

The Rev. M. Baillarge, of the Seminary of Quebec, relates the following anecdote of the Beaver in the February number of that interesting publication the *Naturaliste Canadien*, which we have ventured to translate for the perusal of our readers:—

During the classical course of this venerable sexagenarian, which carries us back to about 1810 or 1812, they kept for several months, in the Seminary, a Beaver, which became as familiar with those who dwelt there as dogs and cats ordinarily are in houses. One fine night in November, when the cold began to make itself felt, the animal, which they permitted to wander in full liberty through the dormitory, perceiving

that, of all its fellow-lodgers, it was the only one which remained without protection from the cold, thought it prudent, no doubt, to consider about taking precautions against the still more rigorous nights which were soon to come; and as it had no choice of materials for the construction of its hut, it seized upon everything which fell within its clutches. It accordingly made a toar of the beds, carrying off boots, trousers, socks, cloaks, caps, etc., which it piled up in a corner of the hall, without a single one of the sleepers knowing anything of the clever theft. But lo! the bell for rising sounds; and each of the scholars demands of his neighbour if he has not been playing him a trick in making away with the indispensable garment; but there was the same perplexity and the same questions on the part of the neighbours, when the Regent coming in, perceived master Beaver still very busy arranging the parts of his future habitation; turning over with his paw whatever boot persisted in sticking out to the derangement of its symmetry, or piling up with his tail any cap that would not stay in its place; drawing back, returning, adjusting each portion, and resting from time to time on the top of the hillock, as though to contemplate with pride the amount of work accomplished in so short a time. Luckily for the robbed, the scene of the performance was in a third story; for no doubt if it had been on the ground floor, and the provident animal had been able to get out of doors, they would have found the novel hut built on the edge of the garden cistern itself, and it would have been much less pleasant to have had to draw the caps, boots, etc. out of the water.

**Pine Grosbeak.**

(To the Editor.)

SIR,—I have noticed several interesting articles in your paper in reference to the Pine Grosbeak (*Loxia Eucleator*).

That they inhabit the Arctic regions there can be no doubt, but I am inclined to think the writer in the *Hamilton Times* is mistaken with regard to their not living through a Canadian summer, "owing to the peculiarity of their food."

I have five, two males and three females, in my cage along with twenty-five other birds of different species, and they seem to thrive. They eat the same food as the others—hemp, canary and fox-tail seed; if they do not survive the summer it will not be on account of the food, but the heat; however, at present there is every prospect of their doing well.

They are of a kind disposition and do not disturb the smaller birds.

I am happy more interest is being taken in ornithology. Our Canadian birds are of immense variety and varied plumage, and well worthy of notice.

C. C. S.

Holland Landing, March 23, 1869.

**Poetry.**

**The Light at Home.**

The light at home, how bright it beams  
When evening shades around us fall;  
And from the lattice far it gleams,  
To love, and rest, and comfort all.  
When wearied with the toils of day,  
And strife for glory, gold or fame,  
How sweet to seek the quiet way,  
Where loving lips will list our name,  
Around the light at home!

When through the dark and stormy night  
The wayward wanderer homeward flies,  
How cheering is that twinkling light,  
Which through the forest gloom he spies.  
It is the light of home. He feels  
That loving hearts will greet him there,  
And softly through his bosom steals  
The joy and love that banish care,  
Around the light at home.

The light at home, how still and sweet,  
It peeps from yonder cottage door,  
The weary labourer to greet,  
When the rough toils of day are o'er.  
Sad is the soul that does not know  
The blessings that the beams impart:  
The cheerful hopes and joys that flow,  
And lighten up the heaviest heart,  
Around the light at home.

**Agricultural Intelligence.**

**Meeting of the Council of the Agricultural and Arts Association.**

The Council of the Provincial Association met in London on the 31st ult., for the transaction of business, chiefly in connection with the approaching exhibition. The proceedings of the Executive Committee at their meeting in Toronto, on the 17th of March, were submitted and approved. These had reference, as already reported, to the prize-list, recommending among other things, that the Prince of Wales' prize be awarded for the best herd of Short-horns, and that prizes of \$30 be offered for the best herds of cattle in each of the other classes; that the class of Angus cattle be struck off the list; that the amount of prizes for long-woolled sheep be increased, and other minor changes.

It was resolved that the rule regarding shearing sheep entered for competition should be the same as last year, namely, that they be sheared on or after the 25th of April. It was further resolved that ewes, two shears and over, to be eligible for prizes, must have borne lambs during the present season.

The report of the Fruit Growers' Association recommended that in addition to the usual premiums, a prize of \$50 be offered for the best collection of named varieties of apples, pears, grapes, plums, peaches, crabs and quinces, to be open to all for competi-

tion, and that the successful competitor be awarded besides a diploma. The report embodying the foregoing recommendation was adopted.

The Council had an interview with the Local Committee, and inspected the buildings and premises set apart for exhibition purposes. The Superintendent, Mr. Cooley, gave a general estimate of the additional buildings and accommodation that would be required for the next exhibition, and these the Local Committee agreed to furnish.

The officers of the London Local Committee are Mr. J. Johnson, of Sunnyside, chairman; Mr. W. McBride, secretary, and Mr. Graydon, treasurer.

