



# THE CANADA FARMER

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NEW SERIES.

## The Field.

### Beet Root and Beet Root Sugar.

No. XI.

We have hitherto treated of the various processes necessary to reduce the root to pulp, to express the juice, to defecate it by boiling with lime (according to the old process), and by concreting the juice into rough syrup, to be afterwards purified, according to the new process. We have described everything in the plainest possible language, so that all may understand it, and in doing so we have condensed and transmitted to our readers all the practical information contained in all the best books which have been written on the subject that were procurable. We have given no opinion of our own on any material point, nor have we diverged from the information we have obtained. We now mean to assemble this information together, in order that it may be applied by our readers to the construction of small practicable works, fit for the Canadian farmer and country manufacturer, and such as will reduce the root to a rough merchantable extract, or merchantable "sucrate of lime," which substances will keep for any length of time, until the farmer can either purify and refine them himself, or find a market for them at the sugar refiners now established, or those which will surely be hereafter established.

And here, to assist the inexperienced in such matters, and to prevent misunderstandings and disappointments, we will make one remark, and it is a very important one namely:

No book that the writer ever yet met with (and he has been a most extensive reader) was ever found to set forth a process in manufacturing any article (where the success of the product is not altogether dependent on machinery) in such a manner as that the manufacturer, without practical know-

ledge, could take the book, follow out the instructions therein given, *verbatim et literatim*, and succeed (in a manufacturing point of view) in producing the article desired in perfection, or even at first to profit.

The writer understands, as well as he can understand from books, most of the ordinary manufacturing processes where practical chemistry is required, and several manufacturing businesses he thoroughly and practically understands, so that he can do them on a mercantile scale, and with success, with his own hands. On these latter businesses he has read nearly everything that has been written in the English language, and he does not hesitate to say, that not one of the processes, even in the most ably written book, is so described as to enable an unpractised person to take that book and proceed according to its directions, and produce a perfect manufacture, at one, or even at several trials.

While saying this, the writer does not for a moment mean to disparage "book-knowledge;" it is all important, and no manufacturer can proceed in an ordinary way of business, or keep up with the times, without books, and without the suggestions of learned men on the subject, but to enable him to apply such information usefully, he must have a certain amount of practical information, and the power of neat manipulation, and also of general knowledge, then he will find the experience of others, as transmitted to him by books, absolutely invaluable.

It is necessary to say this to prevent disappointment to parties who are inexperienced in the manipulations of manufacturing, and who have such a kind of superstitious veneration for what they see in books, that (until they find out that they cannot work by them alone) they believe every word that they find printed. One great reason why they fail is that they apply what is said according to the dictates of *their own* mind and judgment, and not in accordance with the mind and judgment of the author, or with his original intentions.

Bearing this in mind, none of our readers need be disheartened if they fail the first, second or third, or even tenth time in their experiments; they are all the time acquiring information, knowledge, and experience. Such disappointments are invariably necessary, and if they do not dishearten the experimenter, they are universally the precursors of success.

There is not a great and successful manufactory in the world but has spent far more money in failures than the finished and perfected machinery finally costs them.

It will be perceived by our readers that the beet root sugar manufacture is now in a transition state, and is carried on by two classes of persons. the first is the old system as established by the Great Napoleon's chemists, and since then greatly improved and added to by the professors of modern chemistry. This class of manufacturers still work the enormous factories which have cost many hundreds of thousands of dollars each to erect, and who, without dispute, make excellent sugar, and to good profit.

The second class has dropped most of the cumbersome and expensive machinery, has seized the great chemical facts eliminated by the originators of the system, and their entire attention has been directed to the lessening of machinery, and the simplifying the process—and from this class the two processes of working by "Sucrate of Lime," and by "Concretion"—which are certain to produce a revolution in the manufacture—have originated. We think the latter processes are more adapted to Canada than any other, and having given such information as we could collect on the first system, we shall in future treat more of the second, as that most likely to be useful to our readers.

XII.

We now proceed to our recapitulation.

First, the growing of the root:—

The roots must be grown from seed procured through a thoroughly reliable seedsman, from the best sugar districts in Germany, where the object of the manufacturer

is quality and richness of the root in sugar, and where the yield of the root per acre is thought of far less importance. The American Government Commission appointed to enquire into the manufacture of beet root sugar, after repeated trials, and the special journey of a commissioner to Europe for that purpose, narrowed down their enquiries to the following sorts:—White Silesian Green Top, White Silesian Red Top, White Magdeburg, Improved White Imperial, Beta Imperialis Nos. 1 and 2, Vilinorius Improved White, and the Castelnauudy Yellow. The latest English writers also mention the Colet Rose as a great favourite.

It will thus be seen that there are plenty of kinds to choose from. No doubt, some will be found specially adapted to some soils and others to other soils; experiment alone can prove which is the best for each farmer, and each particular class of land. Persons going into the business should procure some seed of all the kinds, and then stick to that kind which they find best adapted for their own farm. After ascertaining this, they will, of course, raise their own seed, which is very easily done.

The land which is to grow beets should be summer-fallowed and manured *the year previous*, as our best farmers now do for turnips; the manure should be well disseminated through the soil, and have the previous autumn and winter in which to decay and impart its fertilizing qualities to the land.

The roots should be grown as quickly as possible to insure perfection; they should not be sown too early, and every precaution must be adopted against "second growth," whether in the field or in the root-house. Second growth is destructive to sugar. Otherwise, the preservation of the root may be the same as that of the ordinary mangel.

Having grown the roots to as near perfection as possible, the next process is the grating them down. Whichever process is used, they must be reduced to the finest possible pulp, and should be pressed as fast as ground; destruction of sugar commences with fermentation, and fermentation will commence in half a day, or even less. What you grind during the day must never stand over for a night.

From the mill or rasp, the juice must pass into the boiler or evaporator. If defecated with lime, that process (as already described) must take place. If the juice is to be "concreted" only, the addition of lime is not necessary in the evaporation. The evaporators can be either large vessels in which the juice is reduced by boiling, or by the "Concretor system" as before described; but whichever way is adopted, speed is everything, and delay is destruction to all success; if fermentation or souring set in, the whole product is destroyed as sugar. The presses will always admit of much discussion, but for ordinary use they must resolve them-

selves into one of two kinds, either the screw press, in one of its many various forms; or the lever press, in which the pressure is continuous; presses of the simplest construction of this kind are used for the manufacture of lard and other fat oils; they are very rough affairs, very easily made, of great effect, and continuous in their action. They will be separately described, and are as useful for cheese presses as for anything else.

People putting up presses must always bear in mind that effective pressure depends on the amount of surface to be pressed. An ordinary cider mill screw with pressing boards, of four feet superficies, will only give one-fourth of the effective pressure that the screw would give if the surface was reduced to one superficial foot; and the latter would only give the one hundred and forty-fourth part of the pressure that would be obtained if you reduced the surface to one superficial inch. An ordinary man pressing the heel of his boot in a small potato of one inch in diameter, exerts on that inch about 170 lbs., or fully twice the pressure of the steam in the boiler of an ordinary high pressure steam engine. The Hydraulic press is, of course, out of the reach of any farmer, and of most manufacturers on a small scale.

The concreting of the juice has already been fully described in No. 10, and need not here be further alluded to.

The final purification of the sugar into refined sugar, will, we fear, be too elaborate and difficult a process for ordinary persons, but as it will not be too difficult for all, we shall describe it in a future article.

### NO. XIII.

In Europe, where labour is cheap, and where individual labour or rather labourers can be depended on to remain with their employers without change, the beet root sugar manufacturer depends on the labourers or "hands," as they are called, to carry through each process, with as little machinery as possible. In Canada and America generally, the matter is reversed; here the successful manufacturer in any art is dependent on his machinery, which he can command, and he wants that machinery to be so arranged that he can proceed equally well with a change of labour as with the original hands; the *machinery* must do the work and the workpeople must attend on it; then if one man leaves his place, another can be obtained to take it without difficulty or delay. Besides this, it must be recollected that the machinery is not "paid by the day," and the man who attends on it is. Our object is, and must be, to reduce the wages to the lowest possible point, and therefore a beet root sugar factory, to be successful, must comply with the following conditions:—

The roots must be brought from the pit to the washer by hand, and then be cleansed by a continuous stream of water. From the

washer they must pass by the power used to the rasp, which reduces them to the finest possible division; then, after being pressed, the juice proceeds of itself to the evaporators, or to the concretor, and passes through its various stages—still without handling—until it is delivered into barrels in the form of syrup, or rather inspissated juice; there the first operation is ended; the remainder of it will rest with the refiner.

The pulp which passes from the presses—whether in one shape or another—is at once fit for cattle food, or it may be stored in pits covered with earth and keep good for years.

These operations ought to be, and must be done, by not more than three men, one to supply the roots, one to attend to the fires, and to see to the barrelling of the boiled juice or concrete, and one to attend to the press. The press, if of the best kind, should be continuous. All the rest of the work must be done by the machinery. This may be of the roughest kind, providing the foregoing essentials are borne in mind, but the results as indicated must be produced.

Where it can be had, steam power will of course be best, as not only can the waste heat of the chimney be used to advantage, but the entire of the waste steam.

Experience has proved, however, in France and Germany, that the animal power of the farm can be used with advantage. Hundreds of small beet root sugar factories are worked in that manner, but, in these cases, separate fires for the purpose of evaporation are, of course, necessary.

The concreting plan so simplifies the process that any person of moderate intelligence can carry it out, leaving the refining the concreted juice into sugar to others who may be more fitted for the intricacies of the business. There is ample profit for all who may engage in either branch.

To those who cannot incur the expense of grinding machinery the following suggestion is offered:—

Grow for your cattle the best kind of sugar beet, cut it up with a knife and lever or any other means at hand, as fine as possible, put up a boiler with a wooden cover and steam pipe, as described in the CANADA FARMER, Vol. II, page 132; place the cut up roots in a vessel with a false bottom, and turn on the steam. During the whole time the roots are cooking the condensed water of the steam will be extracting a good deal of the sugar and other soluble substances from the root, and come away in a pipe bent like an inverted syphon, in a thick sweet state. Boil this down to the thickness of molasses, then add powdered quick lime, and keep the mass stirred until the "sacrate of lime" forms. Dip it out, place it in a strainer and let the fluid drain back into the boiler; boil again until thick; add more lime until you find by the taste that you have extracted all or nearly all the best of the sugar; put the sacrate away by itself for future operation,

and the thick residue into another vessel, it must be boiled down nearly solid or it will not keep. This substance or residue contains potash and other earthy salts and some sugar. In the continental factories they ferment the sugar into spirit, and burn the residue in a potash kettle into potash, and as the latter substance is nearly as valuable as sugar—if not wanted on the farm—it may be sold as potash; but as it will not be exactly like the ordinary potash of commerce it must be sold for what it is, or it will be condemned and sacrificed by the potash inspector at Montreal. The sucrate of lime thus obtained can be converted into sugar by the carbonation process, hereafter described.

By this means, the farmer, while he is feeding his cattle and stock with the boiled roots, is accumulating a store of a valuable article to be afterwards turned into money, as occasion offers. It must be borne in mind that the smaller the roots are cut up, even into dice of half an inch square, the more surface is obtained, and the more juice extracted by the steam, while the roots, by cooking, are all the better for the stock.

Hydrate of lime has been mentioned in the first of these articles. It is the same as powdered quicklime, and is prepared by dropping boiling water on newly burned lime, which must be covered up, and water added from time to time till the lime falls into a fine dry powder; this must be sifted in a fine sieve to take out the pieces of unburned stone and other impurities, and is then used as before described. "Milk of lime" is made by adding water to this powder until a liquid is formed. The stones all sink to the bottom, and the upper liquid is pure lime and water, and is fit for use.

To show the amount of potash obtained in the making of beetroot sugar: In the season of the years 1865-6, France produced 275,000 tons of raw sugar from beets, 100,000 pipes of from 100 to 120 gallons each of strong spirit distilled partly from the root and partly from the molasses, and 20,000 tons of potash were made from the refuse after distillation. The potash alone was worth two millions of dollars from that season's work.

VECTIS.

### Manure—Bones, and Bone Dust.

For accelerating the growth of grass and green crops bone manure is of great value. Within the last 20 years, this manure has excited great attention throughout the length and breadth of Great Britain, and is now in almost universal use for raising turnips in all the greater turnip-growing parts of that country. Of late years it has been looked upon with favour amongst the better class of Canadian farmers.

Long before the advantages to be derived from the use of well-crushed bones were generally known, many persons were aware of their fertilizing properties. At first they

were reduced to ashes by fire, but in this process there was great waste, for the oil and nutritive matter were considerably diminished by calcination.

Bones contain more than 53 per cent. of phosphate of lime, some phosphate of magnesia, carbonate of soda, and over 7 per cent. of nitrogen. To the quantity of phosphates contained is due their principal value, for these salts are largely removed by feeding cattle and the exhaustion of successive crops. Another way of reducing bones to powder has been to partially break them with a hammer, and then decompose them by the effect of urine at the bottom of the farm yard. Mills may be now obtained at a reasonable price, in which to reduce the bones directly to powder, and by this plan much waste may be avoided.

When bone dust is used for the turnip crop it is usually sown in the drills with the seed, or it may be spread to advantage, especially with ashes, along the drills when the young turnip puts forth its virgin leaves.

With regard to the durability of this manure, it has been asserted that on a field, part of which was boned forty years ago, the crops were on that portion, during fifteen or sixteen years, visibly better than on the remainder, although the land was all of the same quality, and the part not boned was manured with barn-yard dung. In another case reported to the committee of the Doncaster Agricultural Association, about three acres of light sandy land were dressed in 1814 with 150 bushels of bones per acre, since which time the land is said to have never forgotten it, but is nearly as good again as the other part, farmed precisely in the same way, with the exception of the one application of bones.

Upon the lighter and more calcareous soils the benefits of bone dust are more marked and more permanent.

This manure should be laid upon grass as early in the spring as the land becomes dry.

That bone manure has little or no effect upon wet land is generally conceded. It has been affirmed that broken bones have a mechanical effect in loosening heavy soils, but I think that a less costly application, say chip manure, would be equally beneficial. Upon thin sandy land, a liberal application of bone manure will be of great advantage, not only to the immediately succeeding crop, but in the improvement of the land for many future years, and in the efficiency, in the succeeding courses, of a smaller quantity to insure a crop.

For general use, particularly upon the turnips, manufactured bones, that is, bones boiled and ground, are most easily handled by the farmer; but farmers, at least in England, have found themselves imposed upon by adulteration on the part of the manufacturers, or more often by the deprivation by manufacture of the gelatin and oil which bones in their natural state contain.

There is yet another way in which to make this article at home. Even as flesh, if buried in the ground, will not bring its fertilizing powers to bear upon the earth until decomposition has set in, so it is necessary that bones should have begun to ferment before they become available for the use of the soil. To attain this fermentation, the formation of a compost of bones with earth and other substances will be found quite practicable. Mix twenty bushels of bones with four or five of barn-yard muck, cover the heap well, and the mixture will soon become decayed and pulverized. In this you will have the *bona fide* bone manure, with all its gelatin, phosphate, and nitrogen contained. This practice has been recommended by several very intelligent farmers, and I have it from a farmer near Guelph that its effects upon the turnip crop have been very decided.

Bones have the advantage of being easily procurable in our cities, and are compact for carriage. One hundred bushels will be found equivalent to thirty waggon loads of barn-yard manure. They may be collected and drawn home in the winter time, and can be preserved for a long time if kept dry. Moreover, they have one advantage over barn-yard manure, in that they carry no weeds to the field. They are most suitable to turnip culture, and a successful crop of these will indirectly benefit the farm in succeeding years. We have numerous instances of turnips with ordinary manure laid under them being destroyed by the fly, while those sowed with bone dust have escaped the ravages of this pest.

In conclusion, I would only add the following summary of the rules for the application of bone manure, as recommended by the members of the Doncaster Agricultural Association. These are as follows:—

That on dry sands, limestone, chalk, and light loams, bones are a very highly valuable manure.

That they may be applied to grass with great good effect.

That on arable lands they may be laid on fallow for turnips, or used for any of the subsequent crops.

That the best method of using them, when broadcast, is previously to mix them up in a compost with earth, dung or other manures, and let them lie to ferment.

That if used alone, they may either be drilled with the seed or sown broadcast.

That bones which have undergone the process of fermentation are decidedly superior, in their immediate effects, to those which have not.

That the quantity should be about twenty bushels of dust, or forty bushels of large, increasing the quantity if the land be impoverished, and also if the bones have been manufactured.

That upon clays and heavy loams it does not yet appear that bones will answer.

Farmers, do not waste bones, but collect all you can.

C. E. W.  
Ancaster.

**Manure—Ashes.**

Of mineral manures there are few of more importance to the farmer than ashes. All ashes may in one manner or another be made of great use upon the farm. The ashes of coals and cinders are of great benefit in loosening tenacious soils, besides acting upon such directly as a manure. In Canada, we burn wood altogether in the country, farmers therefore have the means of collecting every year large quantities of wood ashes. By chemical analysis it is found that wood ashes contain in large proportion all the more essential elements necessary to plant life except ammonia: or more correctly, all those which are not derived directly from the atmosphere. On the European continent, the value of ashes, and their powerful effect, especially upon young clover, are fully recognized.

In Germany the grass lands are kept in the highest state of productiveness by the sole use of this manure. Indeed, the question has frequently been mooted whether it would not pay the British farmer to import wood ashes from Canada for the purpose of agriculture. The chief and most important of the elements necessary to vegetable life in wood ashes are potash and earthy phosphates. Their quantity varies with the different kinds of wood—the harder woods containing more than the softer.

We have some very complete analyses of the ashes of different kinds of wood by eminent chemists. The following is a statement of the quantity of potash contained in some of the trees and plants:—

10,000 parts of	Oak	.....	15
"	"	Elm	..... 39
"	"	Beech	..... 12
"	"	Poplar	..... 7
"	"	Vine	..... 55
"	"	Thistle	..... 55
"	"	Vetches	..... 275
"	"	Beans	..... 200

It will thus be seen that both trees and plants contain in their ashes much valuable manure. Wood ashes being a powerful alkali, correct much of the acidity that may exist in the soil, and we as farmers may employ them without any distinction respecting the sort of timber from which they are obtained.

In the Western prairies, straw is often burnt off, and even in England, where great value is set upon barn-yard manure, the burning of the stubbles is not unfrequently adopted.

I have heard of a crop being so much benefited by the burning of a preceding dirty stubble as to produce a full forty bushels to the acre. This experiment was again tried in the following season. The stubble was partly ploughed under, according to the common practice, and partly burnt before turning over. The result of the crop was eight bushels per acre more on that portion

which had been burnt than on that which had been simply ploughed in. The same experiment was repeated, and a following crop of oats having been seeded down, the clover took well, while the portion on which the burning of the stubble had been omitted was choked with weeds.

To perform this operation effectually, however, it is necessary that our stubbles be left long, and it becomes a question whether the benefit of the ashes will counterbalance the loss of barnyard straw for our long winter's use. For my own part, I am inclined to think that the benefit from this practice arises more from the effect of the fire in the destruction of weeds and insects than from the small quantity of ashes that is produced.

Let the farmer think which way he will of the use of this manure, as above considered, he can hardly doubt the efficacy of wood ashes as a top-dressing on the artificial grasses. In the Netherlands, where their clover crops seldom or never fail, ashes are looked upon as a necessary top-dressing. Numerous individual instances of their beneficial effect have been recorded, and Sir John Sinclair adds the public declaration of eighty-three practical Flemish farmers that "they know by experience that when clover is not manured with Dutch ashes at the rate of 25 cuvelles per hectare (equal to nineteen bushels per acre) the following crop is very bad, notwithstanding any culture that can be given to the soil; whereas they always have an excellent crop of wheat after clover, and doubtless in proportion to the quantity of manure above mentioned being used." The farmers who subscribed this declaration must have been deeply impressed with the importance of these ashes, for besides being brought through the canals from Holland, they must in most cases have been afterwards carried from forty to fifty miles by land.

When ashes are used to top-dress meadows in Canada, they are generally mixed and laid on with gypsum in the early summer.

I think, however, the better plan is to lay on the plaster in the spring by itself, and the ashes in the fall by themselves; we shall thus secure a more liberal application of each of these valuable, but differently constituted manures to the crop. Wood ashes are so valuable to the farmer that it is a penny wise and pound foolish proceeding to sell them for the small bars of inferior soap which we receive from the peddling ash-man.

Let us keep our ashes and also our soot. The latter is most useful when applied as a top-dressing to the young turnip; it is very acrid and bitter, and has been found to prevent the ravages of the turnip fly.

C. E. W.

WIRE FENCE—G. L. C. will find the information he asks for in the June number of the CANADA FARMER of 1869.

**Manure.—Salt.**

Salt, for the use of the land, has now for many years occupied the attention of leading agriculturists, and many and various have been the results deduced from frequently conducted experiments in different parts of the world. These results have varied upon different soils, and under different conditions as to climate and modes of application.