**Monthly Financial Statement.**

We have received from Mr. Graham the following abstract statement of receipts and payments of the Agricultural and Arts Association of Ontario, for the month ending 31st March, 1869:—

RECEIPTS.	
From the Treasurer of Ontario, balance of grant for 1868..	\$5,000 00
Rents .....	400 00
Miscellaneous .....	16 00
	\$5,416 00

PAYMENTS.	
For Council expenses..	\$392 00
" Veterinary School.....	70 00
" Printing and Stationery....	368 01
" Salaries .....	427 00
" Miscellaneous .....	306 88
" Loan account (one half of note discounted at B. B. N. America by old Board).....	1,900 00
" Legal expenses.....	83 67
" Provincial Exhibition, 1868. expenses .....	20 00
" Prizes.....	604 00

	\$4,171 56
Balance in Bank of B. N. America	1,244 44
	\$5,416 00

GEORGE GRAHAM,  
Treasurer Agricultural & A.A.

Brampton, April 1, 1869.

ADULTERATION OF SEEDS.—A Bill is to be submitted to the British Parliament to prevent the adulteration of seeds, which recent enquiries have brought to light as having been practised to an enormous extent by almost all parties engaged in the trade. It is to be hoped that this measure will tend to improve the quality of the seed imported into this country. Recent disclosures should also stimulate farmers, seedsmen and nurserymen in Canada to grow seeds for home use to a greater extent than has hitherto been attempted.

### Cobourg Spring Fair.

An esteemed correspondent from Cobourg has sent us the following account of the Spring Fair held at Cobourg. The first of what is intended to be an annual spring fair for the sale of horses, cattle, sheep, pigs, grain and seeds, was held at the market place, Cobourg, on Thursday the 10th March, and as the day was fine and the sleighing good, there was a large attendance of farmers and others from the surrounding country. Though pretty well for a first trial, it was a matter of regret that more stock and grain were not brought out on this occasion. There can be no doubt that when people understand the advantages of such fairs, enough stock will be brought to them to induce the attendance of buyers from a distance.

There were ten stallions on the ground, shown for the prizes offered by the County Agricultural Society. The first prize was awarded to Mr. Chapman's horse; the second to Mr. Underwood's, and the third to Mr. Brisbin's. There were several young horses on the ground for sale.

Several lots of fat cattle were shown. The prize offered for this class was awarded to a pair of very fat cattle shown by Mr. John Henderson, of Gore's Landing. They were estimated to weigh each about 2,400 lbs. live weight. Mr. John Fisher, Haldimand, ex-Warden, showed a very fine fat ox, that was sold to one of the Cobourg butchers for something over a hundred dollars. Mr. G. Craig had a very fine pure white Durham heifer, three years old; she was very fat—indeed it was thought the finest beef on the ground; one of the local butchers bought her for Easter beef. Mr. G. R. Malay showed a pair of fat cattle. There were also on the ground several other lots of fat cattle, whose owners I did not learn. Mr. T. McEvers showed some cows, Mr. J. Ballagh a bull and some heifers, Mr. Lant some young stock, Mr. G. Johnstone some cows; and several others had cows and young stock for sale. Mr. R. Lane was awarded the first, and Mr. J. Henderson the second prize for fat sheep. Mr. Jarvis Craig and others had some very nice fat sheep on the ground for sale. There were several lots of seed wheat, peas, oats, &c., which found a ready sale.

Amongst the implements shown, there was a self-raking reaper made by Mr. Hazzard Brampton, several cultivators, horse-rakes, &c., &c.

It is to be hoped, now that a beginning has been made, that future fairs will show a marked improvement, that stock, grains and seeds in abundance will be brought to them, and a large amount of business be transacted.

The Quarterly Fair held at Manchester, County of Ontario, on the 2nd March, was good in every respect. The attendance was large, and the display of cattle very good. Bees changed hands at from \$5 50 to \$6 50; but \$6 was the ruling figure.

### East London Emigration.

We learn from the *Times* that on the 10th Feb. a large and influential meeting was held at the Mansion House, under the auspices of the committee of the East-end Emigration and Relief Fund, for the purpose of ascertaining how far the present extreme and increasing distress among artisans and labourers at the East of London could be remedied by having recourse to an organized and continued system of emigration. The chair was taken by the Lord Mayor; and among those present were Baron Alfred de Rothschild, Lord Northbrook, Marquis Townshend, Sir T. F. Buxton, Hon. A. Kinnaird, M. P., Mr. Alderman Salomons, M. P., and many others. The East-end Committee was formed in July, 1867, and has aided 911 to emigrate, and assisted \$61 to other districts—1,772 persons in all. It was stated most of the emigrants had been sent to Canada, and very satisfactory and encouraging accounts had been received from them. They had all been well placed, and the Government Emigration Agent had reported a want of mechanics, labourers, and several other classes. The Society had expended about £6,400 in about a year and a half in emigration and migration. Of that sum the passages of the emigrants cost £3,320, outfits, £1,889; and the expenses of migration were £528; £2,059 had been received in donations, £1,000 from the Manufacturers' Relief Fund, £1,000 from Her Majesty's Government, £836 from the Herbert Emigration Fund, £268 from the United Executive Fund, and £731 from the Poplar Board of Guardians. The balance in the hands of the treasurer was now only £23. Several speeches were made, and the following resolution was unanimously adopted:—"That, in the opinion of the meeting, the affording assistance in emigration to British colonies under proper precaution, is a satisfactory method of relieving the distress existing among deserving unemployed workpeople and their families." Letters of apology were read, among others, from Sir George E. Cartier and the Hon. W. Macdougall, who were unavoidably absent. But Mr. W. Dixon, of Wolverhampton, was present. Very favourable opinions concerning Canada, as a field for emigrants, were expressed.

The Agricultural Society of the township of Hibbert, having complied with the provisions of the Act, has been incorporated.

Within the past few days, hay has gone up to \$15 per ton in Arthur, and some are asking as high as \$20; so an early thaw will be very acceptable.