Owing to the several forms in which salt has been discovered, there has arisen a difficulty among scientific men as to calling it a mineral, but I think we shall not be far astray when we class this product among the mineral manures.

Salt, as a stimulant, is various in its action, according to the mode and quantity of its application. If used in great quantities, it has a tendency, like lime or any other energetic stimulant, to destroy and rapidly disorganize all vegetable matter with which it may come in contact. When, however, this substance is used moderately or mixed with compost, its action is that of a gentle stimulant, giving increased vivacity to the vessels of the plant, even as it does to those of the human body, consequently promoting vegetation and acting as a useful manure.

Upon a naked fallow, it has been recommended in large quantities, in order to hasten the decomposition of any existing vegetable matter or putrescent manures. Its effect is in this case precisely similar to that of lime, and its quantity, when applied to fallow thus, will have so far diminished by incorporation with the soil by the time that grains are sown, as to act upon the crop with moderate stimulating power.

Mr. G. Sinclair, in his prize essay, communicated to the Board of Agriculture as far back as 1820, gives the following experiments with regard to the application of salt to wheat:—

**WHEAT AFTER BARLEY.**

	Produced per acre.
	BUSHEL.
Soil without manure	..... 16½
" dressed with 11 bus. of salt	..... 22½

**WHEAT AFTER PEAS.**

Soil without manure	..... 16
" with 6½ bus. salt with the seed	..... 17½

**BARLEY AFTER TURNIPS.**

Soil without manure	..... 12
" with 5½ bus. salt applied before sowing	..... 28½
" with 11 " " "	..... 28½

These experiments appear to have been made upon small plots of land, and with great care. Such results cannot be expected from the same trial upon a more extended scale, but are useful in giving facts as to the relative value of the application or non-application of salt.

The same authority also gives as the re-

sult of similar experiments upon wheat at a later period, the following:—

Soil, without manure for four years, produced 13 bus. per acre		
“manured with stable dung to a previous crop of potatoes.....	26	“ “
“with 5 bus. of salt per acre, and no other manure for 4 years..	26	“ “

Mr. Ransom, a Suffolk farmer, also says of barley, that his

Soil without any manure produced	30 bus. per acre.
“dressed with 16 bus. of salt per acre, in March .....	51 “ “

It has also been asserted that the growth of turnips has been increased in vigour by the use of salt in the preparation of the land. It is, however, generally conceded that salt cannot compare with farm-yard manure for the use of root crops. Experimenters on the application of salt to meadows have generally agreed on the improvement thereby effected in the quality of the herbage, but these have been so meagre and inconclusive as to leave us yet in darkness as to the comparative weight of crops thus manured, the seasons when best applied, or the quantity to be laid on different soils. Its effect upon the artificial grasses in the increased production of hay and the sweetening of the aftermath, have been generally conceded.

We all know how the addition of a small quantity of salt, sprinkled in successive layers upon hay in the mow or stack, tends to prevent heating, and gives a flavour to such highly relished by all stock.

I hardly dare to rest too long upon the arguments which have been adduced by many competent authorities in favour of the use of salt as a manure. Its application should rest rather upon practical and personal experience than upon theory, however specious such may appear. Yet it may be well noted that in England it has been universally acknowledged that grain, both in weight and colour, is, on land contiguous to the sea, superior to that grown upon the more inland farms. I believe that salt, with many other manures little used, may be found of great practical benefit upon our Canadian soils, far removed as they are from the influence of the ocean. I would therefore beg your readers to give a practical trial upon this subject, and give us Canadian farmers the results of such experiments in the columns of agricultural journals.

As a basis upon which to conduct such trials, we may recommend the application of from four to sixteen bushels per acre of *pure salt*; beyond this quantity, it will be found injurious to crops when sown with the seed. If laid in the fall, upon land intended for summer fallow, from thirty to forty bushels may be spread, according as the land is more

or less foul. This heavy application will help to kill off weeds and noxious vegetable matter, and will by incorporation with the soil have become sufficiently decreased in strength to act as a gentle stimulant upon the succeeding crop.

C. E. W.

### On Fencing.

The scarcity of timber in many parts of the Dominion makes it desirable that such as is used for fences should be economized in every possible way; and, in fact, the recognized principle in many parts of England and also in the United States, of fencing cattle in instead of fencing them out, might be advantageously adopted in those parts of Canada where fence timber of almost any kind cannot be had. It would take very little arguing to show that it is much easier and cheaper to fence in a pasture of ten or twenty acres than to protect a farm of one or two hundred acres by a ring fence, and then dividing the whole into sections of ten to twenty acres. To obtain this end it would require some legislation to compel parties to keep up their cattle. In the States, if a train comes to grief in consequence of animals being on the track, the owner of them has to pay all damages sustained by the railway company. Here, at present, the reverse is the case.

In the mean time, I will describe my plan for putting up a neat and substantial structure, by which means both ground and timber are saved, when compared with that ugly abomination called a “snake fence,” too widely known throughout this Province.

My fence is five hundred and sixty yards long, for which I selected five white oak trees, the largest of which was twenty-six inches at the stump; these I cut into seven feet lengths, and split them as I would have done for staves, from three to five inches wide, and from one to two inches thick. Having hauled the timber to the site of the fence, I sharpened each picket at the smallest end; I then stretched a line as a guide for operations, and dug a trench one spade wide and a spade deep, taking care to keep one side of the trench as perpendicular as possible. This side is used as a guide for setting up the pickets against. Then, as my soil is very stiff clay, I use an iron bar five feet long, and one and a half inches square, brought to a point at one end, with which I drill holes along the bottom of the trench, to set the picket points into. Having set them up along the line, I mount a box, two feet high, and drive every picket into the ground from eighteen to thirty inches, with a beetle about twice the weight of one ordinarily used for splitting rails. Care should be taken to distribute the heart pieces (which will be found thicker and more triangular) at regular intervals along the fence, for the purpose of giving it a more

equal stiffness. Having driven in the palings as above described, I take a three inch wide board and nail it along the side at the top of the fence, with two and a half inch wrought nails. Any pickets that are found so high as to be out of the line are then cut off with the saw, and a like piece of board is nailed on the top. Then fill in the trench, and, when completed, the fence should be four feet six inches high.

A fence which I built three years ago has never required five minutes' attention since, but when it begins to go at the bottom I intend to nail a piece of board along that also, the same as I have done at the top, and as a last resource, set larger posts at intervals along it, to which it may be attached. I have no doubt that, by ordinary attention and an occasional picket set in here and there, it will last in my soil thirty or forty years.

I should recommend, on sandy land, that the palings be dipped into or brushed over at the end inserted into the ground with gas tar, a pail of which may be had for ten cents at the gas office. Crude petroleum would, no doubt, answer the same purpose, and any old paint brush will answer to apply it with.

G. W. B.

Corunna, Ont.

### Draining.

A great portion of our farm being in pasture, we have had from one to two hundred head of cattle on it this year, and find it very advisable to do something towards draining it, at all events through the wet spots. We commenced by running the plough through every wet swaley spot on the farm, and threw out a furrow towards the right. Returning again in the same place, we threw out one to the left. This effectually drained all, and answered well with low places as long as we had the land in pasture. We had determined to put down regular wooden drains, but our crop did not turn out so satisfactory as was expected, and hence we must wait for another year; but we intend getting in a quantity of logs to the neighbouring saw-mill this next winter, and shall have plenty of lumber for all such purposes.

This draining is in our case really almost unavoidable. The land is rather too level, not low, but level, and a great deal of our clearing yet has the stumps remaining, and consequently there is considerable difficulty as yet in the putting down of effective permanent drains, but we can do as we before said, run an even open furrow through all the low spots, which will be of great advantage in next year's operations.

Any field where this is done previous to winter will bear cattle two weeks earlier next spring, without poaching the land.

I witnessed the working of the Carter draining machine exhibited at the fair lately,

and am quite of opinion that great benefit may be derived from its use, but it requires two teams to do the work well, and it also has many faults that, I have no doubt, will be eventually got over.

Our plan is to construct angular board drains by putting together, in the form of an inverted A, two boards bevelled so as to form an angle more acute than a right angle. I have witnessed the action of great quantities of this drain, and where laid in a subsoil that does not wash, nothing can do better, especially if kept nearly level. The drain box should be formed of a ten-inch board divided obliquely through the centre. This saves lumber, and makes a perfect drain, and the angle formed by putting both bevelled parts together offers great resistance to breaking in from the weight of earth above. About four nails in each twelve foot length will keep all steady until the earth completes the security of the drain by its weight. This plan affords the largest drain, and of the best shape, for the smallest quantity of lumber used. In some of my visits to others I saw drains of all shapes and sizes, but nowhere did I see any one so cheap and easily made.

No branch of industry is so open to improvement as a good, efficient, and easily worked draining machine. Some inventive genius will, no doubt, ere long meet this great want, and make a splendid fortune out of it. The great essential is to make a ditch about nine inches wide with one team, and to do this by continuously passing over the same ground. The machine must not cost more than \$30; and at that price one hundred can be sold from one factory annually

C.

### A Backwoods Farm.

#### SEEDING DOWN WITH TIMOTHY AND CLOVER.

So much has been written about the best season for this operation, that one scarcely knows which course is the best. My belief, as well as my experience, certainly is that almost any course will succeed, provided you do not bury the seed too deep, and you have a moist time to sow in, and a most important addition, namely, that the season happens to be suitable for the course you adopt.

We tried many experiments in thick and thin seeding, and succeeded best where about two pounds of broad, two pounds of Alsike, and two pounds of timothy, were sown to the acre; but then the season was exceedingly favourable in this instance. We tried ten pounds of broad clover alone to test the plant with—five pounds also alone—thus placing side by side double the quantity of seed per acre, and on the whole we had the heaviest crop from the five pounds. The ten pounds were certainly too crowded, and consequently too spindling, and al-

though very thick, the stalk was short. In this experiment both were sown during the same rain-storm, and in the same field, side by side; so the experiment was a fair one. I once tried seeding down 20 acres of new land in the fall, after the wheat crop had been taken off. All the seed came up well enough, but most of it perished by the winter frost.

Now, a more favourable season might have given much better results. I also once tried seeding down 35 acres of wheat stubble land in the spring, with timothy and clover. Our desire was to get fall feed as early as possible for a quantity of young stock. I had harrowed the land twice, once each way, and sowed on the seed at the before mentioned rate of two pounds of broad, two of Alsike clover, and two of timothy. It all came up, and there was an immense quantity of feed the same fall; but of course it was thin, as it had not stood out to any extent. This ought to have been cut for hay, and there certainly would have been at least 25 tons on the piece, but labour was very high, and hay plentiful, combined with a late hay-making some time in September, towards the latter end, preventing my doing so, and moreover, I wanted the feed badly. The feed, however, was stalky, late and coarse, and the cattle did not eat it very well, but the plan succeeded admirably, and I am confident I realized a good rent for the land from the pasturage thus obtained. The next year we cut an enormous quantity of the best hay, so, on the whole, it paid us pretty well. The expenses were light, and we had plenty of other work at the time to do, without putting the land to a more profitable use by sowing a crop in the preceding spring, and seeding down with it.

I noticed one great peculiarity about the action of seeding down on Canada thistles. Where the seed took well, and the land was mowed the following year for hay, the thistles were for the most part killed or greatly checked, but the pasturing did not seem to injure their growth at all, so we may safely conclude that all the benefit derived from this course lay in cutting the thistle in June or July, when it was in full flower, and not that the clover killed them. The following year there were none to speak of amongst the hay.

The greatest difficulty we experienced was the injury done by the feet of the cattle in wet fall weather, and our attention was necessarily turned towards the best method of draining.

**BEST ROOT SUGAR.**—A subscriber wishes to know what are "the best books treating on Beet Root Sugar." The best and latest English authority on the subject is entitled "Beet Root and Beet Root Sugar," by William Crookes, editor of *Chemical News*, published July 1870; can be ordered through any of the Toronto booksellers.

### Our Roads.

#### II.

BY ALAN MACDOUGALL, C. E.

Improvement does not apply only to those places that are already well to do, with well cultivated lands and good steadings. It really applies most chiefly to places that are backward, and the further backward a district is, the effects of a little improvement are far more readily discerned than the outlay of large sums in well settled lands. The breaking in of ten acres of bush land is a greater step and more valuable than the money expended in older districts in the erection of costly buildings.

So it is with our roads; we must learn to look upon them as the arteries and blood-vessels of the country. Emanating from the centres of busy life, they push out far into back roads, carrying learning, religion, and refinement with them; conquering the elements of nature, they conquer man in time, and bring him to see the blessings of education. Following the line of a road for forty or fifty miles, one would come across a great many different kinds of cultivation, and with these changes in agriculture, changes in the road—from the gravel road near a town to the bush road of the backwoods.

Sometimes roads in districts where good materials for their construction abound, are completely neglected; sometimes in clay countries, the roads, though excellent during dry weather, after rain become completely impassable. All these need to be treated very much in one way, and that way I shall endeavour to explain in a few homely words:—

We all know at the outset that the first thing to do to improve a road is to have it graded, that is, to endeavour to have an uniform surface upon it, cutting off the crests of hills and filling up hollows, giving the road bed a defined shape and width, and making allowances for the escape of water by ditches and culverts.

In carrying out grades, it is a point of great importance to have them so adjusted that after a load has been brought to a certain height, it is not allowed to descend before it completes the ascent, but rather that a resting-place be formed either on a level or a slightly ascending grade. I do not allude by this to the ascent of steep hills, but to the regular run of the country. Many roads, following too much the surface of the country, rise and fall gradually; first a rise of five feet is overcome, then a slope of four feet brings one to a point only one foot higher than he was 300 yards off, and so on, perhaps, he goes for miles. Many think this is a very good thing, as it eases the weight on the horse, but it is contrary to the example and practice of great English engineers, who have made some of the finest roads, I suppose, in the world.

It has always been the rule among all engineers, whether of the railways of the present day, or the roads of past ages, to arrange their grades in some fixed and determined order, and to obtain a proper ruling grade. This ruling grade is the steepest it is considered economical to put on the road for its safe and cheap working. It is so determined that when the weight is being drawn up it the force expended is not too great for the load brought up; that, in other words, there is as little loss of power as possible.

Telford, the great engineer, used to make the ruling grades of his roads rise one foot in thirty. To do this on a perfectly straight road would be in many cases almost impossible, or else so costly that improvement would never go on. Therefore, it was found necessary to take advantage of the sides of hills and creep round them, making the road longer. It is followed out to some extent in some of the gravel roads that run through the country, but on these even, the principle of a proper ruling grade, as well as the working out of it, is not properly carried out. There are a great many townships and even counties which are so level that there would be no great difficulty in forming regular grades on the roads, and it could be done, too, at no very great cost, if the statute labour of each year were properly and economically applied.

Different engineers have made calculations on various kinds of roads to find out what amount of power has to be used to carry a certain weight at a certain speed. It would be of no benefit to the present purpose to enter into any enquiry on this subject; if the general result be given it will be sufficient. The calculations were all made for English roads, with the worst grade 1 in 30, and on the general run of roads it is computed that, on a perfectly macadamized road a force varying from forty to sixty pounds had to be exerted to move a ton. On a gravel road the motive power had to be one hundred and fifty pounds to the ton, and on a sandy or gravelly road two hundred and ten pounds, or nearly ten per cent. on the standard ton of 2,240 pounds. These forces will all alter according to the speed. The greater the speed the greater the force employed; the less the speed the less the force employed.

On roads, these matters unfortunately are not so carefully considered as on railways, because the force employed exists in different conditions. When an engine has to go a certain distance in a certain time, taking a train of fifteen or twenty cars behind it, it consumes a certain quantity of fuel to accomplish that object. Experience has told locomotive managers and drivers how much fuel has to be burned, and if there is an excess, it shows itself very soon in the working expenses. Where stage-coaches were run for profit, as in England, these matters had to be considered, for horses had to be fed, kept and attended to. In this country, however,

the same attention is not paid to horsepower, as is unfortunately to be seen every day in one's life, when horses are overloaded or made to drag more than they, or twice their number should, over bad roads, where the waggons are often six to twelve inches deep in the mud. Horses are thus spoiled, time is lost, and power wasted.

### Arrangement of Farm Buildings

It is in the convenience of the cellarage for roots, and their handiness to the stock, that the bank barn has a great advantage over any other form. A description of the relative position of stabling and cellars is useless, as all your readers must have seen this form of building, and doubtless many own such, but a few hints on the arrangement of the cellar may not be amiss.

Potatoes should not be put away in heaps of more than three or four hundred bushels. I raise my potatoes off the floor by laying down scantlings and crossing them with slats far enough apart just to prevent a moderately sized potato from falling through. A little care is exercised to have the bottom covered with large potatoes so that none may fall between the slats. A current of air is thus secured from below. Along the front of the scantlings is laid a movable board; this acts like the damper in a stove, and this current of air may be cut off if necessary.

The bins are divided the one from the others by ats laid on each of two sides of upright scantlings. In this manner the partition becomes, also, a ventilator for each bin.

Swedes are not so apt to heat as potatoes, and may be thrown in heaps of any size without fear of heating. It is far better, if possible, to place potatoes and Swedes in separate cellars, for the former require to be kept warmer than the latter. Cellars should always be ventilated, and the best plan to adopt is to build a shaft up through the barn to the roof. This may be closed in the coldest weather.

In passing I would mention that the plan of bringing potatoes directly from the ground to the cellar is not a wise one, as the first heating of the fresh dug roots should be allowed to work in covered heaps in the field, rather than in the cellar.

**COW STABLES AND BYRES.**—There has always been much difference of opinion existing, as to the advantage of giving every cow a stall to herself, of making double stalls, or of standing all the cattle without division—the two latter processes allowing of more economy of space, and of heat being imparted from one cow to another.

Whichever plan is adopted, the floors should be carefully raised above the level of the drain behind, to allow of the cows standing high and dry, and of all liquid manures being carried off to the dung pile. The

gangway in front of the mangers from which to do the feeding should never, if possible, be neglected. The feeding is done in this way far more easily and the cows are less disturbed by the attendant, who has thus no excuse to be constantly striking the animals on the flank, with an injunction to "stand over!" The byres in which milch cows are tied at night should be warm, but at the same time well lighted and ventilated. For fattening beasts darkness is advisable, promoting quietness, and causing them to lie down more frequently during the day time. These latter should be separated, that they may not interfere with or annoy one another.

**OPEN SHEDS.**—If cattle are kept altogether or allowed to run much in the open air (the best way of wintering growing stock), they must be provided with open sheds into which to run in wet or blustering weather. It is useless to expect young cattle to thrive and to make bone, flesh and muscle continuously if the benefit of food is neutralized by exposure to the chilling storms of winter.

**SHEEP SHEDS** should be built on a dry and high spot, and should be left open on the south side, with the exception, perhaps, of such protection as will prevent the ingress of southerly snows and rains. The best manner of accomplishing this is to have wide sliding doors at intervals of every six or eight feet, which may be closed in very stormy weather. Cold will not injure sheep, especially the long-woolled varieties, if their wool be kept dry.

It is the greatest mistake to put sheep, as I have often seen done by farmers, under a bank barn. The warmth is too great for them, and if they should not show the ill effects of an overheated atmosphere, they will in nearly all cases cheat the owner out of the fleece, by shedding their wool themselves before shearing time.

**PIG PENS** should be warm; warmth is an essential to the growth and laying on of fat in swine. I hold that near the house is the best position for pig-pens in the winter. If they are properly attended to and kept clean, being often provided with clean straw and having a raised and separate sleeping apartment, they will never be offensive during winter, even if very near the house. The advantage of this position is that much wash from the house will be given to them which would otherwise be thrown away, or cast into the swill-tub, to be there frozen.

A good pig house should have a room above, in which corn and feed may be stored, with an agricultural furnace below to boil roots, tailings, &c.

Store pigs will keep and thrive during winter on very much less food if provided with a warm place in which to retire and lie down. Some arrange their straw inside a log fence to allow the pigs to get under, unmolested by horned cattle. This is undoubtedly a good plan. In an old number of the CANADA FARMER I gave a simple plan



for erecting a very cheap winter pen for store pigs. At this season of the year, it may be found of some use to the reader.

Build the sides by erecting a double straight fence with upright wood stakes, one side being a foot or more higher than the opposite. Stuff between these straw, and for a roof lay stakes across the side resting on the fences, and roughly thatch with straw. We can in this way make a very warm and cheap temporary pen. C. E. W.

A farmer who runs his farm without a record of expenses and the cost of different crops, is like a ship without a compass or a log book.

Notwithstanding the scourge of war, the principal beet sugar districts of France have manufactured 38 per cent. more sugar this year than in the season of 1868-9. The season has been admirable for the growth of the beet.

**DOUBLE-FURROW PLOUGH.**—One of our English exchanges, speaking of these recent additions to farm implements, says:—That double-furrow ploughs will quickly come into use on lands not exceedingly strong may with safety be predicted, as a plough of this description, with three horses and one man, will do quite as much work, and as well, as two single ploughs working each two horses and one man, thus producing a saving to the farmer of one horse and one man.

A correspondent of the *Rural New Yorker* gives his experience with orchard grass as follows:—"I have had it growing on my farm for five years, and have found it valuable for a pasture grass and for hay. It stands the drought well with me, and the winter also. Its roots penetrate the soil to a good depth, and grows in the shape of a hen's foot. The stems grow up bunching. The seed can be sown in fall or spring; but the best time is to sow it in fall. The soil on which I have it growing is clay. The seed can be sown with clover in spring, as the two together make an excellent grass for hay or pasture."

**A CALIFORNIAN STEAM DITCHER.**—The *Scientific Press* gives the following sketch of a steam ditching machine now on exhibition in San Francisco: "On a frame 41 feet long and 12 feet wide, mounted on four wooden wheels, are placed a 23 horse power steam engine, the cutting apparatus, and the belts for raising and discharging the earth. There are four revolving knives for pulverizing the ground, two feet in width, and having on each side a blade for turning the sloping edge of the ditch. These can be raised or lowered as desired. The earth is thrown from them upon a gutta percha apron or belt, which elevates it to the rear of the machine, whence it is thrown off to the side of the ditch by a horizontal belt. The machine is claimed to be able to cut daily from one to two miles of ditch 4½ feet deep, 4 feet wide at the top, and 28 inches wide at the bottom, three workmen and an engineer being required to run it. The entire weight is about eight tons."

## Stock Department.

### A Plea for Unsheltered Cattle and Stock.

Winter weather is now on us, and heavy snow-storms, the natural consequence; and, while we are all comfortably housed, we sometimes must think of the wretched unsheltered stock that many improvident people have exposed to the inclement weather. Cows suffer most, especially when night and morning the few pints of milk they are capable of yielding are periodically drained—yielded more from the natural instinct of the animal than from any plethoric feeling caused by the secretion. I very much question if cows so cared for would feel their milk oppressive in the least if the milking were to cease all at once.

In many of the above mentioned improvident cases the food of these miserably neglected animals is little else than straw, and that too often bad, and often given without shelter. I have myself seen hundreds of well-doing farmers whose cows had no better shelter than the lee side of the barn or straw stacks, and whose animal heat was not sufficient to melt the snow that fell on their backs. The result is that the habit of standing exposed, with the feet near together and back distorted, causes permanent deformity; and in addition, protruding bones, staring hair, and miserable appearance generally are the inevitable consequence.

If these animals, even thus poorly fed, were provided with a warmer shelter, the utility of this inefficient food would be wonderfully increased. As large a proportion as 90 per cent. of such neglected stock often die before spring (if over nine or ten years old), and if young enough to winter alive, will be so reduced as not to regain their condition before July or even later. And if they happen to calve about May, for nature will under almost all circumstances have its course, it is highly probable that the deaths will be increased 5 per cent. in addition. No doubt, the greatest cause for this neglect is generally poverty; sometimes, but let us hope rarely, it is certainly absolute negligence. Be it poverty or neglect, the process is the same, and wretchedly depreciated stock the result.

The same cause, and with like results, often exists with colts. They are, of course, always young, and will go through a great deal of hardship, and as they are generally bred of as tough and hardy a stock as can be procured, do not suffer quite as much, and not being troubled with family affairs, have more time and opportunity to recuperate.

Old horses, however, deteriorate very fast under such treatment, and seldom again come to the state of health and condition they previously enjoyed. Their wind is almost certain to be injured, and thence also

comes the long array of diseases often incidental and attendant thereon—Heaves-Roaring, Wheezing, Chronic Cough, and often heavy colds, and sometimes Strangles, Glanders and Farcy. All these diseases and many more proceed from neglect and cold, combined with exposure to wet and snow-storms.

Twenty per cent. is the least extent of such depreciation, and this would afford to purchase a reasonable amount of care for a full year. It is in these things that great "leaks," so to speak, are continually running to waste in a farm, and they must be looked to and stopped.

For many years, my plan and treatment has been, for those horses that were not required to work steadily during winter, to turn them into a well littered straw yard, with good warm shed shelter, supplied with plenty of water, and fed with chopped straw and about three quarts of ground grain daily. Towards the end of March I take them into the stable, and feed with two gallons of grain, and substitute hay for the straw previously used. The result is that in two or three weeks we have a remarkably thriving animal, fit for any heavy spring work. When this fairly sets in I always have found that chopped hay and ground grain is the very best food a horse can have. I never allow much hay at night, only just sufficient for a bait, and the horse is always ready for his morning feed, and, moreover, is much more inclined to lie down and rest all night than if stuffing himself with hay.

No one who has ever tried this course will deny its utility. You need never hesitate to feed whether the horse is hot or cold—no danger exists of founder or sickness.

I have wintered and fed colts in this way for years, and have had large heavy teams of three-year-olds as well able to stand the spring work as other horses; and these colts were never stabled all the winter, but they always had good warm shed shelter, with plenty of straw, and some grain. Young yearling colts must have hay and grain; but hay alone is not nearly so good for colts of one, two or three years, as straw and grain, and the cost is probably less, whereas the benefit is certainly much greater. In addition there is an immense deal of trouble saved in looking after stabled horses.

In wintering hogs, food is not of such paramount necessity as warm shelter with plenty of bedding. We never feed our hogs near their bed, especially if slop feed of any sort is used, but invariably provide boxes of about six feet by ten, with small or large inlet for the size of the hog, so that they can be separate according to the different litters, often one division within the other, but always supplied with plenty of bedding, sufficient for the animals to be completely buried, if they choose to cover themselves entirely up.

Well-bred hogs, so kept and cared for,

will keep fat all winter long with one meal a day, and some slop occasionally at supper time for drink. Any hog that is not peevish enough in his nature to sleep two-thirds of his time in winter will never find an advocate for his life in me.

This arrangement of boxes or boarded up small rooms, as above described, some having large holes for the ingress and exit of the full-grown animals, and others having smaller holes, so as to effectually divide the sizes, answers well. Before we did this, we often found a small pig smothered amongst large ones; but since we have followed another course, we never have this happen. We find that by feeding with peas amongst the bedding, occasionally, in each division, the hogs naturally divide themselves according to their capabilities of passing through the hole provided, and thus it soon becomes habitual for the little ones to sleep alone, leaving the older and larger hogs outside their enclosures.

C.

### Steaming Food for Stock.

In answer to several enquiries on the cost and apparatus required for steaming food, I propose to describe a steaming house that I have often seen at work, before leaving England. In a former number of the journal there was a description of a similar establishment, but on a limited scale, probably too much so for some people to use efficiently. This enterprise was conducted on a farm in Hampshire, England, and was used most effectively for many years.

The building needs no description, as any building or shanty would, of course, answer as well.

The boiler was a large-sized potash kettle set in an arch, with a large space for fuel underneath. There are many opportunities of getting better ones here. The fuel used was what are called in England "Bair faggots," that is, the large limbs of the trees mixed with some smaller brush, and all bound up with withis. This bundle was five feet long, and the fire hole would receive a stick without cutting. We always used to cram in a faggot whole.

The ash-pit was deep, and the flame ascended all round the kettle, and had to descend again about two feet at the back to the outlet that communicated with the chimney. This was a very great improvement, and saved an immense quantity of fuel. Until the steam was well up, and everything hot, the fire was allowed to escape into the chimney through an opening provided with a damper at the very upper part of the space, under the kettle. Afterwards, and when the fire and steam were well going, the damper was closed, and the flame forced to descend and escape into the lower outlet. This course kept the great mass of flame playing round the kettle, and none could get up the chimney without giving out its heat.

We tried steaming the food about one hundred feet away from the furnace, but found it more practicable to remove the steamer close to the boiler, and by arranging the steamer on handles or "tugs," placed about the centre of the weigh, to be moved, we could invert the whole quite easily, and empty out the contents into wheelbarrows or handbarrows, and so convey it away to the feeding cistern.

The good arrangement of the boiler or kettle was greatly assisted by a curb of two feet high, being hooped on to the chime, exactly similar to a barrel being hooped on to its head, the flange of the kettle forming an edge to be received into the course cut in the ends of the staves to fit it. The other end of the stove had a head firmly hooped up, and which was sufficiently thick (about 2½ inches) to bear a pressure of steam of about 1½ to 2 pounds to the square inch.

The safety valve was about four inches square, and consisted of a trap of wood covered with linen, so arranged with a hinge to the head as to lift readily if the pressure increased too much. The advantage gained by the curb was that the boiler held water enough to steam all day without the necessity of filling it up. A force pump was thereby dispensed with.

In steaming roots, there will necessarily be a large quantity of distilled water mixed with sap, that will accumulate in the bottom of the steamer. This was taken off from under the false bottom at intervals of twenty minutes, with a cock inserted in the bottom of the steamer, underneath the false bottom with which it must be provided.

The best steamer we could find, and the most easily handled, was a 150 gallon wine-cask, balanced as before described on pins or lugs at about the centre, so as to admit of its being inverted. We found it absolutely requisite to have a two-inch steam pipe communicating with the steamer from the boiler. We tried smaller, but they did not answer as well. Wooden pipes are best. There was a screw coupling to connect the steam pipe, so arranged as to be easily unfastened when the charge of roots was ready to turn out. From fifty to seventy minutes usually sufficed to steam the roots, which were cut into small pieces, and ten minutes was required to empty the steamer, and ten more to fill it; and the work went thus steadily on all day. The roots, being entirely for pig feed, were dumped into brick cisterns, and as each layer of roots, of say six inches in thickness, was filled in, about half a bushel of meal was scattered over it, and the heat of the boiling roots partly or altogether cooked it. When the cistern was full it always fermented, and as such it was believed to be much better for feeding hogs. I recollect perfectly that when at home we used just such a steaming apparatus as is here described, and many others also in our neigh-

bourhood did the same. The steamed roots did not, however, answer for pig feed well alone, especially mangel wurzel. The hogs scoured badly, and some meal was absolutely requisite to counteract this. Turnips were better in this respect. Potatoes were excellent, and all our hogs were invariably fattened on barley meal and potatoes. Peas were more expensive, and were considered to make rank pork in comparison.

Fattening cattle will not do as well on steamed roots for food as on raw, unless meal is mixed in, and the whole so arranged as to be quite fresh and warm every day. The case is altered with milking cows; any kind of slops will force their milk, and make excellent butter, if managed properly; but cows that are accustomed to be so forced will soon do little without it during winter. I am sure that if a large tub were so managed as to secure a succession of layers of alternate chopped straw and roots, which, after having been steamed, was kept heated and fed warm to cattle of any description (other than those which were being forced to fatten with great rapidity,) every farmer would keep nearly double the stock on the same food, and the manure would be very valuable.

Such an arrangement would not be a very expensive one, and the whole could be arranged and put up for about eighty dollars, exclusive of buildings, and would last half a lifetime.

There would certainly be a continuous labour attached to it, as the food must be prepared at least three times a week, and probably heated up each day in very cold weather; but the dairy stock alone would be so much improved by it, and the winter butter so increase, that it would more than fully pay all expenses; and when spring grass came, cattle so wintered, although probably not fat, would be in very thriving condition, and would become good beef by July, when beef always sells so well.

C.

### Oxen

In ancient times, when agriculture, yet in its infancy, was confined to the raising of grain exclusively, and when every farm in Great Britain had its run of pasture over neighbouring uninclosed wastes, ox labour was employed altogether; and indeed it is so yet over the greater part of Europe.

They were sufficient for the slow labour employed in an alternate course of grain and fallow, and where going to market was a matter of rare occurrence. They were maintained at little expense on the free pastures in summer, fed on straw through the winter, and when too old to work were consigned to the shambles. Indeed, it is doubtful whether the farms under the defective management of early days would have been able to support horse teams and also oxen for food. Old Fitzherbert in his Booke of

Husbandric in 1523 tells us, "therefore mosemeth, all thynges considered, the ploughe of oxen is much more profitable than the ploughe of horsen."

But, after the introduction of artificial grasses, of roots, &c., into field culture, had become general, a new era dawned on agriculture. The fields which were formerly fallowed to recruit their strength were now devoted to the cultivation of green crops, from which manure was made, to return to the land, ever improving the soil, and ever producing increased crops. The demand for meat became greater, the fattening of cattle was no longer confined to a few, but became general. Sheep were introduced to the farm in larger quantities, and to work the land expeditiously it was found necessary to have recourse to the horse more generally.

Now in Canada we have adopted the modern principle almost universally, but I am inclined to think that in a country subject to such a long winter, in which horses have to be fed high, and in which we, in the older settlements, have much difficulty in employing our horses steadily, the habit of keeping a working yoke of oxen on every farm of size, is not only advisable, but of great advantage.

Now, there are arguments showing the advantages of each, and they may thus be summed up :-

Horses perform their work better, and more expeditiously than oxen, are more tractable, and are far better suited to the road.

On the other hand, oxen are supported at less expense of food, farriery and harness; are less liable to casualties and require less attendance; are more steady at heavy draught, and perform more work in proportion both to their first cost and that of yearly feeding; increase in value while working, and when no longer wanted can be stall-fed, and sold at a better figure than when first owned.

It has often been urged against oxen that they are slow at the plough. Now, this is the fault of their training. There is an immense difference in the walking pace of different horse teams, and this difference is mainly owing to the manner in which they have been "broken to walk." A great improvement may be made also in the pace of an ox team by care and judgment on the part of their trainer.

I have seen oxen that, owing to the greater facility of turning at the headland, would outplough an ordinary team in a long day.

In my next, I propose to show how this quick step may be taught, and to offer a few remarks on the rearing and training of oxen.

C. E. W.

Beef is expected to be scarce and dear next March and April in Ottawa, as a great number of the largest stock feeders in the county of Carleton will have no fat cattle to sell on account of their losses by the great fires last summer.

Points of a Good Breeding Ewe.

Now is the time, when sheep are housed, to go carefully over the flock, take out those ewes which have heretofore missed the ram, or which from some faults of shape, formation, or symmetry, are not suitable to breed from, and put them up for the butcher. It may benefit our readers if we give a short resume of the points of a good ewe. They are as follows :-

Head medium size (too small a head is often accompanied by want of size in the sheep). Lips thin. Under jaw fine and thin. Ears wide apart and well covered with wool. Forehead well covered with wool, especially between the ears. Eye full and bright, but not prominent. Neck of proportionate length, thin next the head and enlarging towards the shoulder, where it should be broad and straight on top, and not what is usually called ewe-necked. Breast wide and deep, projecting, well formed between the forelegs; this latter is an important point, indicating plenty of room for the lungs, a good constitution and tendency to make weight. Shoulders should be on a level with the back, but not too wide from tip to tip. Back flat, but not hollow from shoulders to setting on of tail. Rump long and broad. Tail set on high. Hips wide. Close ribbed. Fore legs straight from breast to foot, and not knock-kneed. Hind legs full at the hock, and turning out slightly from hock to foot.

C. E. W.

George Miller's Sale.

On Wednesday, Jan. 18th, the sale of Mr. Miller's thorough-bred and grade stock took place at Riggfoot, in the township of Markham. The roads were very good, the weather all that the most sanguine could have wished, and the attendance large.

The following is a list of the animals sold, names of the purchasers, and prices obtained :-

THOROUGH-BRED BELLS, AGED.	
Bell Duke of Oxford—Robert Miller; afterwards sold to Birrell & Johnston, Maple Hill, Pickering, for \$300.....	3225
Duke of Riggfoot—J. R. Craig, Edmonton ..	3225
THOROUGH-BRED BELLS—CALVES.	
Prince of Sparta—George Mackay Co. York..	85
Statesman—Robert Miller Pickering .....	195
Baron of Riggfoot—T. W. Perry, S. Ott.....	100
Royal Arch 2nd—W. Armstrong, Markham....	35
Markham Duke—W. Thompson, Markham....	90
THOROUGH-BRED COWS, HEIFERS AND CALVES.	
Mara—Birrell & Johnson, Pickering.....	345
Mara 3rd, and calf at her foot—John Miller, Markham .....	410
Royal Mary—Joan Wilson, Pickering .....	190
Miss Barrum—Simon Beattie, Pickering.....	335
Miss Syme—George Tenant .....	128
Lady Jane 6th—J. C. Snell, Co. Peel.....	245
Dairy Maid—J. Gardner Co. Peel.....	225
Miss Roy: o 2nd—S. Carswell, Co. York.....	110
Miss Lucy—J. C. Snell, Co. Peel.....	230
Rose of Warham—J. Gardner, Co. Peel .....	315
Princess of Bourbon—Birrell & Johnson, Pickering .....	250
Maid of Ladratrie—Franklin Wickson, Pickering; afterwards sold to J. C. Snell, Co. Peel .....	215
Wild Rose 2nd—H. Reazin, Co. Halton .....	100
—Heifer—H. Reazin, Co. Halton.....	99

GRADE COWS, HEIFERS AND CALVES.	
Susan Gray—R. T. Hackiss, Markham.....	80
Blossom—George Stockdale .....	125
Mary Ann—J. Keefer .....	71
Calf—J. Keefer .....	30
Miss Parly—J. Ingain Markham .....	83
Maggie—D. Emile, Vaughan.....	200
Red Rose—H. Reazin, Co. Halton .....	40

DAIRY COWS.	
—W. Foster.....	80
—J. Scott.....	22
—J. Higgins .....	20

GRADE BULL CALVES	
St. Elmo—Calvin Davis .....	75
Pilgrim Boy—J. Russell, Co. York .....	25
—J. Jenkins, Pickering .....	10
1 Steer—J. Pike, Markham.....	35

BERKSHIRE PIGS.	
Boar No. 1—J. Hope, U. S .....	21
" No 2—J. Cowrie Scarborough .....	15
Sow—J. Hope, U. S .....	12

COLTSWOLD SHEEP.	
Two Ewes—Wm. Miller Pickering.....	78
Do. —J. Davidson, Pickering .....	60
Two Ewe Lambs—J. J. Davidson, Pickering ..	30
Do. —J. J. Davidson, Whitby .....	24

Is the Ox so Stupid?

A country parson overtook a man driving a yoke of oxen. The reverend gentleman was shocked to hear the continued stream of oaths which the countryman found it necessary to pour out upon his cattle. "I think, my friend," said the clergyman, "that I could drive your yoke without using such wicked language." "Try 'em," was the curt reply. The gentleman did try; the cattle immediately fell into a crawling pace, and his mild solicitations, even though accompanied by a loud tone, excited gesture, and even a plentiful application of the gad, were unable to produce an accelerated gait. The gentleman gave the task up in despair, and resigning the oxen into the hands of their former driver, found to his disgust that a renewal of the string of oaths had the desired effect. Now which was the more stupid, the oxen which had been taught that oaths were the only expressive form of man's wishes, or the cub who thus educated them? I leave the answer to your readers.

Cattle, like ourselves, are the creatures of education and circumstances. The ox, when he has lost the wild freedom of the forest, and has become the slave, and not the friend of man, loses much of his instinct without receiving that semblance of reason which we impart by education to our companions the horse and the dog. But when we put the harness on him—when he draws our waggons or our ploughs—he shows in many little traits both intelligence and affection. He is naturally a slow-moving animal; but like that class of human beings who are slow to action, he is capable of great endurance and lasting gratitude for kindness. If we educate our oxen by brutality, we can expect to teach him only stubbornness; but if, on the other hand, we bring him up in kindness, we shall find him as docile as the horse, which he will often beat out of the field in stoutness and honesty in work.

In countries where his services are more extensive and his education more complete,

he shows a great development of intellect. In Africa the Hottentot uses him as we would a horse, teaching him to walk, trot or gallop at the will of the rider. There the daughter or the wife will be mounted on her particular bullock, extravagantly adorned with all sorts of finery, her hair streaming with fat, and a black rim of paint around each eye, she sits *jambe de ca, jambe de la*, (straddling), and with considerable grace guides her steed by the nose.

In the southern parts of Africa he seems to be more intelligent even than the horse, and his sagacity is only equalled by that of the trained dog. There he is used in the field to herd the sheep, driving them wherever he is required by the signs of his master; he shows no mercy to plunderers, and often develops that unpleasant inclination which we see in strange dogs, to attack strangers. Every army of Hottentots is accompanied by its regiment of bullocks, who by command will strike down and trample an enemy, often securing the victory before their masters have had time to strike a blow.

These facts, well authenticated by reliable reports, may well teach us that nature has implanted in this great tribe of mammalia a spirit of docility, obedience and fidelity which we should do well to consider in training oxen to do labour in the field. By kindness we may train our oxen to do our work as willingly as horses, and we should find that it is very unnecessary to treat them with that brutality which they too often receive, from cruel and ignorant drivers.