The people of the village of Acton have guaranteed \$100 to be prize list of the Esqueving Agricultural Society on condition of holding their fall show in that place.

The amount of butter exported from Kingston to the United States from January 6th to March 17th, not including butter purchased in Kingston, and exported from Picton, Belleville and other places, was 36,000 pounds, valued at \$8,415 83. At present there is a lull in the demand and a prospect of a decline in price.

The St. Catharines *Times* is pleased to learn that the peach trees all around St. Catharines, and throughout the Niagara District generally, are entirely unimpaired after the winter. The fruit-buds are fresh and green, and if the blossoms are not cut off by frosts in May next, there will be a heavy crop of peaches. Cherries, pears, apples, grapes, and indeed all kinds of fruit, promise a most abundant yield the coming season.

The barns of Mr. Francis Kent, Esqueving, containing his seed, grain, wheat, fodder and some implements, were destroyed by fire on Saturday, March 27. By great exertions the horses and cattle were saved. One calf was burned. Unfortunately the only insurance Mr. Kent had effected was on his dwelling. The fire originated in the barn, and is supposed to have been the work of some malicious person.

A big pine tree was not long since felled in the township of Cavan, which the owner boasted would give fully 3,000 feet of lumber. The *Ottawa Times* says that a foreman of Gilmour & Co., on the Gatineau, has recently cut down, in the township of Leslie, a pine tree, from which he made ten good saw logs, the largest one measuring 64 inches in diameter. He estimates the lumber in the ten logs at 7,000 feet. The tree forked into three branches at 40 feet from the ground and the tallest limb was over 150 feet high. If the Cavan men want to see big pines they had better go up the Gatineau.

The St. Catharines *Journal* says the fields are now sufficiently cleaned of snow to give the farmers some idea of the state of the fall wheat, and the majority report that in all parts of the Niagara Peninsula the crop never promised better. The wheat presents a very healthy and strong appearance, and there is good reason to believe that the yield this year will be much better than last. The loss from winter-killing will be almost nothing, while the midge has been kept on such short allowance of food for some years that very little fears are entertained of serious damage from its ravages.

On the 19th March, 61 magnificent cattle were shipped from Oshawa to Montreal by Messrs. Fanson and Knox. The *Indicator* says they were probably the finest drove that ever left that station. The prices paid were large in proportion to the cattle. In fact they were fancy prices, in being far above the market rates. The following are the persons from whom they were purchased, and the prices paid:—J. Ellice, West Whitby, seven head, \$600; Jas. Atkinson, W. W., three head, \$275; Alex. Ross, Pickering, two head, \$195; J. Thompson, Pickering, 7 head, \$460; R. Hamilton, 4 head, \$360; Alex. Wilken, Pickering, four head, \$250; Robt. Medd, West Whitby, four head, \$290; J. Mitchell, W. W., five head, \$625; Daniel Lamon, W. W., three head, \$325; Tweedie & Bro., W. W., nine head, \$776; Alex. Knox, Darlington, two, no price named; Jesse Wells, W. W., three head, \$150; Jno. Smith, East Whitby, four head, no price; D. Whighton, W. W., four, \$230.

THE MODEL FARM.—The Council of the Agricultural Association have determined to give up all connection with the model farm that at one time existed in the northern part of the city. The farm was in reality given up, as far as all practical purposes were concerned, about eight years ago, and since that time has been leased, first to Prof. Buckland and afterwards to Mr. Shanly. When first used for model farm purposes the ground was about 100 acres in extent, but the University park and other lots having been taken from it, the property gradually dwindled down to 14 acres. The Association only held it on license of occupation, but built a fine house and spent a considerable sum in drainage and also in beautifying the premises. For their outlay they claim an allowance from the Council of the University, and the amount to which they are entitled will probably become a matter for arbitration.

Letters from France mention a premature growth of the wheat on account of the mild weather.

The woollen mills of California used four or five million pounds of wool last year, and those of Oregon one million.

Fifty cents a dozen is the price paid for toads in the Paris market. They are used to catch insects in gardens.

The old Hensberger farm in the township of Louth, one hundred acres, was sold for \$8,000 recently, indicating that this sort of property is advancing in price.

The farmers of the township of Woolwich, near Conestoga, having a large number of winter-fed fat cattle, are agitating an Easter cattle fair at that village, to be continued permanently.

It is said that Ohio has in the past three years imported ten million bushels of wheat to feed her people, instead of exporting, as formerly, from seven to ten millions annually.

The subject of fish culture is attracting much attention. The Massachusetts Society for Promoting Agriculture has decided to award two prizes of \$300 and \$200 for the two best establishments for the culture of fish for food in Massachusetts. The premiums to be awarded on the 1st March, 1872.

Goderich salt, free on board, is quoted at \$1 30 per barrel. The farmers buy this, cram it in large quantities into butter, and sell the mixture at 30 cents per pound. Nice profit, eh? We wish salt was \$25 per barrel; then there would be less danger of being prematurely pickled at the breakfast table. So says the *St. Catharines Times*, and the salt men wouldn't object.

Mr. W. Swanston, of Guelph, the other day sold a splendid steer, two years and half a month old, weighing 1,580 pounds, to Mr. Smith, of Detroit, for \$102. He was one of the finest animals brought into Guelph for a long time. He also sold another steer, very little inferior to the one above mentioned, to Mr. George Hood, for \$5 50 per cwt. He was 22 months old, and weighed 1,245 pounds.