C. E. W.

**SWINE EXHIBITION.**—It is proposed by the Illinois Swine Breeders' Association to hold an extensive exhibition of swine in the coming fall. The place of holding the show is not yet decided, but in all probability Chicago will be selected for that purpose.

**REMARKABLE LONGEVITY IN A SHEEP.**—In the year 1847 a speckled ewe was brought from Shetland and given to Mr. Buist, of Ormiston, who, unwilling to kill what he received as a gift, has kept it ever since. This ewe, which died recently, was twenty-eight years old. It may safely be said of it, without the risk of contradiction, that it was the oldest sheep in the British Islands.

An Ohio hog raiser advocates the system of pasturing on clover during the summer. He presents, as the advantage of this plan the statement that an acre of ground in clover will pasture five hogs four months, and that it will take the corn from half an acre to feed them the same time. The cultivation of the corn he counts equal to the rest of the other half acre. He further claims that hogs pastured on clover are in far better condition than if fed on corn, as they are better framed, healthier, and eat better, and also states that the land is enriched by the clover pasturing.

## Veterinary Department.

### Ontario Veterinary College.

This valuable institution re-opened for the second term of the winter course of instruction on Wednesday, the 4th of January, with a greatly increased attendance of students, the number amounting to close on fifty. This is the largest class that has ever been enrolled at one time in the school since its commencement, and the steady progress of the institution must be a matter of congratulation to all concerned. Veterinary skill is more than ever needed in Canada, now that the value of its live stock has so notably increased by enterprising importations from abroad and careful breeding at home. The intelligence, also, of the agricultural class keeps pace with the progress of the times, and the number of those who will be content to entrust their animals to the care of ignorant farriers is rapidly diminishing. The services of the educated and trained medical practitioner are better appreciated and in growing request. The prosperity, therefore, of such an institution as the Veterinary College is at once an evidence and promoter of agricultural progress.

The school is sustained with thorough efficiency under the direction of the Principal, Professor Smith, and an able corps of coadjutors. The place of Dr. Bovel, during his temporary absence from the Province, has been filled by Dr. Barrett, who gives instruction in animal physiology.

### Sudden Death in a Calf

To the Editor.

SIR,—I bought last fall a calf which was rather weak, and to which we gave every morning a pailful of skimmed milk, which it drank very greedily. One day last week the girl who fed it came running into the house, and told me that all at once, while drinking the milk, it began to stagger and fell down. I went to the calf-house, and found the poor thing with swollen belly and protruding tongue, groaning most pitifully. It was in the agonies of death, and expired after a few minutes. I have heard since that similar cases of calves dying while drinking a pail of milk, are not at all rare, and that it goes by the name of choking. Is it that the milk gets into the windpipe, or how is it to be accounted for, and is there anything that can be done for it?

INQUIRER.

REPLY.—It is very seldom that animals are choked from taking liquids of their own accord. It occasionally occurs when liquids are forcibly administered. Part of the drench may pass into the windpipe and descend to the bronchial tubes and produce suffocation.

Perhaps there was some solid body contained in the milk that became lodged in the gullet and caused death. A *post-mortem* examination would have revealed whether any of the milk had passed into the windpipe. Possibly the cause of death was in no way connected with the drinking, as the animal was previously in a weakly state.

### Swelled Legs

To the Editor.

SIR,—I have a young mare that is troubled with swelling in her hind legs. In other respects she appears well and hearty. At present she stands most of the time in the stable, and does not get much exercise; but when she works regularly, her legs swell as much as ever. J. G.

REPLY.—The swelling is the result of a weakened condition of the absorbents of the limb. You must apply a dry bandage to the parts immediately after exercise; and give internally one drachm of the iodide of potassium daily until twelve doses are given. Hand-rubbing the leg is also attended with benefit.

### Horses Dying from Gorging with Chopped Straw

More than one-half of the sickness and mortality amongst the lower animals depend upon ignorance, carelessness, and mismanagement. Preventable causes and sanitary blunders have much to answer for. It is not old age or natural decay, it is not over-hard work, it is not always over-cold and changeable weather that maim and kills off so many horses prematurely. Over-crowded, low-roofed filthy stables are answerable for much disease. Filth and darkness proverbially breed disease. Errors in diet are constantly adding to the lists of ailing and dying. During the autumn months in ordinary seasons numbers of horses suffer and some die from eating too freely of tough, indigestible clover and vetches. The usual symptoms consist of colicky pains, dulness, abdominal distension, generally terminating after a day or two in more violent evidences of inflammation of the bowels. Throughout many parts of England where cut food is in common use, the heavier descriptions of horses are being now supplied with large quantities of wheat cavings and of wheat straw cut into chaff. In moderate amount, in conjunction with mashes, or other soft food, such fare would do little harm. Given in quantity without moistening, it is most injurious. Being in a tolerably fine state of division, it is rapidly swallowed by hungry horses; it undergoes little softening from the saliva and trifling trituration from the teeth; its hard, tough, silicious textures resist to a great extent the solvent properties of the gastric and other alimentary juices; throughout the small and even in the larger intestines, the chopped straw is found imperfectly broken up; it retains its original

form; its transverse fibres are in part disintegrated; its longitudinal fibres, however, are little changed, and have still all their stiffness and hardness. Thus imperfectly reduced, the straw can yield little nutriment; it becomes a mechanical source of irritation; it is not in a sufficiently pulvaceous form to pass rapidly through the bowels; it accumulates in the small and still more in the large intestines, giving rise to serious derangement.

The cases vary somewhat in their intensity and duration. They are ushered in by colicky pains, pawing with the fore feet, straining, suddenly lying down, rolling, and as suddenly getting up again. In the less acute cases the patient in the intervals between his colicky spasms is very dull, hangs his head, and does not care to be disturbed. There is gradually increasing abdominal fulness, but there is seldom the sudden and excessive tympanitis which follows the eating of wet clover, green corn, and the like. Except during the paroxysms of pain, the pulse and breathing are not much quickened. The attendants usually fancy that something is amiss with the bladder, and say that if the animal could stale freely he would be all right. This straining and effort at urination do not, however, indicate any actual disease of the urinary organs themselves, but are merely the irritability depending upon sympathy with the adjacent deranged digestive system.

If the patient, from natural causes or from rational treatment, is not relieved within twenty-four hours, inflammation of the bowels is apt to supervene. The pulse rapidly rises to 80° or 90°, and remains at that high figure; it becomes small and weak; the breathing is quickened; there is more or less injection of the visible mucous membranes; the pain, instead of being occasional and spasmodic, becomes persistent, and is little abated by any treatment. As death approaches, the animal becomes quieter and duller, his pulse imperceptible, his skin bedewed with cold perspiration; he stands usually with his head away from his feeding-box, and drops suddenly down, often dying without a struggle.

The causes of death are not difficult to discover. In the lower parts of the small intestines the rough, hard, undigested straw-chaff is found in considerable amount adhering to the walls of the canal. In the colon the chop, little changed, dry, tough, and hard, has accumulated literally in bucketfuls; whilst in large amount it has also intruded into the *cæcum caput coli* which in an ordinary state of health contains little solid matter, but is full of fluid. In most cases there are comparatively slight traces of inflammation even in the small intestines. In some instances twisting and invagination of the small intestines are found, evidently the result of the hopeless straining to get rid of the mass of indigestible matter. From the same violent straining also arise ruptures of the intestine, which

are not uncommon in this class of cases. Death seldom occurs within thirty-six hours; is more common about the third or fourth day; but where treatment has been faulty it may supervene even after a week's illness.

The principles which should regulate the treatment of these cases are obvious enough. The horse must at once be restricted to a sloppy mash diet. All chaff, chopped food, and in the first instance even hay, should be scrupulously withheld. Water and all manner of drinks should be freely supplied, so as if possible to moisten and wash onwards the crude indigestible mass. Farther, to hasten its expulsion, a full dose of physic is requisite. For a big horse six or seven drachms of aloes may be given in solution; and, if no effects are observable in fifteen or eighteen hours, a second dose of four or five drachms also in solution should be given; or instead of the aloes may be substituted a dose of oil and calomel. To encourage the unloading of the bowels, back-racking and soap and water clysters should be resorted to at intervals of two hours. To relieve the painful spasms, antispasmodic draughts consisting of ether, ammonia, and opium, may be given. For the same end, hot fomentations and mustard are applied over the abdomen. The more sensitive nature of the horse, and his greater liability to inflammation of the bowels, prevent the possibility of cutting into the digestive canal, and mechanically removing masses of indigestible food, as can be done with perfect impunity in cattle. Even after the bowels are partially emptied, it is most important to watch the animal, attend to his diet, and, if need be, continue the administration of laxative medicine. Frequently after a few movements of the bowels all danger is thought to be past; the animal returns to his ordinary feed; the bowels again become overloaded, and serious relapses thus occur. After attacks of indigestion, colic, or serious accumulations of indigestible matter, the digestive canal, it should be remembered, continues for some time in a weakly and irritable state, and patients that have suffered from such attacks should accordingly be carefully dieted, and supplied only with easily digestible, comparatively soft, and not too bulky nutritive food.

ABORTION.—In reply to "A Subscriber," who writes that several of his cows have recently "slipped their calves," we would state briefly that this accident is often produced from high feeding, or anything that is likely to disturb the connection between the mother and the fetus, as injuries, over-driving, and the excitement caused by sympathetic influence. When an animal aborts it is apt to spread; therefore, whenever a cow shows signs of abortion, she should be removed from the rest of the herd, and kept segregated for a considerable length of time.

Abortion in cows is still very prevalent in Herkimer county and other parts of New York.

## The Dairy.

Canadian Dairymen's Association.

FOURTH ANNUAL CONVENTION.

The Canadian Dairymen's Association held their fourth annual meeting at Ingersoll, commencing Wednesday, Feb. 1st the President, Mr. Jas. Noxon, occupied the chair.

A brief morning session was devoted to the usual routine business of appointing committees and reading minutes.

In the afternoon there was a very full attendance, completely filling the hall. The committee on the order of business having given in their report, the President, in accordance with their arrangements, delivered his address:—

PRESIDENT'S ADDRESS.

We again assemble together with the labours of another year added to our experience in the great and important interests which this association was organized to foster and promote. It is most gratifying to know that the past year has been one of unusual prosperity to dairymen; and to whatever extent this Association has contributed to the enlargement of the dairy interests of the country, we may accept the result as the goodly fruit borne by the united and well-directed efforts of its members. It is, indeed, a most worthy and noble pursuit which seeks to elevate the condition, by augmenting the wealth, of the agricultural classes; and that these objects and aims may be the more effectually secured, we invoke the aid of men of science, of observation and practical knowledge in making this one of the most important and valuable institutions of the land. Progressive and self-reliant as I know dairymen to be, I feel justified in predicting a proud future to the dairymen of Canada. Only let the same earnest spirit of inquiry continue to characterize your efforts, and the obstacles that remain to be overcome in establishing the character of Canadian cheese in the markets of the world will disappear for ever.

Favoured as we are in climate and soil, and in the wisdom and economy of our institutions, we are in a position to compete with the most favoured regions on this continent in supplying the markets of Europe with the products of the dairy. Much has already been accomplished; the avenues of trade have been cleared of the dishonesty and fraud that had been systematically practiced by American dealers against Canadian dairies, and we have to day a channel opened up to the principal British markets, through which our cheese can pass without having heaped upon it other taints and imperfections than those of our own defective making. I am pleased to know that a spirit of enquiry has been set on foot, and instead of the almost universal ignorance on the subject of milk and its products, which existed a few years ago, we hear almost every day discussions on the constituent elements of milk and the various influences and changes to which they are subject. For many valuable improvements, for much of this information, we are directly indebted to the discussions, investigations, and publications of this and kindred associations. Still there is work to be accomplished, to which our untiring energies should be given. We can not yet afford to sit down and hug the fond delusion that we have reached perfection, and that there is no need for further exertion. We may now be even with the foremost, but we have yet to win the race; and to be successful requires the full, free, hearty co-

operation of every person connected with the business. It is a fallacy to suppose that there are antagonistic interests existing between the patrons of factories and factory men, as that which is for the pecuniary interest of one is for the interest of all.

It will be admitted that, other things being equal, the higher the skill and the greater the experience of the manufacturer, the better are the results obtained, both in regard to quality and quantity. Skilled labour always commands a high price, and it is right that it should. The better the quality of an article of produce, the higher the price to be obtained, and the better the market. A really fine article ever goes begging for customers, and consequently the dealer is never fearful of heavy losses when his entire stock is strictly gilt-edged goods. Therefore it is for the interest of the cheese factory patron to have none but highly skilled labour engaged in the manufacture of dairy products. The better the success of a factory, the greater the amount of patronage, and the larger its receipts, the easier it is to effect sales, and at better prices, and the better the dealer likes to handle the goods. I would say to the patrons of factories, that it is to your interest to patronize those factories only which employ the highest class of skilled makers, remembering always that it is more for your interests to pay a skilled cheesemaker two cents per pound for making your cheese than to employ an unskilled one; and I think I shall be able to satisfy you that this is susceptible of perfect demonstration. It is a well understood fact that our best cheesemakers are able to produce a higher yield of cheese from the milk received, while the difference in value between a strictly fine article of cheese and a medium one is never less than from one to two cents per pound; so that taking into account the increase in the yield and the difference in price, we have a difference of from two to three cents a pound between a highly skilled cheesemaker and an ordinary one.

That there are difficulties besetting the factory system of cheesemaking, those of you who have had experience in the business will readily admit. These are incident to the system itself. But there are perils and dangers to be found on the side of the system, which threaten to be more destructive to the capital embarked in the enterprise than all the difficulties of its inner working. The reckless rivalry displayed in certain localities, in cutting down the charge for manufacturing below a remunerative point, presents a danger to the business at large that those about to erect factories where the wants of the section are already supplied would do well to heed. No satisfactory progress can be made, and I am bound to say no permanent success secured, unless patrons are willing to pay such a price as will enable factory men to employ the highest skill attainable in the superintendence of their factories. I feel that I cannot too strongly urge upon all connected with this business, whether milk producers, factory proprietors, or dealers, to unite and help one another to bring about an end so important to the establishment of the system on a satisfactory and permanent basis. I regret that the Directors have not been able to publish the report of the last year, as it had been found impossible to obtain the necessary statistics. There is now a better prospect of securing these, and I hope they will be able to incorporate in one publication a full report of both years, including the proceedings of the present Convention. I have been in communication with the Minister of Agriculture, who has promised his aid, and it is proposed to obtain statistics of

the dairy industry of the Province in connection with the approaching census.

#### DAIRY HUSBANDRY AS AFFECTING CANADIAN AGRICULTURE

Prof. BUCKLAND next addressed the meeting on the subject of dairy husbandry as affecting Canadian agriculture.

He commenced by referring to the prevalent modes of husbandry which had till a period quite recent, obtained in Canada. From the early settlement of what is now the Province of Ontario, as the land had become denuded of the primeval forest, the production of wheat occupied the chief thoughts of the settlers. As both soil and climate along the lakes were then well adapted for the raising of the finer varieties of winter wheat, the almost only article of the farm at that time which commanded a cash price, what more natural that the settlers, seen generally of very scanty means, should, under these circumstances, raise this crop year after year, with very short intermissions, as long as a remunerative return was obtained. As the cultivation given was generally exceedingly superficial, and but little attention was paid to the saving and application of manure, the soil, in obedience to what are now well understood natural laws, gradually became deteriorated, and the point was sooner or later reached when wheat culture ceased to be profitable. The soil becoming, in some cases at first almost imperceptibly, exhausted of plant-food, such as the phosphates for example, and its mechanical condition being unimproved by a more thorough cultivation, the wheat plant naturally diminished in vigour and productiveness, and by degrees became a prey to the attacks of insects, the midge especially, and other maladies popularly termed blights, so that this principal source of the farmer's income became gradually diminished. Within the last quarter of a century several counties might be named that produced with comparative certainty large crops of winter wheat—from 20 to 30, and in rare instances even 40 bushels of fine white wheat per acre; lands on which winter wheat has of late almost ceased to be cultivated, and only spring varieties are raised. At this period the price of live stock, beef, mutton, and dairy products was very low. Canada did not produce a fourth of the cheese to meet her consumption, and the butter exported to the British markets was meagre in quantity, and decidedly inferior in quality. In this juncture of affairs it was fortunate that increased attention began to be diverted to dairy husbandry, which soon led to the improvement of live stock, particularly cattle, and ultimately to the introduction of the co-operative system in the manufacture of cheese. A pressing want now began to be earnestly met; hitherto the practice had been to make grain-growing the farmer's chief object, the soil was rapidly being run down, and an increased quantity of live stock, of improved breeds, became a necessity to restore the long lost balance. In this way, by increased attention to dairying and pasturage, involving more and better kinds of stock, especially if coupled with a more thorough cultivation, will the amelioration of Canadian agriculture be surely, though noiselessly, worked. Land laid down to pasture is placed in a position of rest; and being free from the demands of grain crops for several years naturally recovers, to some extent, its lost fertility. If, therefore, stock raising and dairying can be made profitable operations in themselves, there remains in addition the incalculable advantage of restoring by degrees the exhausted productiveness of the soil, which will again be placed in a condition for the remunerative growth of

grain. It must not, however, be inferred that the grazing of land in no measure exhausts it, as the grasses on which animals feed draw mineral matter largely from the soil; especially the phosphates, which are constantly being carried off in the bones of animals, cheese and butter, and therefore such substances must be occasionally returned to the land in the form of some kinds of manure to sustain its productive capability. Hence the advantage often seen in giving pasture land, especially when milch cows are kept, an occasional slight dressing of well comminuted manures, such as wood ashes, lime—in the state of carbonate, sulphate and phosphate—with or without farm-yard dung. Superphosphate of lime, when genuine, is an excellent dressing for such purposes, and admits of easy application. Whenever pastures become weak and thin, and cannot be readily restored by moderate dressings and sowing fresh grass seeds, they should at once be broken up, as poor pasture is perhaps the most unremunerative condition in which land can be placed. Subject as Canada occasionally is during the growing season to droughts of more or less intensity and duration, when pastures become bare and food for cattle deficient, it is of importance to have always on hand a certain amount of auxiliary food, particularly for milch cows, as thickly sown Indian corn, oats, vetches, rape, &c. On dry calcareous soils patches of lucerne might be tried, also Italian ryegrass, and other herbage crops extensively raised for this purpose in Europe. Whether, and to what extent, these and other productions of a similar character would succeed in Canada cannot be satisfactorily determined apart from carefully conducted experiments. Our dairy system requires more to be done in this and other directions before its capabilities and extent can be reliably ascertained. Another system of keeping cattle much practised by many of the more advanced agriculturists of Europe, but little known on this continent, designated "soiling," is well worth being practically tested in Canada. It is claimed for this mode of management that bringing green food to animals in byres and yards is more economical and effective than allowing them to feed in the fields, that they are more thrifty and comfortable, and their manure prevented from injury and waste. Under such a system permanent pastures become considerably reduced, and large amounts of forage plants are cultivated. Perhaps it would be found, after a thorough trial of this system in different parts of the Province, that a modification of it would best meet our situation and wants. The Hon. Geo. Brown is putting the "soiling" system under a searching and extensive trial on the Bow Park Farm, and expresses himself so far well satisfied with the results. Whether Mr. Brown shall ultimately succeed or not, he will well deserve the thanks of the country for having instituted the important experiment. The introduction and extension of dairy husbandry in Ontario cannot fail to increase progressively the wealth of the Province, and in several ways to impart precision and system to farming pursuits generally, improve the breeds of stock, and materially assist in determining the kinds best adapted either for general or specific purposes.

#### CURING CHEESE AND VENTILATING CURING HOUSES.

The subject of the best method of curing cheese and the proper system of ventilating curing houses was then taken up. The question was opened by Mr. Farrington, who considered the great desiderata to be a proper temperature—about 70 degrees—and sufficient ventilation carefully applied, not by open windows, which occasioned too strong cur-

rents, but by an even lifting of the air through the floor or walls.

Mr. LOSKE would make the curing house tight to preserve it from cold, and provide ventilation through the floor.

Mr. GALIVER, of Dorchester, thought one of the most important matters to attend to was maintaining the requisite heat, for which purpose he considered a furnace under the curing room connected with hot-air pipes far better than stoves alone, producing a more even, better diffused and more easily regulated temperature.

Other speakers—among them Rev. W. F. CLARKE, Mr. CASSWELL, and Mr. JAS. HARRIS—expressed the same opinion, and it was stated that such heating apparatus could be erected at a cost of from \$25 to \$100.

Mr. WHITLAW (of Beachville) advocated warming by steam, where it could be adopted, as the most economical and the most cleanly. Heating by stove-pipes was condemned as dangerous and apt to impart a taint to the cheese from the condensed soot.

Mr. DYSON (of London) described the apparatus for heating by hot air, and laid much stress on the importance of securing the supply of air to be heated from the outside of the building rather than from under the floor, where it was apt to be foul.

#### SOILING CATTLE.

The subject of soiling cattle was next taken up, and its advantage very forcibly advocated, not only as a means of supplementing the feed in dry seasons, but as the most effectual and economical system of feeding altogether. Indian corn, especially the western variety, was recommended; and sweet corn, it was considered, would be still more advantageous.

Mr. BALLANTINE mentioned an instance that had come under his notice in visiting a factory in Addington, where Mr. Nimmo, who practiced soiling, had obtained for six months an average yield of 720 pounds of cheese for each cow. Soiling possessed also the incidental advantage of preserving cattle from the plague of flies.

Both questions were laid on the table.

#### MR. CHADWICK'S ADDRESS.

Mr. CHADWICK, the former President of the Association, then delivered an interesting address, in which he advocated the necessity of enlarged intelligence among dairymen, as the processes of their manufacture were not merely mechanical, but chemical, and required the nicest skill and adjustment. He explained the composition of milk, the changes which it undergoes on being separated from the cow, and the necessity of a thorough acquaintance with the subject, in order that the dairymen may, to a certain extent, regulate these changes. It was to the interest of the dairymen to increase as much as possible the quantity of milk from a given number of cows, and for this purpose a good breed, with special milking qualities, was required as well as good food. Cheese making could not be carried on profitably with cows whose yearly yield was only 300 or 400 pounds, when it might be raised to 600 or 700 pounds. Dairymen must cease to fill up their herds annually from the culls of other farmyards, and give their attention to raising their own dairy stock. The Oxford dairy lands now held a foremost position, but to keep it up farmers and factorymen must avail themselves of the wisdom and skill that science and the practical experience of the most enlightened dairymen of the day have brought to bear on the subject. Mr. Chadwick urged the importance of a more thorough education of the farming community, contending that there was

no profession or pursuit in which such enlarged knowledge and training were more needed. Agriculture is a growth like the plant it cultivates, and like the mind itself, the more it is developed the more it yields.

At five o'clock the meeting adjourned.

#### EVENING SESSION.

The principal business of the evening was the annual address, which was delivered by the Rev. W. F. Clarke, and, was a comprehensive and interesting exposition of the Canadian factory system of cheese making.

The following abstract is little more than a bare enumeration of the topics considered.

#### ANNUAL ADDRESS.

Mr. Clarke introduced the subject of his address by referring to the "old style" and "new style," in politics, education, locomotion, agriculture in general, and dairying in particular. All present being more or less versed in the new style of dairying, his object must mainly be to give such information, rules, and practical suggestions as tended to render an accepted system more efficient and remunerative. A comprehensive treatment of the subject involved recurrence to first principles, and indeed first things. The starting point in dairying is the cow—and under this head a variety of rules were given to guide in the choice of cows having good milking characteristics. Individual cows having these would be found in all breeds, and largely in our native breed. The treatise of Guenon on milch cows was recommended as a useful guide on this subject. The next topic was dairy management. To succeed in dairying, the wants, well-being and productiveness of cows must be made a constant study and ceaseless care. He urged regularity and abundance of feed, plenty of pure fresh water, thorough cleanliness of animal and stall, proper degree of warmth, sufficient ventilation, regularity in milking, careful and complete milking, and kind, gentle treatment generally. Directions were given as to feeding at various seasons, so as to keep up the milk yield. Pasture and soiling were discussed, and the improvement of pastures and meadows by stocking them with the best grasses was urged. Root growing was recommended and various suggestions made for feeding and rearing dairy stock. The third topic was Dairy Manipulation, and the cardinal rule here was cleanliness in everything and of everything. The care of milk generally and the remedies for tainted milk were the chief points treated under this head. Factory buildings, fixtures and work were next referred to; and practical directions of choice of site, plans of building, internal fittings, and routine of factory work, according to the latest and most approved methods, were furnished. Sunday cheese-making was next discussed, the pleas for it answered, the needlessness of it shown, and the importance of the Sabbath rest, both in a physical and moral point of view, urged; influential testimonies against Sunday cheese-making were quoted, and the methods of disposing with it pointed out. In conclusion, several miscellaneous matters were briefly touched upon—such as the manufacture of small cheese for home consumption; the desirableness of memorialising the Legislature for an experimental dairy farm, now that they are proposing to establish model, reformatory, and asylum farms; the necessity of estimating milk according to quality and not by weight; keeping up the productiveness of old dairy regions; and the objections to colouring cheese. The opinion was expressed that the dairy business is yet in its infancy, and is destined to prove not only a valuable com-

mercial interest, but a mighty recuperative power in our agriculture. Too exclusive devotion to dairy farming was deprecated, and a mixed husbandry recommended. Factories must not be too numerous, nor farms entirely given up to dairying. The cheese yield and prices paid during the past season have been highly encouraging, while the future looks bright, not only for dairying, but for crops, markets, and business generally.

The address was listened to with attention by a large audience who crowded the hall to overflowing, and a cordial vote of thanks moved by Mr. Bodwell, and seconded by Mr. Chadwick, was unanimately passed.

#### SECOND DAY'S PROCEEDINGS.

On Thursday morning there was again a large assemblage in the Town Hall, and a little before ten o'clock the President called the meeting to order.

#### NEXT PLACE OF MEETING.

The first business was the receiving of the report of the committee on order of business. After which the committee appointed to consider the best place for holding the next annual meeting, handed in their report recommending Ingersoll for that purpose. This report having been submitted to the meeting, an amendment was moved by Mr. Daly, that Belleville be selected for one year. He supported his recommendation on the ground of the growing interest in dairying manifested in that town and neighbouring district, the desirableness of extending information and stimulating this important industry throughout the Province, and the advantage of rendering the Association truly a Provincial rather than a local one.

On behalf of Ingersoll it was contended by several speakers that this town was truly the centre of the dairy interest; that the extension of this industry westward was far more rapid and extraordinary than the increase in the opposite direction; that the removal of the meeting for even one year to Belleville would probably involve a pecuniary loss, as holding the Provincial Exhibition in the East always had done; and that the labour and trouble which had been expended by the dairyman in Oxford in organizing and carrying on this Association entitled Ingersoll to special consideration.

Mr. B. HOPKINS, Reeve of Dereham, moved again in amendment that the constitution of the Association be altered, so as to make Ingersoll the permanent place of meeting. He considered the constant discussion of this matter injurious to the Association, and that the practice in the United States with the kindred institution of holding their annual meetings always in one place (Utica) was the safest course to follow. He saw no objection to the formation of a branch association, and the holding of meetings in other places, wherever the dairy interest was sufficiently developed; but he would strongly advocate a permanent location of the general meeting in Ingersoll.

A number of members took part in the discussion, the greater proportion of whom strongly favoured Ingersoll, and when Mr. Hopkins' amendment was put to the meeting it was carried by a large majority.

#### DISEASES OF DAIRY STOCK.

Professor SMITH was next introduced, and delivered an address on the diseases of dairy stock. The lecture was illustrated by anatomical specimens and drawings, and was of a thoroughly practical character, on matters of such importance to the owners of cattle that to do it justice, it should be read and studied entire. In reference to the contagious foot and mouth disease, Mr. Smith reiterated his conviction that no authentic

case of the disorder had yet made its appearance in Canada; but he considered it necessary that our authorities should take measures to guard against its introduction from the adjacent States.

At the conclusion of the lecture, a unanimous vote of thanks was passed to Professor Smith and Professor Buckland for their valuable addresses.

#### FLY AND HOOF DISEASES.

Some discussion ensued in reference chiefly to the fly disease and hoof ailment, which had been so prevalent during the fall. Among others, Mr. Moulton who had resided many years in Cheshire, England, stated that he had been quite familiar with the forms of foot disease in the old country, including the contagious epizootic aphtha; that he had seen over three hundred cases of hoof disorder in the county of Oxford during the past year, and was perfectly satisfied that the complaint was altogether distinct from foot and mouth disease, not one case of which, he was convinced, had occurred in the Province.

The meeting adjourned soon after twelve, to meet again at half-past 1 o'clock.

#### ELECTION OF OFFICERS.

In the afternoon, the first business was the reception of the report of the committee on nomination of officers. The following were nominated:—

President—James Noxon, Ingersoll; 1st Vice-President—W. Yates, Belleville; 2nd Vice-President—T. Ballantyne, Perth; Sec.-Treasurer—R. James, Ingersoll.

The report was adopted.

#### FINANCIAL REPORT.

The report of the Finance Committee was read, and showed a balance in the Treasurer's hands of \$128.

#### TAINTED MILK.

The discussion of the causes of tainted milk and the remedy was then brought up.

Mr. FARRINGTON opened the question. The general causes, he considered, were heat and rennet; and the unusual prevalence of this failing during the past year he attributed to the peculiar moist and sultry season, which had affected the cattle themselves, as well as rendered the milk more ready to decompose and taint. The condition of the atmosphere also affected the herbage, and rendered it less sweet and wholesome for cattle. In regard to remedy, he recommended cooling the milk as quickly as possible, and the observance of the strictest cleanliness throughout. As a cure for taint, he advised the use of the curd mill, so that the salt might more quickly penetrate the particles.

Mr. BALLANTYNE thought that the chief, if not the only, origin of the tainted milk, of which the cheese of the past season had shown such evidence, was simply want of cleanliness. He had found that the cause of defect in his own factory was traceable to a very few patrons, and the course he adopted was to refuse to take milk from patrons who were not strictly observant of perfect cleanliness.

Mr. MANNING employed a simple apparatus for cooling the milk immediately after it was drawn from the cow. It consisted of two tin pails, one within the other, leaving a narrow space between. The inner pail was filled with iced water, and the outer one immersed in a trough of the same. The milk to be cooled passed by means of a tube through the inner pail into the narrow space between the two, and flowed out into a suitable receptacle, thus being subjected

in a very thin stratum to the action of two bodies of ice cold water. He had found the contrivance very efficacious. It would be introduced to the public in the coming spring. With six or eight pails of water, and about 50 lbs of ice, he could, with the aid of this apparatus, cool quickly 500 lbs of milk.

#### MODEL FARM

At this stage of the proceedings Mr CHADWICK proposed, and Mr BALLANTYNE seconded, the following resolution, which was carried unanimously:—"That in view of the establishment of a Model Farm by the Legislature of Ontario, the President and Secretary of the Association be empowered to memorialise the Government of Ontario urging the establishment of the same; and that in connection therewith due provision be made for giving proper instruction in dairy matters, whereby this very important and rapidly growing branch of Canadian agriculture may receive that attention its importance demands."

#### FLOATING CURDS.

The question of floating curds, cause and remedy, was then brought up. Again, want of cleanliness was acknowledged as the chief cause of the fault. The treatment recommended was to use additional acid, grind the curd, and salt more heavily than usual.

#### GRINDING CURDS

The next question on the programme was to what extent has the system of grinding curds, and making cheese once a day, been practised the past year? and the result.

Mr. WILMOT, of Milton, said he had carried out both practices for four years and found them work satisfactorily. He thought there was great waste of labour to all parties in making twice a day. The patrons found no difficulty in keeping their milk cool, mostly by keeping it in cans let down, immediately after milking, into a well.

Mr. J. A. JAMES, of Culloden, had also practised grinding curds. He ground twice, and pressed for 38 hours.

Mr James' cheese, it was stated by Mr CASWELL, had obtained a prize for the best make at Belleville, and had secured a first-class reputation in the English market.

#### CHEESE FACTORIES.

The proper construction of cheese factories was the next topic discussed.

Mr. GEORGE HAMILTON, of Cromarty, gave a brief and practical account of the principles to be kept in view regarding site, supply of water, facilities for draining, and provision for constant and thorough cleanliness. He recommended the curd house to be a separate building, if possible, and advised the planting of shade trees around factories.

#### MISCELLANEOUS.

The closing hour of the convention was occupied, after the disposal of the questions on the programme, by a few miscellaneous topics.

Mr FARRINGTON said the best width of cotton for bandages was 39 inches, which was well adapted to a cheese made with 16-inch hoop, and from 9 to 10 inches thick.

The Liverpool factory filled salt, manufactured for dairy purposes, was recommended as the best.

Attention was also directed to the importance of not crowding factories too closely in any locality.

A few other miscellaneous topics were briefly discussed, and shortly before 5 o'clock the convention adjourned, after a very well-attended and interesting session.

#### American Dairymen's Association.

The American Dairymen's Association held their sixth annual meeting in Utica, N.Y., on the 10th of January and two following days. The attendance was large and the proceedings were, as usual, of a highly interesting and instructive character. A very full report of the meeting is furnished by the *Utica Herald*, from which we cull our information. Many of the papers read were elaborate essays, full of practical instruction. Our space will not allow of the reproduction of these entire, or even of large extracts, in one issue; we can only give a general account of the proceedings, and reserve some of the more valuable addresses for future issues. The instruction will not be less timely or valuable at a later date.

#### FIRST DAY'S SESSION.

The chair was occupied by the President, Hon. Horatio Seymour, and the forenoon of the first day's session was occupied with the work of organization, the formation of committees, &c., &c. In the afternoon the order of business was reported, and the first subject brought forward was introduced by A. Holdridge, of Oswego county, namely:—

*Would the consumption of cheese be promoted by the more general manufacture of small cheeses?*

Mr. Holdridge very strongly advocated the adoption to a large extent of small sizes, weighing from ten to twenty pounds. The result of partial experiments on this continent, and the general practice in Europe, favour the change. The principal objection is the increased expense, which has to be met by a higher price on all the cheeses; but the cheeses are worth more to the consumer, and some improvements may yet be made in the process of pressing and packing which will diminish the cost of manufacture. The proportion of shrinkage compared with the larger cheeses is a fraction larger for the first thirty days, and afterwards is about 50 per cent. less.

Mr. Burnham said that during the past season he manufactured sixty tons of small cheeses, weighing from seven to nine pounds each. They were all round in shape, and sold easily. He could press from nine to eighteen at a time. It cost him about one-half cent. per pound more to manufacture small cheese, this covering all expenses of boxing, bandage, shrinking, &c. He could realize from 1½ to 2 cents per pound more on the sale of the small cheese. He manufactured the small and large cheese precisely alike.

The next subject discussed was that of *Soiling Dairy Cows*, which was introduced by Hon. H. Lewis, of Herkimer, in a very interesting paper. He considered that in this climate, so subject to severe and protracted droughts, soiling cattle was absolutely indispensable to economical and profitable dairy husbandry. To remedy the



growing evil of these periodical droughts, recourse should be had to systematic tree planting on a large scale; but, in addition, each farmer had the means within his own reach of materially diminishing the trouble. The chief of these are *irrigation, underdrainage, and deep cultivation*. One cause of the shallow culture which many farms at present received was owing to the light breed of horses, which the "fast" proclivities of the age encouraged. A heavier horse, more adapted for draught, was needed by the farmer. With regard to the first of these remedies, many years must elapse before any general benefit could be expected, and irrigation also was probably far off in the future. But every farmer should make at least a commencement by draining and deeply ploughing. Let the dairyman begin by setting apart a piece of land convenient to the barn—say one acre for every ten cows kept; underdrain it in the most thorough manner; then "go down, down, down with the plough below the gold deposit, enrich it as every dairyman has the ability to enrich it, and seed this early in spring with a liberal supply and general assortment of our best grasses, which will ripen simultaneously." From time to time as means increase and opportunity offers, more land should be treated in the same way, till at length the whole farm shall have undergone the ameliorating process, and drought will no longer be feared. Orchard grass was highly recommended as a pasture and forage crop. Land, prepared as above directed, will, when seeded with orchard grass, produce four cuttings of two feet each every season, as long as its fertility is maintained, and the cutting done at the proper time. But at the head of all forage plants for soiling dairy cows the speaker placed lucern, provided the soil and mode of cultivation were suited to its habits. The soil should be a deep rich gravel or sandy loam, naturally underdrained. The roots, penetrating deeply in search of moisture, would soon choke up artificial drains. It may be sown broadcast or in drills ten inches apart. In drills ten pounds of seed are sufficient; but if sown broadcast, sixteen pounds may be required per acre. Next to lucern, where it can be grown Mr. Lewis esteemed orchard grass, and next to it would choose common meadow grass. Corn, so much esteemed by nearly all dairymen, "he regarded as worthless, its cost exceeding its actual value." Whatever kind of grass is used, it is highly important that it be fed, or prepared for fodder, before it has passed out of bloom. The speaker had also found advantage in the partial "wilting" of all forage grasses for soiling.

The adverse opinion in regard to Indian corn elicited a storm of discussion, and met with general condemnation, to which expression was given by the following resolution:

Resolved,—That this convention is of opinion that corn is a valuable product for the

dairy farm, and that we commend it as a forage crop.

Mr. Lewis, in a subsequent stage of the proceedings, considerably modified his statements and admitted that he had been mistaken in regard to the cost of production. By referring again to his farm accounts he found that the *poorest* corn crop he ever raised *did* pay. He was still, however, of opinion that other crops were more nutritious, and gave the results from two dairies near his own residence, which were in all respects alike except in the kind of feed used. The one was soiled with grass, the other with corn, the soiling season beginning Aug. 1 and ending Oct. 31. The yield of the grass-fed herd for that time was 90,288 lbs. of milk, and of the corn fed 79,452 pounds.

The evening session of the first day was occupied principally with a lengthy and very interesting paper, by Prof. G. A. Caldwell, on the

#### *Evolution of Cheese in Foreign Countries.*

We must reserve some of the details for future publication, and notice now only the general considerations to which the Professor drew attention at the close of his address, which were as follows:—

1st Some of these methods of cheese-making illustrate in a most interesting manner that intimate connection between the development and growth of mould fungi and the ripening of the cheese; a connection as close and invariable as I attempted to show in my address of last year, as that of cause and effect.

2nd To uniformity in the practice of salting the cheeses after they have been formed and pressed, and without breaking up the curd after it has been completely separated from the whey; the salting being then performed by applying it to the outside of the cheese, either by sprinkling salt over the surface in small doses at a time, which is the more common method, or by immersing the cheese in brine.

3rd. To the heavy pressure that, in most cases, we put on our cheeses. To be sure, the lightly pressed cheeses may not keep so well, but they are intended more for immediate consumption, without transportation to great distances.

4th. To the indications that point to some connection between the presence of ammonia in the air of the curing room, and the process of ripening.

5th To the peculiar circumstances under which the best cheese of France is made, "the king of cheeses," and the possibility of the construction of similar vaults in fissured limestone in our own country.

6th To the fact that some of the best and most highly prized cheeses are made from wholly or partly skimmed milk, so that an additional income is derived from the cream worked into butter.

7th. To the small size of some of the favourite continental cheeses. The Edam

weighs only about 4 pounds, the Gouda 15, the Schalzceiger 5 to 7, the Brie 4 to 7, the Roquefort 4 to 5 pounds, while only two, the Parmesan and Gruyere, are large, like the American cheeses.

8th. To the great variety of cheeses obtained by these variations in the details of cheese-making and the better market thereby obtained for the products of the dairy. Greater variety appears plainly to lead to greater consumption in Europe, and a similar result might reasonably be expected here.

Finally, then, I would point a very long story with a moral. With every variety of soil, situation, climate and consumers' tastes in the great extent of country represented by the American Dairymen's Association, there should be a correspondingly large variety in the character of the productions represented here. There should be something else besides big, round cheeses, weighing a hundred pounds or more, and, though all good when well made, yet tasting about alike.

#### SECOND DAY.

The first topic taken up on the morning of the second day, by Dr. S. Wright of Oneida, was that of

#### *Factory Buildings and Fixtures.*

This paper, also, we must reserve for future notice.

Mr. Willard next introduced the question, "Is there a decline in the amount of dairy products in the old dairy regions? If so, what is the cause, and what the remedy?"

Mr. Willard thought there was a decline in the cheese product, and that bad cultivation of the soil, bad treatment of the cows, and bad management generally were the causes.

The next matter considered was the question,

"Is there any way by which the patrons of butter and cheese factories can receive credit for the milk delivered according to its actual value, and not according to its weight or measure?"

This subject was opened by Hon. H. Lewis, who contended that the present system was unfair, inasmuch as the richer the milk the lighter it weighs, and *vice versa*. The value of milk for making cheese depends on the amount of cream and casein it contains, the proportion of water, its freedom from filth, and its keeping qualities. The first two items can be tested by the lactometer; the last two by setting samples from the can of each patron. He thought this plan desirable and practicable.

After discussion, the following resolution was adopted:—

Resolved,—That a committee of three be appointed to consider the best means of making an equitable apportionment to the patrons of butter and cheese factories, according to the quality of milk and not by weight; and to report at the next annual meeting of the association.