The Orangeville Fair, held on Thursday March 11th, was but thinly attended, owing chiefly to the impassable state of the roads. The absence of a supply of fat cattle urged many dealers to leave at an early hour, but the demand for milch cows and young cattle was about as great as on any previous occasion, and the prices realized were higher, occasioned, no doubt, by the scarcity of fodder this season.

At the late annual meeting of the Union Cheese Manufacturing Co. of the Township of Haldimand, the report showed that there were delivered at the factory, during the last season, 481,669 lbs of milk, from which there were 48,674 lbs. of cheese manufactured, averaging 9,59 1/2 lbs of milk for one pound of cheese. The stockholders recommended the Directors to declare a dividend of five per cent on capital stock, the balance to be held for current expenses.

The Mount Forest cattle fair, held on the 17th March, was pretty good as regards numbers, but rather inferior as to quality. Good stock met with ready sale at prices somewhat below the quotations of last month. A herd of six (steers and heifers) were sold to a Guelph buyer at the rate of \$36 per head. The average rates were:—Oxen, per yoke, \$70 to \$90; steers, per yoke, \$40 to \$60; cows, \$16 to \$25; heifers, \$12 to \$15.

**TORONTO ELECTORAL DIVISION SOCIETY.**—The Directors met at the Agricultural Hall on Thursday March 4, and adopted Prize lists for the Spring and Summer Exhibitions, to be held on the 18th of May and 8th of July respectively. The Secretary was instructed to communicate with the officers of the Agricultural Societies for the West End and the Township of York, and the Townships of Etobicoke and Scarborough, inviting them to unite with the City Society for the purpose of a Union Fall Exhibition; and also for the purpose of co-operating in getting up a grand Fall Provincial Ploughing Match.

The Conestoga fat cattle market held on the 15th March, was successful both as regards the number and the quality of the animals on the ground. Nearly 300 head were offered, and of these over 200 changed hands at an average price of \$4 88 per 100 lbs. live weight. Between 25 and 30 buyers were present, and, as a consequence, competition ran high. The quality of the stock was splendid, and the *Berlin Telegraph* asserts from figures that from \$10,000 to \$12,000 were left in Woolwich on that day for cattle, at which fact farmers are proportionately jubilant.

The cattle fair held at Ailsa Craig on the third Tuesday of March proved a decided success, and showed a marked improvement over the preceding fairs of this year. A large number of very fine cattle changed hands. \$170 was refused for a yoke of fine oxen weighing 4,000 pounds. The fairs at this station are held monthly, on the third Tuesday of each month.

The Ayr Cattle Fair held on the 9th March was pronounced a decided success. A large number of buyers, hailing from Galt, Gushp, Brantford, Buffalo and other places were present. About one hundred head of cattle were offered for sale, fifty of which were sold at very fair figures. Prices ranged from three to five cents per pound, live weight, and were apparently regarded as highly satisfactory to the sellers.

The quantity of cattle purchased and shipped from the neighbourhood of Galt to the eastern markets is surprising. The *Reformer* says that dealers are scouring the country in every direction buying up stock, and will do so for some weeks to come. Mr. Wm. Hall of Ayr, was in Galt on Tuesday with 18 head, which he will ship from Paris to-day along with about 20 more. A couple of American buyers are expected in Galt to-day with about 60 head, or three car loads, for transportation. During this week we learn that besides Mr. Hall's shipment from Paris, Messrs. Kingsbury, Murray, Thompson and others will send off from the same point nearly 160 head more. The prices paid have been in advance of what ruled for some weeks back.

The regular monthly fair held at Fergus on the 18th March surprised a great many. After the great number of fat cattle that had been disposed of at the Elora and Guelph Fairs on Tuesday and Wednesday, it was feared there would not be many left for Fergus. However, fat cattle commenced to pour in from all directions, early in the morning, and continued most of the forenoon. The prices, as compared with the last fair—which it will be remembered was an unusually good one—scarcely paid farmers for keeping their stock over; nevertheless plenty of buyers were on the ground with lots of money, and sales were effected at about the same figure as paid in Guelph on the previous day. The prices varied between \$1 50 and \$3 50, which might be taken as a fair average of the day's sales.

**IMMIGRATION.**—From the Government Emigration Agent we learn that Miss Rye was to be in Liverpool on the 29th of March, soliciting subscriptions towards defraying the expenses of a large number of girls, whom she has engaged to proceed to Canada. Miss Rye purposes starting with her proteges about the middle of May. From a Lanarkshire (Scotland) journal we also notice that a strong feeling of emigration has taken possession of the mining population of that over-crowded district. A better class of immigrants for the backwoods of Canada could not possibly be had. They are men inured to every hardship, and industrious, and why cannot we get them to settle amongst us?

The Elora cattle fair on the 2nd March was, by the report of the *Express*, one of the best for business held there for the past two years. There were at least thirty buyers present, with valises full of the needful, and inclinations to purchase. Of cattle there was no lack, the fair ground being covered from one end to the other. Beef was pretty plentiful, but the best was reserved for the Easter fair, on the 16th. Business commenced at eight o'clock—buyers were keen—sellers were keener—and bargains were as easily struck as it is possible to conceive of. From \$4 to \$5 was about the price paid for the cattle purchased. When we say that ten thousand dollars changed hands on the fair ground, it is a low estimate.

**THE SEASON IN SCOTLAND.**—The *Scotsman* says that the weather is still surprisingly mild, and farmers and gardeners continue to have serious apprehensions of late frost—especially the latter class, as fruit trees are so far forward that even a slight frost would now damage very materially the prospects of a good fruit crop. Farmers are somewhat less anxious, seeing that the benefit which they would derive on one hand from frost would fully compensate them for any injury they might sustain through it in another direction. Where stiff land is being ploughed in the slightest degree damp, it is very hard, and cannot easily be brought into a fine enough state of tillage to afford a good seed bed; whereas a night or two of black frost would render it more friable, and not only cause better work, but save a great amount of extra horse labour. However, there is no appearance of frost in the meantime. On Monday evening, snow began to fall about eight o'clock, and next morning the Pentlands and portions of Arthur's Seat were white from the fall; but a mild southwesterly wind was blowing, and the sun shone with the warmth of advanced spring. Some farmers have already commenced to plant their potatoes, but so early a commencement is not generally recommended. In the course of the present week and the next, there will no doubt be a good breadth of ground planted, should the weather continue favourable. On most farms where beans are grown, the seed has already been got in under most favourable conditions. The *Scotsman* has not heard of any oats having been sown as yet. The mild weather and the absence of wind during the past week have again caused the wheat to look very rank and vigorous. Potatoes and turnips are growing rapidly in the pits, causing a great deal of loss in bulk, as well as much expense in turning and picking. The market has become quite a drug, owing no doubt to the inferior quality, as the consumption is much smaller than is usual when the roots are more palatable. The grain markets are still falling, as the various reports show; while meat, on the other hand, is steadily advancing, especially mutton.

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Markets.

Toronto Markets.

CANADA FARMER'S Office, April 9th, 1869.

FLOUR AND MEAL.

Flour—The market continues steady, notwithstanding the decline which has taken place in Europe and the United States

The following are the ruling rates: Flour—No 1 Super, \$4 10 Do Extra, \$4 50
Out Meal, \$5 50 to \$6
Corn Meal—\$3 50 to \$3 65
Hann, per ton—\$16.

GRAIN AND SEED

Wheat—The market was quiet and dull to day. Unfavorable advices received from Europe and the United States made buyers cautious and indisposed to buy. On the street market there is little or nothing doing. Spring Wheat is bid at from \$5 to \$9 00, and Fall at from 95c to \$1.

Barley—The market is firm with a fair demand. Sales were made of car lots at \$1 20 in store. Street prices, \$1 15 to \$1 20
Peas—There has been nothing doing in car lots. On the street market 70c to 75c was paid for a few loads. Still a few loads are coming into the market, and sell at 60c.

Chowder—\$6 to \$6 25. Timothy—\$2 50 to \$2 75. Hungarian Grass—\$1 25 to \$1 50. Tares—\$1 50 to \$1 75. Flax Seed—\$2.

HAY AND STRAW.

Hay—In fair supply. Selling at \$13 to \$17. Straw—\$7 to \$8.

PROVISIONS.

Butter—Packed, 22c. to 24c.; rolls, 30c to 35c. Cheese—From 14c to 17c. Bacon—From 10 1/2c. to 12c. Hams—From 12c. to 14c. Lard—From 16c. to 17c. Eggs—From 13c. to 20c. Potatoes—90c.

SALT.

American selling at \$1 50 in barrel on the wharf or on the cars. Canadian at \$1 60.

HIDES, SKINS AND WOOL.

Hides—Green, 5 1/2c to 7 1/2c; cured, 6 1/2c to 7 1/2c. Calfskins—Green 10c, dry, 13c to 20c. Sheepskins—Long wool, \$1 30c to \$1 60; medium wool, 90c to \$1 10. Wool—25c to 30c.

THE CATTLE MARKET.

Beves—\$5 to \$7 50 per 100 lbs. Sheep—\$4 60 to \$5 per 100 lbs. Lambs—\$2 to \$3 50. Calves—\$2 to \$3.

Hamilton, April 6.—Wheat, White Winter, 95c to \$1; Red 85c to 88c; Spring, 85c to 90c; Peas, 65c to 50c; Oats, 52c to 53c; Barley, \$1.10 to \$1.25; Buckwheat, 65c. to 70c.; Clover Seed, \$6.50 to \$6.75; Timothy Seed, \$2.50 to \$3; Grass Seed, 85c.

Guelph, April 6.—Fall Wheat per bush, 95c to 98c; Spring Wheat per bush 85c to 91c; Oats per bush, 55c to 58c; Peas, 75c to 80c; Barley, \$1.15 to \$1.20; Wool, 25c; Hides, per 100 lbs, \$6; Hef, do, \$7 to \$8; Pork, per 100 lbs, \$7 to \$7 50; Strao per load, \$3 to \$4; Hay per ton, \$14 to \$17; Eggs per dozen, 15c to 20c; Butter per lb., 22c to 24c; Apples per bush, \$1 to \$1 12; Potatoes per bag, \$1 12 to \$1 25; Sheepskins, 50c to \$1 25.

London.—Grain—White Wheat, per bush, 90c. to \$1; Red Fall 80c. to 85c.; Spring Wheat, 85c to 87c; Barley, \$1.10 to \$1.25; Peas, 70c. to 75c.; Oats, 45c. to 46c.; Corn, 65c. to 70c.; Buckwheat, 55c to 60c.; Rye, 75c. to 80c. Produce—Hay, per ton, \$12 to \$15; Strao, per load; \$2 to \$3; Potatoes, per bushel, 60c. to 70c.; Clover Seed, per bushel, \$6 to \$6.25; Timothy, \$2.75 to \$3. Hides—Sheep Skins, each, 50c. to \$1; Green Hides, \$6 50 to \$7 Provisions—Butter, in rolls, 28c. to 30c., do. in tubs or crocks, 23c. to 25c.; Lard, per lb., 12 1/2c to 14c.; Cheese per lb., 10c. to 11c.; Dressed Hogs, per 100 lbs., \$9.25 to \$9.50.