In the afternoon the subject first brought under consideration was

*The Causes of Tainted Milk, Floating Curds and the Remedies.*

Mr. Farrington, of Tomkins, led the discussion, and said that he considered the principal causes of these defects were improper food, deficient or bad water, ill health of the cows, ill treatment, uncleanness of utensils, tainted atmosphere from putrid or other noxious matter—causes that were attributable to the patrons. On the part of the manufacturer the sources of the evil were uncleanness at the factory, and tainted rennet. The remedy for these evils—one which he had found efficient in his own practice—was that of grinding floating curds. He made up tainted milk just as he did any other milk. Draw off the whey as soon as any acid is perceptible, and let it undergo a process of digestion. Then grind it. The object of grinding is to get the whey out of the curd, and this can not be done without grinding, or breaking up into small lumps, and exposing to the air. This remedy applies only to the manufacture of the milk, but the fundamental remedy is good feed and plenty of water for the cows, and entire cleanliness about the farm, the barn, and all utensils.

*Grinding Curds.*

Was the next subject taken up by Mr. A. McAdam, who favoured the practice.

Mr. Donald Mitchell then read a paper on the topic,

*How far and in what way the practical farmer can best avail himself of the teachings of science.*

It was, says the *Utica Herald*, a scholarly production, but the essayist retained his paper for publication elsewhere.

In the evening, Mr. Arnold read an essay on the question,

*What shall be done with the cream that rises on the milk through the night, where no agitator is used?*

There are two ways of utilizing such cream. One is to make it into butter, and the other is to work it into the cheese. There is a difference of opinion as to which is the better way. But whatever view may be taken, there is no doubt of the fact that a whole milk cheese cures much faster than one from which cream has been taken. Every dairyman has seen enough to demonstrate the powerful agency of cream in developing the germs of fermentation.

To produce the best results, a curd should cure at a certain rate—not too fast nor too slow. If it cures too fast, it will huff and become porous, or generate foul gases that will injure its flavour. If too slow, it will become bitter or sour, or some other change than the cheesing process will supervene and produce effects that never can be removed. In curing a whole milk cheese, it is generally agreed that the right progress is made

at 70°. A curd from milk with the night's cream out will cure no faster at 75° than one with the cream all in will at 70°, and a more thorough skimming will require a temperature of 80° or 85°.

Dairy men seem to have altogether overlooked the important item that removing the cream retards the curing of the cheese, and that to keep up the right progress the sluggish curing should be hurried up by a higher temperature.

Great attention was also absolutely necessary in the process of curing—a matter that was not sufficiently attended to. The subject elicited an animated discussion, and though no resolution was adopted, a large proportion of the speakers condemned the practice of skimming.

THIRD DAY'S SESSION.

The first business brought up was the discussion on

*Condensed Milk Factories.*

Mr. Church, of Elgin, Illinois, gave an account of the factory at that place.

The election of officers was next attended to, after which the following resolution was adopted:—

Resolved,—That a committee of three be appointed by the chair to consider the propriety of petitioning the Legislature of this State to make an appropriation for the purchase of one or more experimental farms for the manufacture of dairy products.

Mr. Joseph Harris then read a paper on

*Fattening Cows on Dairy Farms.*

The gist of the essay, an eminently practical one, and which we hope to refer to at some future time, was that profit and advantage were gained in proportion as we fed as much above what was required to keep up animal heat and vital functions, as the animal could digest. He attributed the superior results mentioned by Mr. Lewis as having been obtained from forage grasses over green corn fodder, to the more concentrated nourishment contained in the former.

Mr. Harris was followed by Mr. O. S. Bliss, of Vermont, who read a paper on the

*Management of a Good Butter Dairy.*

A report of this paper we must defer. A resolution was adopted to the effect that the subject be referred to a committee, who shall give their report at the next annual meeting.

Mr. Farrington, of Canada, then took the floor to discuss the subject of

*Colouring Cheese*

He strongly opposed the practice, because it did not improve the cheese, while it added about one per cent. to its cost. If the consumer pays this extra cost, he gets only ninety-nine one-hundredths of what he pays for. The speaker estimated that the cost of colouring cheese averaged \$100 to each factory, and when this sum was multiplied by the number of factories in the country, the total expense became enormous. All this,

he claimed, was waste. Many of the substances used are badly adulterated, and absolutely harmful to the cheese and the consumer. The only colouring matter that he knew of, which was not impure, was the anottoine; but he did not know how long this would remain pure. At present, he was well satisfied with it.

A general discussion concluded the business of the convention. Among other topics that of Sunday cheesemaking was brought up, and the following resolution referred to a committee appointed to report on the subject, at the next meeting of the Association:—

Resolved, That with a view to the enjoyment of the rest and privileges of the Sabbath by cheese manufacturers and their assistants, as well as out of regard to the sacredness of the day, the importance of maintaining it unimpaired, for the benefit of the public and of individuals of every class, it is desirable that the delivery of milk to cheese factories on Sunday should be dispensed with, and that dairymen are requested to inquire whether this is not practicable, consistent with their interest, and whether the value of the Sabbath would not justify some sacrifice on their part, and that of their families, should this prove unavoidable.

The following resolution, also, was adopted:—That it was the sense of the convention that the dairymen of the country strive to adopt all practicable means for increasing the home consumption of cheese, and that to this end it recommend that each factory should keep on hand some small hoops for the manufacture of small cheeses, such as seem to be required by the home trade, and that a portion of each factory's make be softer than is required for shipping and such as our home markets demand; and that a portion be made without colour.

Mr. Schermerhorn gave some account of his experience among the cheese makers in England. The Convention finally adjourned, to meet again in Utica, on the second Tuesday of January, 1872—the session to continue three days.

The following is a list of the officers elected for 1871:—

President, Hon. Horatio Seymour, Utica, N. Y.; Vice-Presidents, Thomas G. Alvord, Onondaga; Anson Bartlett, Ohio; N. A. Willard, Herkimer; E. Wilcox, Michigan; Henry Wade, Canada West; O. S. Bliss, Vermont; Joseph Tofft, Illinois; Asshel Burnham, Chautauqua; N. W. Woodfine, North Carolina; C. H. Wilder, Wisconsin; Levi Wells, Pennsylvania; John M. Webb, New York city; S. W. Wells, Connecticut; H. Calnies, Kentucky; J. H. Klippart, Ohio; S. A. Bartholomew, Massachusetts; T. L. Harrison, New York; C. E. Chadwick, Canada West; C. W. Vrooman, Minnesota; S. H. Ellis, Pennsylvania; R. Goodman, Massachusetts; A. R. Camp, Vermont; M. J. Haden, Kentucky; B. F. Bruce, Madison; Newton Chrissy, New York.

Secretary, Gardner B. Weeks, Syracuse, N. Y.

Treasurer, Dr. L. L. Wight, Whitestown, N. Y.

### Ventilation of Milk Rooms.

In an essay read at the last meeting of the Vermont Dairy Association, O. S. Bliss, Secretary of the Association, talks in this wise on the above subject:—

The ventilation of milk rooms is generally even less philosophical than that of stables. The end sought in the two cases is entirely different, demanding precisely the opposite treatment, and the provision for a strong current or draught of air is as uncalled for, and even injurious, in the one case, as it is indispensable in the other.

It seems to be forgotten that currents of air only reduce the temperature in proportion as they cause evaporation, and this is just what the dairyman does not want. It dries the curd of the milk into flakes, which adhere to the cream, producing what are known as "flecks," those very undesirable white specks in the butter. We repeat, the air in the milk room, unlike that in a living room, does not require to be constantly, or even frequently changed, and it exerts a far better influence if left undisturbed, especially in warm weather.

Milk rooms, therefore, should be ventilated only from above, and one opening is sufficient for all practical purposes. Were the prevalent notion true, which it is not, that the air in such a room is likely to become pernicious in some of its influences, the opening of the doors several times a day would dispel all such influences.

That it is desirable so to ventilate the room as to evaporate the moisture in and around it, is another fundamental error. A quantity of water or ice upon the floor exerts a cooling influence just in proportion to the evaporation produced, as we have already said, of the current of air; but it is not desirable to cool one portion of air, and at once drive it off, to be replaced by another drier and warmer portion. Such an operation might well be called an attempt to cool "all out-doors," instead of the milk-room alone. The moisture of the air in the milk room is not in any respect unfavourable to the production of cream and butter.

Referring to the dry vault, Mr. Bliss says it is the best substitute for the spring house, and is believed by many to be quite as good. The construction does not differ essentially, except that the necessity for heavy walls well sunk in the ground is more absolute in this case. The floor should be flagged or cemented, and the pails or pans set upon it. If shelves are used at all they should be of stone. In very warm weather it may be necessary to wet the floor daily, but generally the temperature may be kept very nearly uniform throughout. If practicable, a shady site with a northern exposure should be selected. In a moist springy soil, though a supply of water cannot be depended on, it may be well to put narrow

slats on the ground, on which to set the milk vessels, instead of making a close floor. Of course, in this case, drainage must be provided for, so that there may not be an undue accumulation of water.

### Does Dairying Improve Land?

Mr. N. A. Willard, in a recent article, says:

There is no question but that lands may be kept in fertility and increased in productiveness with more ease and less expense under the dairy than under a system of grain-growing. The dairy farmer has the means at his command for making large quantities of manure. That he is wasteful of this material, and injudicious in its application it may be often, and perhaps as a general rule, is charged against him. Still under all mismanagement in this regard, it is believed that dairy lands are steadily improving in the elements of fertility, and are now in better heart for grain crops than when grain-growing was made the business of the farm. It is true that upon many farms the yield of grass is much less than it should be, but this is not so much on account of any lack of fertility in the soil as from neglect of proper culture—allowing weeds to creep in, overstocking pastures, feeding down the aftermath of meadows, cutting grass when over ripe, and other abuses which, in time, have served to lessen the product. When farms have been properly managed, and have received the liquid and solid excrement of the stock, judiciously applied, they have been wonderfully improved, and are annually yielding immense crops.

Herkimer County, the oldest cheese dairying county in New York, contains about 278,000 acres of improved land. This is divided up into two thousand farms of fifty acres and over, and a thousand farms running from three to twenty acres; or in all, say about three thousand farms. The value of products taken from the farms in 1864, according to the State census, was as follows:—

Dairy products.....	\$3,157,129
Grain products.....	1,106,780
Some thirteen other products.....	2,524,882

Total agricultural products for 1 year ..... \$6,788,791

Now, if this sum was equally divided among the 3,000 farms, it would give each farm \$2,263 as the average income. But as there are 1,000 farms that run from three to twenty acres, or that are under fifty acres each, some idea may be had as to whether the farming is as productive in its results as in other sections. If we have figured correctly, the average product per acre in 1864 amounted to some \$24. The highest annual product of cheese sold from the county has been a little above 18,000,000 pounds. In 1864 the cheese crop was only a little over 13,000,000 pounds.

## Apiary.

### Amateur Bee-keeping.

To the Editor.

SIR,—Five years ago I purchased a swarm of black bees in a common box hive, and as I had no knowledge or experience in the management of bees, I made enquiries of neighbours who had been bee keepers on a small scale for a number of years, but in almost every instance the answer was, "I can't tell you much about them; I don't bother with them. The fact is, I don't think they will pay." I started ten or twelve years ago, with a swarm or two, and had not been able to increase their number. This, of course, was very discouraging to a new beginner; but fortunately a neighbour was kind enough to lend me a little book, called the Canada Bee Keepers' Guide. I have, as a rule, followed its instructions, and believe any person who does so will be rewarded with success. It taught me the great advantage of movable frame hives over the common box hive, and the superiority of the Italian over the black bee. I purchased an Italian queen from Mr. Thomas, giving him six dollars for her, and consider the money well expended. I now have forty swarms of Italians, and thirteen swarms of hybrids. The average weight of honey, weighed the fourth of October, was thirty-four pounds.

To make bee culture a successful calling, it is absolutely necessary to discard boxes and adopt movable frame hives. This will give you full control over swarming, enabling you to divide at the proper time, and to reap the full benefit of the honey season; whereas, in common box-hives, the bees will frequently cluster in front of the hive till the honey season is almost over, and then cast a worthless swarm.

Another advantage is in being able to equalize stores in the fall, and bees in the spring. It sometimes happens that a swarm will be very much reduced in numbers by wintering, and by a little judicious management in spring in equalizing, can be got in first rate trim by swarming time.

And now, whilst our long winter is passing and time is not as precious with some of us as it is in the summer season, I would suggest that we hold meetings for the purpose of discussing subjects connected with bee-culture and invite our neighbours to attend, and try to create a more lively interest in bee keeping.

Perhaps it would help to drive away some of the superstition and nonsense connected with it. We could at these meetings discuss subjects like the following: The best method of wintering bees; of obtaining the greatest amount of surplus honey; also the best method of dividing or making artificial swarms, the proper time for doing so,

both as regards season and the condition the hive may be in; and a score of other subjects that would be both interesting and profitable, besides being a means of inducing others (as I firmly believe it will) to make a beginning in the way of bee keeping, and so collect the thousands of tons of honey that go annually to waste in this fair Canada of ours.

SAMUEL ADAMSON.

Greenwood P.O., Pickering.

### North American Bee-keepers Association

A movement has been inaugurated to establish a united national Bee-keepers' Association, embracing the North American States and Canada. For this purpose a convention, pursuant to public notice, was held in Indianapolis, on the 21st and 22nd of December last. There appears to be a want of unanimity in the matter, and some parties seem to look on the convention at Indianapolis as clashing with a similar gathering to be held in Cincinnati on the 5th of February. The meeting was, however, well attended by representatives from different States and from Canada. Papers were read, followed by discussions on various topics comprehended in Bee-culture, such as the management of the apiary at different seasons of the year, foul brood, the Italian and Egyptian bee, natural and artificial swarming, bee forage, &c., &c. A great variety of bee hives were exhibited, and the various merits of each set forth by their respective champions.

The election of officers resulted in the following appointments: President, I. L. Langstroth, Ohio; Vice-Presidents, W. F. Clarke, Ontario; T. B. Hamlin, Tennessee; A. F. Moon, Michigan; A. R. Bickford, New York; E. Gallup, Iowa, and C. M. Dunlap, of Illinois; Secretary, W. M. Ballbridge, Illinois; Treasurer, N. C. Mitchell, Indianapolis.

After a pleasant session, extending over two days, the convention adjourned, to meet again at Cleveland, Ohio, on the first Wednesday of December, 1871.

**BEE-HIVES.**—We were under the impression that none of the Thomas hives were shown at the Quebec Provincial Exhibition; but Mr. Losee informs us that Mr. J. Smith, of Beauharnois, exhibited a hive of this description in Montreal.

The common but ridiculous practice of making a clatter with kettles, tin pans, coal scuttles, &c., when bees are swarming, is utterly useless, and is resorted to only by old fogy bee-keepers.

Moisture sometimes generates in a beehive in winter, and runs down the sides to the entrance, where, coming in contact with cold air, it is frozen, filling up the space and stopping ventilation. This matter should be looked to occasionally.

## Correspondence.

### Burnt Land.

To the Editor.

SIR,—I live near Ottawa, in the burnt section of the country, and I have a piece of land that is burnt to about eighteen inches below the surface. There are about five inches of ashes on it, and it puzzles me what to put on it for the best next spring. If you can give me any information as to what is best to do with it, or if any of your correspondents who have been in the same fix would tell me how they acted, I should be very thankful.

JAMES PURVIES.

Ottawa, Sept. 27.

In reply to the foregoing communication, our valued contributor "C" gives his views and experience as follows:—

Many years since, "paring and burning," as it is called, was very commonly practised on clay lands in England. We did not think sandy soils benefited in an equal degree with the more argillaceous, but it was a common practice to run what we called a skim coulter plough over the land. This plough cut a furrow about 1½ inches in depth, and about 9 inches in width, and was never used but in old pasture land that had become "hide-bound," and when the wild grasses had entirely choked the better kinds, and when a new course of cultivation was required.

The operation was always performed in early spring, and while the sods were wet and tough. A plough was then passed across the furrow, and the result was that all the sods were cut into about nine inches square and about one and a half inches in thickness. These sods were all piled in rows of a convenient width to throw them in from each side, and again were thrown each way into heaps, care being taken that the sods were all set on edge, and so arranged as to shed any water that might chance to fall on the heap, thus allowing the mass to become quite dry inside. Women were generally employed to do this, and the whole was usually let out at so much a bushel for the ashes, so as to induce the parties contracting to burn as much soil as possible. If otherwise taken, they would invariably avoid burning the soil, so as to get the more combustible portion consumed as rapidly as possible.

The result was that the field was covered with an immense number of heaps of ashes, as they were called, but which was in reality burnt earth and vegetable fibre. The crop that followed this was generally turnips, and often, and in fact most generally, the growth of the same year, unless the weather proved most unfavourable; but it was always considered dangerous not to get all the burning

done the same summer, as the heaps were sure to get wet and decay the following winter, and could not be induced to burn next year. The crop of turnips so raised was something monstrous, and when fed off with sheep, and barley succeeded, that crop also often reached an immense yield, even to the extent of 70 bushels an acre. After the barley followed clover and hay for one year, and then wheat on the clover ley. No manure was used on any of these crops, and the benefit derived from the paring and burning was considered fully equal to supplying good crops for many years afterwards. Of late years the course has gone much out of fashion, other modes being considered less expensive and fully as good.

I might mention as reference and authority for the theory and practice of this mode of management, Arthur Young, F. R. S., England, the excellence of whose works on agriculture has never been doubted. We now, however, want some Canadian experience, and it is at hand.

Thirty-eight years since, about two years after our arrival in Canada, we occupied a farm on Yonge Street, and on the lot was one three acre field that had grown up to second growth from scrub. The land was situated on the top and edge of a ravine that passed half round it on two sides, and the depth of the ravine was about one hundred feet. The soil was clay, with very little black soil or humus on the top, or indeed in its composition.

The second-growth stumps were all rotten, and we determined to grub them out and utilize the land. These stumps did not as a rule exceed six inches in diameter. We soon invented a means of leverage to prize out the stumps, piled them in large heaps and burnt them. We ploughed the land in the first week in April following, and a friend advised burning. We followed the course already detailed, and, the weather proving very dry and hot, we burnt an immense quantity of ashes, which we spread over the land again. It happened to be a very dry time, with fresh winds, and the expense of burning was but little; the sods dried fast, and we did a large quantity in a day.

On or about the second week in June we were ready to sow, and sowed the whole field with two-rowed English barley. We harvested and sold over 45 bushels of clean good barley to the acre—although sown so late. We only, however, obtained 40 cents a bushel for it—the price at that time. After barley, the same fall, we sowed wheat, and harvested the following year 124 bushels of splendid Soules white wheat, which we sold at 55c. a bushel.

We seeded down with clover and timothy, in the month of May, when the wheat was about eight inches high. The yield from that seeding was two tons of excellent clover hay to the acre the first crop, and over one

the second. The very first was cut early, as it was enormously stout, which fully accounts for the second being good. The year following we required the whole field for pasture or green fodder, and having a great many horses, we determined to tether them on it (the same as we had been accustomed to do at home) by the foot, with a chain and peg. Much of the clover was thus eaten after it was quite high; but from some cause, although the crop that year was equally good as the one previous nearly all the clover died out. Probably the winter killed it. Next spring we sowed again, on the same field, six pounds of clover to the acre, and harrowed it well in twice each way, and to insure its growth, as we had very little land cleared, we hauled on 36 loads of chip muck and old rotten mould and after spreading, we dragged a large bush over the land both ways. The result was another excellent cut of grass, about the beginning of September, not very high, but very thick, of about twenty-five cwt. to the acre. We were always convinced of the extreme utility of the ashes. The adjoining six acres of the very same land never did half as well. I forgot to mention that the last day of our burning was Saturday, and father came on the land about 4 o'clock in the evening, and ordered us to leave about twenty rods untouched, and to sow the seed directly on the inverted sod. We did so, and for eight years afterwards, whilst we owned the land, this particular piece was always poor in appearance, whilst the rest was very luxuriant in its yield.

The course I would recommend for the burnt lands at Ottawa is to sow every acre in turnips that can possibly be spared, and to feed in any way all that can be fed; all else to be ploughed in as manure for a succeeding crop of spring wheat. This course was recommended, where practicable, in this journal some time since, and from information derived from the result of last year's turnips being frozen up in the fall in this land, and consequently decayed and used as manure for succeeding crops this year, there is no doubt that the manure so obtained has produced splendid results. Several people whom I well know give this as a fact, and state that they believe they are correspondingly recompensed for the loss of the turnip crop.

### Coal Tar in Milk House

To the Editor.

SIR,—Can you inform me what will neutralize the smell of tar in a brick milk house? I had one built last fall, and in order to preserve the bricks, I got them coated with tar on the outside from the foundation up to the level of the ground, and thinking that what was good for the outside would be good for the floor, I had the under side of the bricks for the floor also coated, and then plastered on top with

water-lime; but whether in consequence of bad lime or workmanship, it was not water-proof. The water came through, bringing with it a strong smell of tar. I then covered the bricks with about a foot of earth, and had a concrete floor laid on that, and still I am troubled with the tar, enough to taint apples kept there. Can you inform me how I can get rid of the trouble? Can the tar be neutralized by any other substance which will not affect eatable articles, or would a cement floor of any description keep the smell under, or shall I be under the necessity of digging it out root and branch?

Longwood.

J. G. BEGG.

ANS.—We recommend our correspondent to make root and branch work of the tarred bricks, and to fill in the space thus made with pure clay, covering the latter with a floor of bricks fresh from the kiln, and which have never been near the useful though pungent substance complained of, for he may rely on it, that so long as the "remembrance" even of the smell remains, every casualty which may happen to substances stored between those four walls will be laid to the coal tar, and to his experiments therein. Disinfectants will surely fail; actual eradication is the only possible resource.

AGRICULTURAL SOCIETIES will be supplied with the CANADA FARMER, for the ensuing year, at the same low rates as in 1870.

## The Canada Farmer.

TORONTO, CANADA, FEB. 15, 1871.

### New York State Cattle Disease.

The disease that showed itself a few weeks ago in the State of New York seems to have spread considerably, and our neighbours are dealing with it promptly and vigorously. There has been no proof yet given, however, that the affection in question is the foot and mouth disease, and we sincerely hope that it may prove to be only some milder and passing distemper. Mr. Morris, Cattle Commissioner of the State and city of New York, has made a report on the matter; and, after quoting from English authorities a description of the foot and mouth disease, he proceeds:—

"The State Cattle Commission, in view of these facts, have been untiring in their efforts to arrest the further spread of this disease throughout the State; and adjoining States, through their Boards of Agriculture, have been and are taking every precaution to the same end, so far as their power extend. In this State the instructions to the Assistant

Commissioners have been explicit, from the first knowledge of the presence of this disease, both as to placing in quarantine whatever animals may be found sick, and at the same time to prevent the sending of milk to the city from dairies where the cows are so affected, and as to liberal use of disinfectants in cars and yards. These precautions it was thought might prevent the further spread of this disease among cattle, and at the same time protect the public health in the use of unwholesome milk. This has been done rigidly in every instance, as I am informed, by the Assistant Commissioners, by Dr. Guernsey in Dutchess County, and by Mr. Dayton in Queen's County. In Dutchess County the Doctor informs me he has already quarantined over 1,000 head of cattle, a large proportion of which were dairy cows.

"At Albany, being a central point for the distribution of stock eastward, the Assistant Commissioner, Dr. Stimson, has endeavoured to prevent its further spread by great care in watching and quarantining whatever could be discovered passing through it.

"In our own cattle yards this disease has been discovered among beef cattle and cows on sale for daily purposes. The rule has been to allow animals to be killed unless they were badly diseased, as there is as yet no evidence which proves that their flesh is unhealthy as human food; but cows or other cattle are not allowed to leave quarantine to communicate the disease to other herds until they have entirely recovered. Advice received this day inform me that the disease is subsiding in Dutchess County. No milk is allowed to be sent from dairy cows suffering with the disease for 30 days, affording ample time for complete recovery."

"The symptoms of this disease, as given by Prof. Law, of Cornell University, are so obvious that any person may be able to recognize it at once. An infected animal appears dull and listless for a day or two, with loss of appetite, and, in cows, a falling off in the quantity of milk; hot, dry, mouth; grinding of the teeth, and drooling; tenderness of the udder, teats, and feet, producing a lameness in the walk; frequent shaking of the feet, as if to get rid of some irritating matter; on the second or third day, abundant frothing at the mouth, smacking of lips, and tongue-lameness, and the formation of blisters in various sizes, up to an inch or more across on the mouth, udder and teats, and between the hoofs. In one or two days more these blisters burst, leaving raw sores and heads of loose skin inside the upper lip, on the roof of the mouth, the tongue, on the teats, and between the hoofs.

"These discharge an irritating fluid for a time, then scab over and heal up, in favourable cases, in from 10 to 15 days. The sick beasts should be well nourished with soft mashes and gruels. Cooling, but not purgative, medicines should be given, and the sores washed with some mild carbolic acid

preparation, or with a weak solution of sulphate of zinc (white vitriol) The discharges from the mouth, sores and scabs from the udder, teats, and feet are the sources of infection, therefore the stable, yards and fences where sick cattle are kept should be constantly cleansed and disinfected with heavy oil of coal tar and lime-washing."

In his report Mr. Morris says, "it has been satisfactorily demonstrated that it [the said disease] was recently imported from Europe by way of Canada." Where—when—by whom—was this demonstrated? Has there been a tittle of evidence to this effect? Mr. Morris does not pretend to know that the disease came from Canada; he does not pretend to know any one who knows that it did; he does not pretend to give any groundwork for his assumption; but he coolly assumes, without a particle of evidence, that the fact has been satisfactorily demonstrated."

And the New York *Tribune* assumes Mr. Morris' assumption to be ample proof of the whole story, and gravely informs its readers that "the Cattle Commissioner of this State reports that the disease now prevalent among our herds was brought from Canada"

And the Secretary of the U. S. Treasury at Washington thereupon also assumes the whole story, and gravely writes to the U. S. Secretary of State on the 30th December an official letter that, "having been reliably informed that the cattle disease has been introduced into the United States from the Dominion of Canada, where it is said to prevail to a considerable extent," he deems it necessary to prohibit the importation of Cattle or Hides from Canada unless each shipment is accompanied by a consular certificate that the disease is not and has not recently been in that section of Canada, and that he (the consul) is satisfied that the importation is entirely free from disease."

And so urged, the U. S. Secretary of State accepts the entire tale, and notifies all the U. S. consuls in Canada that the suggestions of the Secretary of the Treasury have been adopted by Treasury minute, and that they must guide themselves accordingly.

Now, could anything be more unreasonable than all this? The whole fable of the introduction of this disease from Canada rests upon the hearsay statement of Mr. Harrison, Secretary of the New York Agricultural Association, who is himself extensively engaged in the rearing of pure-bred Shorthorns. Mr. Harrison heard that a drover from Canada brought a herd of cattle to Albany suffer-

ing from the disease; that they were too sick to be sold, and so he took them on to Poughkeepsie; that they were too sick to be sold there, and so he drove them back into the country, through the State of New York, through the State of Connecticut, to nobody knows where—but meeting ready purchasers all along the road for his rotting beasts from the way-side farmers! And on this tremendous story Mr. Harrison reports that he heard it! And then Mr. Morris reports that its truth is "satisfactorily demonstrated." And Mr. Greeley protests that Mr. Morris has so reported and the fact is settled. And Mr. Secretary of the Treasury reports that he has been "reliably informed" that the Canadians are the sinners. And Mr. Secretary Fish sends forth his ukase to close the doors against Canadian beef and hides forthwith.

And all this time the allegation is entirely destitute of foundation. There is not one case of foot and mouth disease in Canada—and there never has been a case of it in the country within the knowledge of any living man.

Fortunately the U. S. consuls in Canada are men of probity and sense—and Mr. Dart, Mr. Blake and Mr. Shaw have all reported to their Government that the thing is a complete mistake—that there is no such disease in Canada, nor with all their diligence can they hear of any one case of the kind ever having been here. They have also adopted a declaration to this effect, and appended it to the form used as the consular certificate in all shipments from Canada to the United States. Shippers of cattle will therefore have no difficulty in making their entries as usual.

#### The Sufferers in the Great War.

Since the commencement of the struggle between the two powerful nations of Europe now at war, England has maintained a consistent neutrality; but while the Government and people have abstained from any interference in the terrible contest, the active sympathies of the humane throughout the land have been evoked on behalf of the unhappy sufferers from the war, irrespective of nationality. The unanimity and zeal with which all classes in Britain have lavished money and substance in aid of the sick and wounded in this mournful conflict, or of the helpless families rendered destitute thereby, while it affords a practical testimony to the benign influence of Christianity, speaks well for the true heart of the nation, and will reflect a lasting glory on their history.

All ranks, it is pleasing to observe, have engaged in this beneficent work; for the claims of misery appeal alike to all. But as it is the agricultural classes in the belligerent

countries on whom the heaviest burden of suffering falls, so it is fitting that the same class in peaceful communities should be readiest to extend relief. A very general movement has been set on foot amongst the agriculturists of Great Britain to aid their brethren on the continent in this terrible crisis. Contributions of food and seed for future crops, so greatly needed, are being collected amongst the farmers, and transmitted, under ample guarantees for the proper distribution of the supply, to the country now desolated by war.

Similar action is being taken by our American neighbours, and the leading agricultural journals appeal to American farmers with much earnestness on behalf of the despoiled victims of this fierce and sanguinary conflict. Canadians should not be behind in an enterprise so benevolent. Something has already been done amongst us, more particularly by the German portion of our population, to aid their suffering compatriots in the fatherland. But it is right to bear in mind that the French peasantry will be the greatest sufferers. Both nations alike have been drained of the flower and strength of their manhood, but, in addition to this common calamity, the fair fields of France have been laid waste by the desolating struggle, and that, too, at a time when the country had scarcely emerged from a period of agricultural distress, the consequence of an almost unprecedented drought. Let the issue of the conflict be what it may, and let its end be ever so near, sore will be the need of the means of present sustenance, as well as of seed to replenish the devastated fields as soon as spring returns. All that can be spared from the abundance of more favoured countries will be little enough to meet the emergencies of the occasion. £50,000, we are told, will be required to purchase seed to sow the land in the district around Metz alone, and other war-desolated tracts will be left in no better plight.

Some public action, it is to be hoped, will be taken amongst us in reference to this urgent matter; and the farmers of Canada, we are well assured, will not be slow to join in such a practical thanksgiving for the bounties of Providence, and in manifesting a noble Christian sympathy by doing what they can for the relief of their sorely-afflicted brother agriculturists in the country most heavily suffering under the horrors of war.

#### Death of Lord Walsingham.

Our latest British exchanges bring us the tidings of the sudden death of Lord Walsingham, which occurred on the last day of the year. This nobleman had won for himself a distinguished place among the patrons of agriculture in Britain. By a judicious system of improvement he succeeded in rendering fertile a tract of land formerly esteemed poor, and thus materially enhanced the value

of his estate. But his most signal achievements, with which his name is most frequently associated abroad, have been in breeding sheep, chiefly Southdowns. He successively served as President of the Royal Agricultural Society, and of the Smithfield Club. In reference to his agricultural career the *Mark Lane Express* says:—"Lord Walsingham was chiefly famous for his Southdown flock, for some years past the most successful of any in the country. On the Home Farm, at Merton, which has been much improved of late by marling and scientific cultivation, there is a Southdown flock which dates back for about forty years. The sheep, however, were originally small, and when Lord Walsingham first began to think of exhibiting, he was told that the soil was too poor, and that animals from it would always be beaten by those which came from better lands—as this at first was the case. But some success came in 1851, at the Norfolk and Yorkshire shows, while since then, Lord Walsingham has continued to improve his position, until at length, for seven times in eight years, he has won the Gold Medal or Cup at the Smithfield Club, culminating his honours at the last two shows with the Champion Cup for the best pen of sheep, of 'any age or breed' in the Hall. The foundation of the improvement in the Merton flock traces back to Jonas Webb, of Babraham, but constant resort has been had to the stocks of the Sussex men themselves, such as Messrs Rigden, Hart, Turner, Ellman, and Boys."

#### State Entomologist for Massachusetts.

We are glad to learn that Massachusetts has followed the example of so many other States, and appointed, through its Board of Agriculture, our friend Dr. A. S. Packard, Jr., as its State Entomologist. Dr. Packard has obtained a high reputation in Europe as well as in America by his researches in this branch of science; he is the author of "A Guide to the Study of Insects," the only American text-book of Entomology, and a work of great value to all who study or collect insects. He is also one of the editors of the *American Naturalist*, a popular illustrated monthly magazine of Natural History in all its departments, published at Salem, Mass., by the Peabody Academy of Science. While we tender our warmest congratulations to Dr. Packard upon his appointment we must also express our gratification at this fresh recognition of the value of entomological researches to the agricultural community. This is now, if we mistake not, the seventh appointment of the kind, made of late years in the neighbouring republic, and we doubt not that ere long every State in the Union will find it to its interest to engage some active and zealous entomologist, as leader in the warfare against its myriad insect foes. Massachusetts has already done much by the publication of Harris' "Insects

Injurious to Vegetation," one of the best and handsomest works of the kind in existence, and we are glad to find that it is about to do so much more. This Province too, our readers will no doubt be pleased to learn, is commencing the work by the publication of reports on special insects in the annual report of the Bureau of Agriculture. As these, however, will so soon be in the hands of the public, we need say no more respecting them at present, but will defer any notice of them till their appearance.

#### The English Cattle Shows

The month of December is selected in England for holding a number of fat cattle and poultry exhibitions, with reports of which our recent British exchanges have been largely occupied. The chief of these shows, that of the Smithfield Club in London, and the Birmingham Show at Bingley Hall have already been noticed. At the close of the Smithfield Show, a circumstance occurred which created some excitement and inconvenience. One of the animals, when about to be taken away, was discovered to be affected with foot and mouth disease, and the further removal of cattle from the yards was at once prohibited. The diseased animal was slaughtered, and after considerable delay the remaining cattle were suffered to depart, as no other case of the disorder occurred. This detention interfered somewhat with the Leeds show, which was thus deprived of the presence of some of the finest animals. Notwithstanding these drawbacks, however, we are informed that the exhibition at Leeds was remarkably good, and in the poultry department the London *Field* says that so good a collection of birds has never before been got together at Leeds.

In the department of poultry the Crystal Palace Show is always considered to take the lead, and we were gratified to learn that our old friend Col. Hassard, though he has only just commenced a fresh start in his favourite pursuit, was successful in winning commendation cards for some of his birds at Sydenham, as well as first and second prizes in Dublin. As much as £12 sterling was offered for some of his birds, which is worthy of notice in view of the prices put on them here, and really under their market value, and shows what success and profit may be achieved by the judicious breeder.

The London *Field* furnishes some curious statistics in regard to the Crystal Palace show, giving some idea of the magnitude of the exhibition. There were—exhibitors, 511; total number of pens entered, 2,050; number of poultry pens, 1,236; containing individual birds, 1,932; number of pigeon pens, 814, containing 1,539 birds; total number of specimens, 3,471. Many of the birds were of great, some of lesser value; but it may well be assumed that the real aggregate

value of the entire collection would approach £10,000. The pens in which the birds were shown, if placed in line, would have extended to within 250 yards of one mile. As evidence of the care and good management prevailing, we are informed that only two deaths occurred during the show, among this large number of birds, and in these instances the fowls were rousy when they arrived.

#### Dairymen's Convention

In another column will be found a report of the fourth annual meeting of the Canadian Dairymen's Association. The executive, on whom has devolved the arrangements and preparations for the occasion, and the members of the association generally, may well be congratulated on the complete success of this convention. The attendance throughout was larger than at any previous annual meeting, and the interest manifested in all the proceedings intelligent and unflagging. This decided increase of the attendance, after all the attraction of novelty has passed away, affords conclusive evidence that the importance of the dairy interest is becoming more thoroughly appreciated; and no one who was present, and marked the earnest and practical character of the essays, enquiries and discussions, could fail to be impressed with the immense advantage of such conventions, as a means of stimulating enquiry and disseminating information. All must have felt, moreover, that it was highly desirable to preserve and more widely diffuse the instruction afforded, by the publication of the proceedings of the convention and other transactions of the association, and will look with much interest for their next report, which will, it is understood, be issued at an early date.

A noticeable feature in the recent meeting was the high standard of excellence advocated, and the emphatic expression given to the conviction that dairymen must rest satisfied with nothing short of the very best in their appliances and processes, in order to secure the best results.

Much importance should be attached to the suggestion thrown out in the annual address, and embodied in a subsequent resolution, concerning the desirableness of providing, in connection with the proposed model farms, instruction in dairy husbandry. A dairy farm, not to compete with factories, but to assist them by conducting experiments in crops, breeds of cattle, feeding, and in manufacturing processes, could hardly fail to prove a great advantage to this important branch of agriculture. Some project of the kind, it is to be hoped, will be carefully considered and wisely carried out.

The action taken by the convention in altering the constitution so as to permanently fix the place of meeting at Ingersoll, will not pass unchallenged, and will naturally create

disappointment in the eastern dairy districts; but we trust will not disturb the harmony of the association, or impair its general usefulness. Ingersoll is undoubtedly the present centre of the dairy region, and the most convenient gathering place for the largest number engaged in this department of farming. Whenever factories have become sufficiently numerous or extensive, and the dairy industry is adequately developed in the eastern section of the Province, there is no reason why similar meetings should not be held at Belleville or elsewhere; and this in no spirit of rivalry, but in perfect friendliness and brotherhood, and with the hearty concurrence and aid of the dairymen of Oxford, Perth, and other western counties. Let it not be forgotten that "union is strength," and co-operation the essence of the modern system of dairying.

### Notes on the Weather.

The month of January has not been characterized by any great departure from the average weather of the season. On the 23rd and three successive days the country experienced one of those extreme visitations of cold which, by those at a distance, is considered the normal condition of a Canadian winter. This brief accession of cold reduced the mean of the month somewhat below the average; otherwise the weather has been, on the whole, mild and pleasant. Much of the snow in the neighbourhood of Toronto and westward has melted, and the ground is barer than farmers would wish, on account of their winter wheat. But there is time enough yet to supply a sufficient covering of this efficient non-conductor before the alternate freezing and thawing temperature of the latter end of winter comes on, and which is more to be dreaded than steady cold.

The records of the Toronto Observatory show the following results—

The mean temperature of the month has been 21° 3, which is 1° 8 below the average, and 3° colder than January, 1870. The highest temperature was 46° 4 on the 13th, and the coldest 13° 2 below zero on the 23rd. The warmest day was the 13th, with an average of 39° 7; the coldest the 23rd, with the very low average of 5° 7 below zero, being the coldest day since January, 1866.

Rain fell on six days, and amounted to 0.864 inches, being only about two-thirds of the usual quantity, and about one-quarter of what fell in January, 1870. This is compensated by the quantity of snow which fell on twenty-one days, and amounted to 43.6 inches, being 27.7 inches in excess of the average, and 12 inches more than January, 1870.

There was only one clear day, twenty-two wholly clouded, and eight partially so.

The wind has been very variable.

## Horticulture.

EDITOR—D. W. BEADLE,

CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

### Fruits in the Huron Section,

EMBRACING THE COUNTIES OF LAMBTON AND HURON, AND THAT PART OF THE COUNTIES OF BRUCE AND GREY BORDERING ON LAKE HURON AND THE OCEAN BAY.

(From Report of Fruit Growers' Association for 1869.)

#### APPLE.

The most popular varieties are the Red Astrachan, Early Harvest, American Golden Russet, Rhode Island Greening, St. Lawrence Fameuse or Snow Apple, Gravenstein, Fall Pippin, Keswick Codlin, and Duchess of Oldenburgh.

Those thought most profitable for market are the following:—Red Astrachan, Fameuse, St. Lawrence, Gravenstein, Fall Pippin, Baldwin, Rhode Island Greening, Early Harvest, Northern Spy, William's Favourite and Ribston Pippin.

Every reply stated that "none" were too tender, with the exception of John G. Francis, Esq., who states that the Baldwin, King of Tompkins County and Rhode Island Greening are too tender.

There is no disease of the tree mentioned. Mr. McGlashan says that the prevailing winds are from the south-west, and that in consequence the trees are frequently made to lean to the north-east, and such trees are liable to have the bark on the south-west side of the trunk scalded by the sun. He suggests that when the trees are planted they be set out leaning towards the south-west a little, in order to obviate this evil. Mention is made of the borer, the bark-louse, caterpillar and codlin moth, but their ravages do not as yet seem to have been very serious.

The great majority favour spring planting. Dwarf trees have been planted and the most report them as doing well, though one or two complain that the dwarf pear has not done well.

#### PEARS.

No varieties of pear are reported as too tender. The Bartlett, Flemish Beauty, Dearborn's Seedling, Duchess d'Angouleme, Vicar of Winkfield, and Fondante d'Automne or Belle Lucrative, are named as most profitable for market.

All varieties are named as hardy.

The fire blight is spoken of as being very destructive when once it makes its appearance, and the slug is found on the leaf, but not to any serious extent.

Mr. McGlashan says that the lands in the Bear Creek Settlement, and many farms on the Detroit River, are admirably suited to the culture of the Standard Pear.

#### PLUMS.

All varieties of plum succeed well. Indeed, both soil and climate seem to be admirably adapted to the development of this fruit. No varieties have been found to be too tender. The sorts most popular and profitable are the Duane's Purple, Jefferson, Washington, Lombard, Green Gage, Reine, Claude de Bavay and Yellow Egg.

In some parts of this division, particularly in the County of Huron, the curculio and black-knot are but little known, and have not as yet done much damage. In the County of Lambton these troubles of the plum grower prevail.