New York Produce Market, April 7.—Flour—Dull, prices still declining. Receipts, 5,000 barrels; sales 4,200 barrels at \$5 45 to \$5 90 for superfine State and Western; \$6 to \$6 55 for common to choice extra State; \$6 to \$7 for common to choice extra western. Rye Flour—Quiet. Grain—Wheat dull and 1c to 2c lower Receipts 1,900 bush.; sales 29,000 bush Rye—Quiet. Corn—Unchanged Receipts 21,000 bush, sales 42,000 bush. at 86c to 88c for new mixed western Barley—Dull. Oats—Easier. Receipts 4,200 bush.; sales 30,000 bush. Western in store, at 75c to 75 1/2c.

Advertisements.

THE TWO BEST EARLY POTATOES, SELECTED FROM GENUINE STOCKS.

EARLY ROSE.—The Early Rose is a seedling of the "Garnet Chili," originated by Albert Bresee, Esq., an intelligent farmer of Vermont. The skin is of a dull bluish or rose color (in some soils nearly white), the flesh perfectly white and solid, and the eyes very shallow. It produces fewer small tubers than any other early potato, boils through quickly, and is very mealy, and of excellent flavor. The good qualities which recommend it are—

1st. It is from ten days to two weeks earlier than any other potato.

2nd. It is of larger average size than any other early potato.

3rd. It is in table quality and delicacy of flavor without an equal.

4th. It is in productiveness the most astonishing variety ever offered to the public, and the reports of the yield from single pounds the present season are marvellous.

Prices.—One pound, 75c.; do., postage pre-paid, \$1; one peck (15 lbs.) \$6 Larger quantities furnished at reduced rates.

EARLY GOODRICH.—This variety was introduced a few years ago by the Rev. Chauncey E. Goodrich, of Utica, N.Y., who spent fifteen years in experimenting on the production of new varieties, and in that time raised over sixteen thousand seedlings, and the Early Goodrich was considered by him the finest of his whole production; it is very early, of large size, white skin, smooth eyes, white flesh, of first-rate quality, and always perfectly solid—per bushel \$2; per barrel, \$4.

In addition to the above we have to offer several other varieties of very choice SEED POTATOES. For description and prices see our DESCRIPTIVE PRICED CATALOGUE, a copy of which will be mailed to any address on receipt of a three-cent stamp to pre-pay postage.

JNO. A. BRUCE & CO.,

Seed Merchants,

Hamilton, Ont.

NEW & CHOICE SEEDS FOR PRESENT SOWING.

- Per Packet CABBAGE.—Little Pixie, the earliest variety... 10c. Early Schweinfurt Quintal, very large and fine... 10c. CAULIFLOWER.—Demi-Dur, large and sure heading variety... 25c. Lenormand's Extra Large, best late variety... 25c. CELERY.—Incomparable Dwarf White, extra fine... 10c. Incomparable Dwarf Crimson... 10c. LETTUCE.—Bruce's Nonpareil Cabbage, the largest and best... 10c. Boston Curled, very beautiful... 10c. Tom Thumb, very dwarf and compact... 25c. RADISH.—French Breakfast, very tender and early... 10c. Scarlet Olive-shaped, very fine... 10c. TOMATO.—Bruce's Extra Early Apple, the earliest and best... 10c. The Tiden, very solid and handsome... 10c. Keyes' Early Prolific, very early and fine... 10c. CUCUMBER.—Mills' Jewess, for forcing... 25c.

On receipt of TWO DOLLARS we will send FREE by Mail to any part of the Dominion, the above collection of New and Choice Seeds.

JNO. A. BRUCE & CO.,

Seed Merchants,

Hamilton, Ont.

J. H. THOMAS' FIRST PRIZE BEE-HIVES IMPROVED

By being ventilated at the rear of the Hives, which does away with the necessity of dropping the bottom board when the Bees are too warm. No extra charge. The demand for these popular Hives is increasing every year. 1,000 Hives building. Send on your Orders. Price of double board, including the right to make and use \$6; of the single board, \$5.

CANADIAN BEE-KEEPERS' GUIDE always on hand. It should be in the hands of every Bee-keeper. Price, (post paid.) 25cts. Everything required in Bee-keeping furnished to order.

J. H. THOMAS, Brooklin, Ont.

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.

THE DOMINION  
**Hand Seed Drill and Cultivator.**  
 PRICE. - \$12 50.

**AS A SEED DRILL,**  
 THIS Machine is offered to the public with the greatest confidence. It possesses special advantages for sowing Onions, Carrots, Beets, Turnips, Parsnips, &c. It is at once simple, light, easy to operate—sowing the most difficult seeds surely and evenly, marks its own rows, makes its own drill, drops and covers the seed. All slides, recds, and brushes are dispensed with, and therefore the machine is not liable to get out of order.

**FULL DIRECTIONS**  
 For working are attached to each Machine.  
 The change from seed sower to cultivator is readily made by removing the hopper and roller, and putting on the cultivator, which can be done in three minutes.

**AS A CULTIVATOR**  
 Is very light and simple, and can be readily expanded and contracted to the required width.  
 The above machine carefully packed and forwarded to any part of the country on receipt of \$12 50.  
 For sale only by

JAMES FLEMING & CO.,  
 Toronto.  
 JOHN A. BRUCE & CO.,  
 Hamilton.  
 v1-4-11.

March 16.

**THE NEW TWIN PLOUGH.**

AMONGST the Agricultural Implements exhibited at the Seed Fair of the Agricultural Society of Whitby and East Whitby, noted in these columns last week, Mr. James Walker's new invention of the "Twin Plough," was perhaps the most prominently noticeable. It is arranged with two shares, two coulters, and two mould-boards on the beam, so as to turn two furrows at once, and any width that may be required. It is specially adapted for spring work where the ground has been ploughed in the fall, and also for summer fallowing; and by the use of it, farmers can do one-half more with the same number of teams. Not a farmer who examined it (and there were many) but expressed himself highly pleased with it, and all thought that it was just the plough that Canada wants, and that it is destined to supersede, to a great extent, all other ploughs now in use. A patent has been applied for.  
 Mr. Walker also exhibited his Dominion Plough, with a wheel attached to the inside of the land side of the plough with a peculiar hub, in which dirt cannot enter. By the use of this wheel, which can be attached to any plough, a great saving in draught, as well as its being a substitute for the usual sole plate, is effected. This also attracted a great deal of attention, as sole plates are so liable to wear out, and in this alone a great saving will be effected.—*Whitby Chronicle.* v1-4-11.

**CANVASSERS WANTED  
 FOR THREE NEW BOOKS.**

ON one of these Books, Agents have reported up to 20 orders a day. Exclusive territory given. Address  
 P. R. RANDALL, Publisher,  
 v1-4-11. Port Hope, Ont.

**SEED POTATOES.  
 GET THEM TRUE TO NAME!**

THE undersigned offers for sale the "Early Goodrich," "Gleason" and "Harrison," at \$3 per barrel of 165 lbs., delivered to Great Western Railway. No Early Rose or Climax for sale until this fall.  
 Address, LEWIS SPRINGER,  
 v1-2-11. Hamilton, Ont.

TO PARTIES HAVING  
**FARMS & LANDS  
 FOR SALE OR TO RENT.**

THE undersigned is preparing a list of Farms and Lands for Sale and to Rent in Ontario, which he intends to circulate extensively among tenant farmers in England, and, in this way, place the properties before the best class of purchasers.  
 Parties who have Farms and Lands to sell are requested to send the particulars to the undersigned, when they will be inserted in this list free of any charge.  
 Printed forms for descriptions can be had on application, or will be sent by mail on receipt of stamp to cover postage.  
 THOMAS CHURCHER,  
 Land and Estate Agent,  
 Market Square, London, Ont.  
 v1-4-11.

**FRUIT & ORNAMENTAL TREES  
 FOR SALE.**

A very choice stock of all the leading varieties on hand. Send for a Catalogue.  
 JOHN GRAY,  
 v1-4-11. Box 493 P.O., Toronto.

**DAIRYMAN'S GOODS.**

VATS, HEATERS, PRESS SCREWS, HOOPS, (RED CHERRY),  
 CANS, &c., &c.,  
 OF the latest improved styles, and of the best quality, sold cheaper than any house in the trade.  
 SMALL VATS, complete, suitable for thirty cows and under, sent to any address in Canada, free from rail expenses, for thirty dollars. Send for price list, and address  
 H. PEDLAR,  
 v1-2-11. Box 100, Oshawa.

**SENT FREE TO EVERY BEE-KEEPER IN CANADA,  
 A DESCRIPTIVE CIRCULAR AND CUT OF**

**S. H. MITCHELL'S  
 PATENT COMBINED HIVE  
 AND  
 BEE HOUSE.**

THE MOST PERFECT,  
 THE MOST USEFUL,  
 THE MOST DURABLE  
 AND ORNAMENTAL HIVE  
 Ever offered to the Public.  
 Address, S. H. MITCHELL,  
 Apiarist & Market Gardener,  
 v1-2-11. St. Mary's.

**NEW AND RARE VEGETABLES.**

HAVING been the original introducer of the Hubbard Squash, Marblehead Mammoth Cabbage, and many other new vegetables, I continue to make the raising of new and rare varieties a specialty.  
 I raise on my three seed farms,  
**Over One Hundred Varieties of Seed,**  
 including all the STANDARD SORTS, and import many choice kinds from England and France.  
 Catalogue gratis to all.  
 JAMES J. H. GREGORY,  
 v1-3-11. Marblehead, Mass.

**100 YOUNG MEN  
 AND  
 25 YOUNG LADIES WANTED!**

TO all Situations in Telegraph Offices on New Lines now building. No other business offers as good inducements. Good situations guaranteed. For particulars address  
 P. McEACHREN,  
 v1-3-11. Supt. City Telegraph Company, Toronto, Ont.

**TAYLOR'S  
 PURE WHITE LAND PLASTER**

At Four Dollars per ton on board cars at Caledonia, or vessels at Cayuga.  
 "Absolutely pure Gypsum."—Professor Croft's Analysis.  
 "As a Fertilizer it occupies the highest rank."—Professor Buckland's Report.  
 "White Plaster is the best."—CANADA FARMER.  
 Awarded Prize Medal at the World's Fair, London, England, 1862.  
 Freight per railways, lumber rates.  
 ALEXANDER TAYLOR,  
 v1-4-11. Caledonia, Ont.

**NEW SEEDLING POTATOES.**

THREE NEW KINDS of great excellence, not to be found in any other Catalogue, will be found engraved and fully described in my new Seed Catalogue.  
 Sent gratis to all.  
 JAMES J. H. GREGORY,  
 v1-3-11. Marblehead, Mass.

**NEW ROSES.**

FOR a choice collection of the best New Roses send to the St. CATHARINES NURSERIES.  
 D. W. BEADIE,  
 v1-2-11. St. Catharines, Ont.

**CHEESE VATS & PATENT HEATER,  
 PATENTED JULY, 1868.**

Manufactured by PELLOW & WALTON,  
 OSIIAWA, Ont.  
 SEND for Illustrated Circular and Price List. Parties infringing or using our Heater without our consent, will be prosecuted.  
 P.S.—The above Heater can be attached to Old Vats.  
 v1-3-11.

**Philadelphia Raspberry Plants**

THIS is the hardiest and most productive Red Raspberry in cultivation. Strong plants for sale by the dozen, hundred or thousand.  
 Also, fine plants of the Clarke, Franconia, Hornet, Naomi, Imperial, Davison's Thornless and Mammoth Cluster, at the  
 St. Catharines Nurseries.  
 D. W. BEADIE.  
 v1-2-11.

**ORANGEFIELD  
 EARLY DWARF TOMATO.**

THE Earliest and Best-flavored Tomato we have yet tested, and very productive.  
 Seed 25 cents per packet—5 packets for \$1.00, free by mail.  
 GEO. LESLIE & SON,  
 v1-3-11. Toronto Nurseries, Leslie P. O.

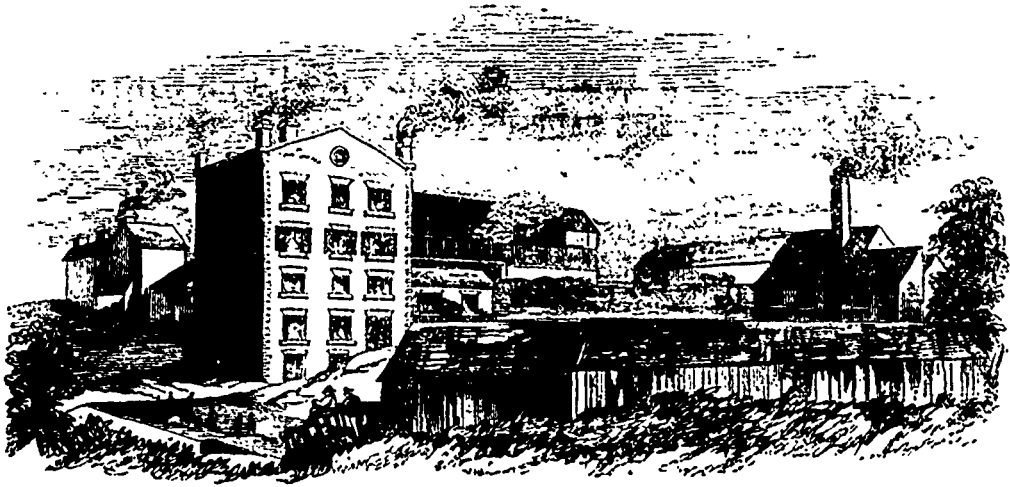
**GRAPE VINES FOR SALE.**

ALL the best and earliest hardy sorts furnished at low rates by the hundred or thousand.  
 Parties wishing exotic sorts can be supplied with fine plants true to name.  
 D. W. BEADIE,  
 v1-2-11. St. Catharines.

**LAND PLASTER**

OF THE BEST AND STRONGEST QUALITY manufactured at Paris, Ontario; and sold at the lowest price, in Bulk, in Barrels, or in Bags, by  
 THOMAS W. COLEMAN,  
 v1-2-11. Paris, Ontario.  
 January 13, 1869.





CROPS RIPENED FROM 10 TO 15 DAYS EARLIER,  
AND  
YIELD INCREASED 100 PER CENT.  
BY USING  
**LAMB'S SUPER-PHOSPHATE OF LIME.**

It is very prompt in its action—is lasting in effect to a degree unattained by any Commercial Manure in the market, and is afforded at a much less cost than bought Stable Manure, or Peruvian Guano. The labour involved in its use is far less than that of applying stable manure; while there is no risk from the introduction of noxious weeds.

PRICES AND TERMS:

Lamb's Super-Phosphate of Lime, \$40 per Ton, in Barrels of about 225 lbs.  
Fine Bone Dust, - - - \$27 50 per Ton. Half Inch Bone Dust, - - - \$22.

CASH TO ACCOMPANY ALL ORDERS.

NO CHARGE FOR BARRELS, AND DELIVERED FREE AT RAILWAY STATION, TORONTO.

Last year, in February, we sold to one Farmer \$667 worth, and in May he ordered another large lot, and we could not send it, as we had sold all out, and received a great many orders after we had sold our stock. In consequence, this year we have manufactured a larger quantity of a very superior quality, and trust that we shall have enough for all; but do not delay in ordering, but order at once to insure to have it fulfilled. It is good for

WHEAT,	BUCKWHEAT,	CORN,	CABBAGE,
RYE,	MILLET,	BEANS,	ONIONS,
OATS,	BARLEY,	PEAS,	POTATOES.
- ALSO, -			
TURNIPS,	BEETS,	CARROTS,	MANGEL WURTZEL,
		STRAWBERRIES,	TOMATOES.
			CUCUMBERS,

**FOR FRUIT TREES, RASPBERRIES, CURRANTS, GRAPE AND HOP VINES,**

Ground Bones are an invaluable and lasting manure. When the Trees or Vines are first planted, a liberal supply of half inch Ground Bones should be used about the roots, and Super-Phosphate applied as a top-dressing. In spring loosen the earth, and apply liberally, raking it in. This will give a vigorous and healthy growth, ripening the wood early, and causing a larger amount and more luxuriant growth of fruit; also, improving the quality.

**PETER R. LAMB & CO.,**  
MANUFACTURERS,

TORONTO.