#### CHERRIES.

Not much attention has been paid to the cherry. The inhabitants have mainly been content with the Kentish sort, which is very abundant, bears well and is very hardy and healthy. Some report the finer varieties as having been planted, and succeeding well on light soils, and name the Black Tartarian, Cleveland Bigarreau, Napoleon Bigarreau, Yellow Spanish, Governor Wood, &c. There does not seem to be any trouble on the score of insects or diseases of the tree.

#### PEACHES, &c.

The peach thrives well where it has the benefit of the ameliorating effects of the water, and the kinds usually grown in the Niagara and Erie divisions are the favourite sorts. But when once removed from the influence of the water the climate is too severe and the peach fails.

The quince, apricot and nectarine can be grown wherever the peach will flourish, but they are not much planted.

The strawberry flourishes here and the Wilson is the favourite sort, next to it will come the Triomphe de Gand and Russell's Prolific.

Raspberries, wherever planted, have grown well and borne abundantly; however, very little attention would seem to have been given to this fruit. Those who have grown Brinckle's Orange and Philadelphia are much gratified with the results, while some complaint is made where the old Antwerps have been planted, that they suffer from the winter.

The English varieties of gooseberry are here much afflicted with mildew, and no preventive has been discovered, though the use of sulphur, a mulch of salt hay, and putting boards under the bushes have been thought to be of some benefit. The Houghton Seedling is mentioned by all, save one, as exempt from mildew, and he says that for some years this sort was badly mildewed, but, to his astonishment, this year the plants are loaded with clean fruit.

The blackberry grows wild in such abundance that very little attention has been paid to the cultivation of this fruit. The new Rochelle or Lawton, the Kittatinny and the Wilson's Early have been planted to a limited extent, and all succeed well.



Currants of all kinds succeed well and bear abundantly. The favourite sorts are the White Grape, Cherry and Black Naples. The sawfly worm has latterly made its appearance there and done considerable injury in some gardens. The remedy which is recommended is white hellebore.

#### GRAPES.

The following varieties of grape have been planted, the four varieties first named by far the most generally, viz. :—Delaware, Concord, Clinton, Isabella, Hartford Prolific, Catawba, Logan, Rebecca, Iona, Israella, Adirondac, Rogers' Nos. 4, 15 and 19, Allen's Hybrid, Creveling, &c.

Most answers state that none have been found to be too tender, though the Isabella and Sweetwater are quite liable to be injured by the winter. One person found the Delaware and Concord, which he planted in a sheltered situation, and which made a vigorous growth, to be killed back very badly by the winter. The Clinton, Delaware and Concord are named by nearly all as being perfectly hardy. Those varieties which don't ripen later than the Concord are reported to ripen well every year. No disease is reported, and but very little complaint of insects.

Clay and clay loams seem to be the predominant soils of this division, diversified with ridges of lighter soil. Usually fruit trees thrive better when planted on these higher grounds, and when near the lakes escape the late spring frosts. Mr. Adamson says that the amount of rain-fall at Goderich last year was 23 1-10 inches, snow melted 10 inches, and the extremes of average temperature 89.06 Farenheit, to 10.8; sky clouded 57.6, Clear 42.4. This division is evidently well adapted to the cultivation of the apple, pear, plum, cherry, currant, strawberry, raspberry, blackberry, and some varieties of grape, especially in the vicinity of the lake, where many sorts will thrive and bear well which fail in the interior when beyond the benign influence of water.

Mr. McGlashan says that he has heard of several seedling apples for which great excellence is claimed by their owners, but not having had an opportunity to test their merits he does not think it desirable to call the attention of fruit growers to them.

#### Fruits in the Interior Division of Ontario.

This division comprises the Counties of Peterboro', Victoria, North Ontario, North York, North Peel, Halton, North Wellington, North Riding of Wentworth, Waterloo, North Oxford, North Middlesex, Perth, and those portions of Bruce and Grey which are removed from the influence of the lake.

#### APPLES.

The following varieties are recommended to be planted for market in the order named below, viz. :—Early Harvest, Northern Spy, Rhode Island Greening, Fameuse or Snow Apple, Baldwin, Red Astracan, Spitzenburgh,

American Golden Russet, Roxbury Russet, Hawthornden, Keswick Codlin, Fall Pippin, St. Lawrence, Swaar, Early Strawberry and Duchess of Oldeburgh.

The following sorts are put down in the order of their recommendation for hardihood, viz. :—Northern Spy, Fameuse, American Golden Russet, Talman Sweet, Rhode Island Greening, Roxbury Russet, Red Astracan, Early Harvest, Baldwin, Rambo, Swaar, Spitzenbergh, Fall Pippin, St. Lawrence, Duchess of Oldenburgh, Colvert, Hawthornden, Pomme Grise, Keswick Codlin, Ribston Pippin, Wagener, Belleflower, Maiden's Blush, King of Tompkins County and Gravenstein.

In some parts the codlin moth has injured the fruit considerably. The bark-louse is most troublesome on those trees that are planted on damp cold ground, which causes an unhealthy state of tree, and renders it more subject to the attacks of this insect.

Twenty-two give the preference to spring planting, and two say either spring or fall.

There is considerable diversity of testimony with regard to dwarf trees; some, indeed the greater number, stating that dwarf trees thrive well when properly cared for; others that they fail.

#### PEARS.

Pear trees have not been generally planted in this division. In some of the replies it is stated that they have failed. The variety most popular is the Flemish Beauty; after it in the order named, the Bartlett, Seckel and Louise Bonne de Jersey.

The Bartlett, Sheldon and Duchesse d'Angouleme, are mentioned by Mr. Bessey, as being too tender. Mr. Dickson says the tender sorts are too numerous to mention, and Mr. Patterson says that their name is legion, yet most of the others say that they are not aware that any are too tender.

The Bartlett, Flemish Beauty and Louise Bonne de Jersey, in the order given, are the sorts which are most frequently named as being profitable for market, though a large number of the replies do not name any sorts.

Many did not give the names of the most hardy varieties, but of these named the following occurred the most frequently and in the order given below, viz. :—Bartlett, Flemish Beauty, Louise Bonne, Seckel and Dearborn's Seedling.

The fire-blight is the disease most frequently mentioned. Two speak of injury from frost in winter, and a very few of slug on the leaf.

#### PLUMS.

Plums generally succeed well. The varieties that seem to be the most frequently planted are the Lombard, Green Gage, Imperial Gage, Yellow Gage, Yellow Egg, Smith's Orleans, Damson, Washington and Jefferson, in the order named. The only variety mentioned as being tender is the Coe's Golden Drop, by Mr W. Sanderson, who adds also that it ripens too

late. The curculio stings the fruit and causes it to fall prematurely. The Lombard is the most popular market plum of them all; next to it, though only mentioned half as many times, are the Smith's Orleans and Yellow Egg.

Mr. Bessey says that they have a plum known as the "Dayfoot" plum, which is never stung by the curculio, and the tree never affected with black-knot, and that it is a prolific variety. The black knot is very generally complained of throughout this division.

#### CHERRIES, &c.

Only the hardy Morellos and Dukes thrive well throughout this division. The Kentish or common pie cherry is recommended by fifteen different replies; no other variety is named half so often.

The Mayduke, Black Tartarian, Elton, Black Heart, Napoleon Bigarreau and Knight's Early Black, are mentioned by a few, the order in which they are put down indicating the frequency with which they occur. The Heart and Bigarreau sorts are generally spoken of as being too tender.

Bursting of the bark, where the trees are not allowed to branch out near the ground, is spoken of by some; and a few speak of the slug and aphid on the foliage.

Mr. Bessey says the quince grows well in Esquesing; and Mr. Gray says it grows about Woodstock. The peach and quince are also grown around Brantford to a very limited extent. Mr. Cowherd is experimenting with some seedlings which promise to be more hardy and of fine quality. But, with these exceptions, the peach, quince, apricot and nectarine, are seldom grown within this division.

Strawberries do well. The Wilson and Triomphe de Gand are evidently the two popular sorts, and for market the Wilson. Mr. Stevenson, Guelph, says, "I consider the Agriculturist the most profitable where a large yield is desired. It has proved with me after five years trial to be the most hardy kind I have, the plants forming large stools, never killing out like the Wilson, and many other varieties after the second year." Mr. Patterson says the Wilson, &c., &c., have done very badly these two years; want some new kind.

Raspberries are not generally grown. Those who have been trying them seem to give the preference to the Red Antwerp, Brinckle's Orange, Philadelphia and Franconia.

The English varieties of gooseberry are found to be very subject to mildew. One or two speak of succeeding with them, particularly on clay soil, all the rest say that only the Houghton and Downing can be relied upon. There does not seem to be any sure preventive of the mildew. Very high cultivation, close pruning, the free use of sulphur, and mulching the ground under the bushes are recommended as being of benefit.

Blackberries are not much grown. Several speak of the Lawton as a failure; but Mr. Ferrier, of Fergus, says that it succeeds well there. One or two are trying the Kittatinny and Wilson's Early, and speak favourably thus far.

All varieties of currants thrive well; but within the past few years the sawfly worm has done no little injury to the leaves of the currant and gooseberry, in some places.

#### GRAPES.

Many varieties of grape have been planted, and their suitability is being tried. The Concord, Clinton, Delaware, Hartford Prolific, Isabella, Diana, Rogers' No. 3, No. 4, No. 15, No. 19, Adirondac, Northern Muscadine, Perkins, Cornucopia, Canada and Brant, are mentioned in the replies as ripening every season.

Mention is made of mildew on the foliage and fruit.

The red spider, thrips and grape-vine flea beetle are spoken of by a few, but they do not seem as yet to have been found very troublesome, except in the vicinity of Paris.

The soil which seems to be the most predominant in the orchards of this section, and upon which the apple, plum and pear thrive best, is a clay loam. All recommend that the soil for orchards be well drained, or one having a porous sub-soil

#### Climbing Vines on Dwelling Houses.

Mr. H. T. Williams read an article before the New York Fruit Growers' Club, on Climbing Plants as helps to home adornment, in which he says:—

"Our new built houses, with all their elaborate decorations and imposing designs, are still cheerless until mellowed and softened by the genial touch and presence of nature. The wood, brick or stone stand out in angular outlines, bare and hard, and lack the one thing needful to heighten their effect. Let them be wreathed with climbing vines, and let their corners be hid under the delicate foliage or brilliant flowers of the vine, and architecture and nature combine in harmonious proportions to produce the highest picturesque effect."

We have copied the above paragraph in order to caution our readers against the folly of covering their dwellings with vines and creepers in this climate. It may look very pretty, be highly poetical, sentimental, and all that; but it is also highly prejudicial to the health of the inmates. A vine-clad house, in our climate, is always damp, dark, and unwholesome, where disease comes oftenest and tarries longest. The highest combined effect of nature and architecture is too dearly purchased when paid for by the health or life of ourselves or of those dearer than life. Better far that our houses stand out in the open sunshine with ever so angular outlines, than be mellowed and softened by the touch of disease or the dark pinions of death.

But we can preserve our homes from the appearance of being cheerless without running such risks of that most fearful of all cheerlessness—a desolated fireside. There are plenty of places for creeping vines and beautiful trees and gorgeous flowers, and he who loves his home, and loves to make it to his children the sweetest spot on earth, will mellow and soften all the rugged lines with genial touches of nature, so disposed without and within his dwelling that the health-giving sunlight shall ever play there, never scorching, ever gladdening.

#### The Filbert.

It has been a matter of surprise to many that this nut has not been generally cultivated in this country. One reason for the neglect of this nut in particular may be found in the fact that all nuts have been neglected. It is very seldom indeed that our nurserymen receive an order for a nut tree of any kind; what nuts the dwellers in our cities have are the poor, dry, and often rancid nuts brought from across the seas, and those who live in the country either go without or depend upon what the children may chance to find in the wood-lot. Another reason why the filbert has not been more generally grown is that the few efforts that have been made have not been successful. The trees seem to grow nicely for a few years, but do not continue to thrive, and eventually die.

The *Rural New Yorker* says that a gentleman in Brooklyn, N. Y., imported a number of the very best varieties, and planted out an acre of them. This was twenty years ago; for about ten years they grew finely, and bore heavy crops, but at about that time they began to be affected with a blight which soon destroyed them, even trees six inches in diameter and ten feet high. This seems to be the history of all attempts to grow the filbert. If any one has made a trial of them in Canada, we should be very glad to hear from such of their experience in this matter.

#### Shrubs in Pots

These are very useful for decorative purposes, whether forced so as to bloom in advance of their natural season, or grown without artificial heat, and allowed to bloom at their usual time of flowering. There is often a scarcity of flowers between the bulbs and bedding plants, where a few shrubs in pots, plunged in the soil, can be very advantageously employed, and removed as soon as their beauty begins to fade.

The shrubs of two seasons' growth are the best for putting in pots, which may be done in the month of October, in good strong loam, well mixed with about one-half of partially rotted manure and leaf mould. They will not thrive well in poor soil. The roots should be cut in very sparingly, and the pot

be large enough to hold the roots nicely. After potting they may be plunged in spent tan or in well drained soil, and protected so that the pots will not be injured by frost. During the following season they will flower freely, and after they have served their purpose for decoration, may be plunged out of the way in some sunny spot, requiring very little attention beyond an occasional watering.

If desired to force them into bloom, they should be grown one summer previously in pots, in order to be certain of success, and when taken in for forcing, let the change be gradual and gentle, with very little heat, else the flower buds will drop off without opening; and give plenty of light and air, and keep the roots sufficiently supplied with moisture.

The double flowering peach is almost beautiful and useful plant for forcing in pots; also the dwarf double-flowering Almond, the rose and white varieties; the *Prunus Trilobata*, the Japan Quince and the *Wigelia rosea*. All these, with a little care, may be made most charming objects, and if gradually coaxed, as it were, rather than forced into bloom, will make a beautiful display.

After they have done blooming, and as soon as the weather has become warm and settled, they may be taken out-doors, plunged to the rim, top-dressed with some good rich dressing, and freely exposed to sun and rain. If the weather should be dry, they may need watering during the growing season, but not after the first of August. Treated in this way, they may be used for forcing two or three times, after which they may be planted out, and a fresh lot put in pots for the next winter.

#### Painting Trees to Protect from Mice

To the Editor.

SIR,—Some time ago, I saw an article in the CANADA FARMER about protecting trees from mice with white lead, linseed oil and lamp-black, which is a regular paint, and would do well, being cheap and handy, if it is, as your correspondent "Observer," says, good for the trees as well as a protection against the mice. But, on that point, some of your readers have doubts, white lead being a poison.

Now, if you know that there is no danger to the trees from the use of it, let us know as soon as possible, and oblige a number of your subscribers

CAUTIOUS.

We have never used white lead paint in this way. We know it is good to paint over large cuts and wounds, to keep out sun and rain, but cannot say that it is good to paint over the bark, and that we know there is no danger. Will "Observer" please tell us for how many years he has used it, and whether the bark grows freely under it?

### Meeting of the Western New York Horticultural Society.

The regular annual meeting was held in the city of Rochester, on Wednesday and Thursday, the 18th and 19th of January, 1871. There was a large attendance of members and a fine display of fruit. There were more than eighty different varieties of apples on the tables, some of them well-known and long-tried sorts—apples that have taken fast hold on public esteem for their many good qualities, and that are likely to remain high in favour for many generations yet to come.

Perhaps first among these, as a table fruit for winter use, we may name our well known and highly prized Swayzie Pomme Grise. It needed no heralding; indeed it was placed on the table without even a card to designate its name, but its familiar form and cinnamon russet coat, with just a deepening tinge on the warm cheek where the sun kissed it, were not to be mistaken. We were permitted to cut one, and found the grain most delicately fine, and the flavour rich, sprightly and spicy—quality just the best. In truth, to our taste, this apple is not only unexcelled, but unequalled by any of its season as a dessert fruit, and after January has passed and gone, there is not a pear in the whole catalogue that will jostle this apple from the table of an appreciative lover of fruits. There will ever be those who will pay ten times as much for pears that do not possess one-tenth the flavour of this apple, merely because they are pears: but the knowing ones will be content to let them eat their pears, so long as the better and more nicely flavoured fruit may be left to them, even though it be an apple. To the Canadian, it is some matter of pride to know that so far as its origin has been traced, it sprang into existence on the banks of the Niagara, in the Province of Ontario, and no little gratification to learn that the tree seems to be possessed of that hardy constitution that will enable it to endure the cold of our more unfavourable sections.

Here, too, were our favourite Snow Apple, Jonathan, King of Tompkins, Northern Spy, Monmouth Pippin, and the like, apples that stand in the foremost rank, that stand among apples, like Saul, head and shoulders above the multitude.

But there were some new sorts of apples there, and among these we were pleased to see the much trumpeted Grimes' Golden Pippin. The specimens of this apple were sent from Ohio, and had been somewhat bruised in coming to the meeting, yet not so seriously injured but that a good opinion could be formed of the appearance and quality of the apple. It is of good medium size, oblong in form, the stem slender, and set in a very deep, even basin, the eye closed and set in a large and very deep cavity, colour deep golden yellow, with some slight patches of thin

russet, especially towards the blossom end, and thickly sprinkled with small brown dots. The flesh is yellow, juicy, and rich, with a sprightly sub-acid flavour; quality best. Thus much we must say for the fruit, which we were permitted not only to see but to taste. Whether the tree is vigorous, productive, and hardy, we cannot tell. Those who have the tree for sale claim for it everything that can be desired in all these particulars, but the tree has not yet been planted for such length of time in such variety of soils, climates and exposures, as to warrant any very positive and comprehensive assertions on these points. Those who wish to test these questions would do well to plant this variety, for if it should succeed in their hands, they will have secured a fruit of great excellence.

Another new apple was shown, raised by Mr. Jacob Moore, of Rochester, which he had obtained by hybridising the Roxbury Russet with the Northern Spy. The fruit did not resemble in appearance either of its parents, being more like a Rhode Island Greening in form and colour, yet more ruddy on the sunny side, and more lively yellow where the green of the shaded side mellowed down to join the red. This apple is of large size, smooth, even, and handsomely regular. In flavour it much resembles and closely rivals, if indeed it does not fully equal, the highly prized Green Newtown Pippin. It has not yet been sent out, not even named; but if the tree should prove to be hardy, and to yield good crops of even size and of such quality as the sample we tasted, a very valuable variety will have been added to our list of winter apples. Another seedling was shown by the same raiser—a very pretty, indeed showy fruit, but by no means equal to the sister sort we have just described.

There was a good display of late varieties of pears. Three enormous specimens of the Easter Beurre, from California, were placed on the table by Mr. J. J. Thomas. They were very attractive from their large size and perfect symmetry. The flavour was very good, though the flesh was somewhat coarse and gritty at the core. In large cities there is a market for such pears as these at very high prices.

All the other plates of pears—some 25 different sorts—were exhibited by Messrs. Ellwanger & Barry. Among these were many well-known sorts, such as the Vicar of Winkfield, Winter Nelis, Beurre Gris d' Hiver, Jaminette, &c., &c., but first of them all in quality, without doubt or exception, stands the Josephine de Malines. The skin of this pear has a fine glossy appearance, and the flesh a delicately beautiful tinge of pink colouring, that mark this variety quite distinct from all others, while the juicy, buttery, slightly quince-like character of the pear make it the most delicately delicious of all the winter sorts. Of the character of the tree we cannot speak so decidedly, not being sufficiently familiar with its habit. At New-

burgh it has not seemed to be as vigorous and productive as at Rochester, and whether the tree has sufficient vital force to endure the rigors of our climate and ripen such fine fruit is yet a matter of experiment, but one well worth the trial.

There were three varieties of Rogers' grapes exhibited in fine condition—Nos. 1 and 9 and Salem. These had kept perfectly without shrivelling and without any loss of flavour. Indeed, there is no difficulty in keeping grapes all winter. There is a difference, no doubt, in the keeping qualities of grapes, some keeping naturally much longer than others; but if the fruit be perfectly ripe when gathered, and be kept in a dry atmosphere and at a low temperature, there is no trouble whatever in preserving them. It will at once be seen that the cellar is not a suitable place for keeping grapes, the air being too moist. The best place is in the attic, provided it can be kept free from frost. Let them be ripe, dry, clean and cold, and grapes will keep fresh and sound.

Mr. D. S. Wagener, of Pultney, N. Y., exhibited a set of implements for facilitating the operation of grafting, the scion and stock being so cut by these instruments that they must of necessity fit exactly to each other. We did not see the operation performed by means of these instruments, and cannot tell our readers whether the operation of grafting is really made any more simple or more certain of success. A sharp, thin-bladed knife in the hands of an experienced workman will put together a great many grafts in a day with great exactness and certainty of success.

The greater part of the time of the meeting was taken up with the discussion of the subject of the marketing of fruits. Much loss and no little vexation had been experienced by the raisers of fruits, by reason of the rough handling of expressmen and the delays of railway companies, and while all seemed desirous that these evils might be remedied, none could suggest any feasible method of attaining so desirable an end. The arm of the law was powerless; remonstrance and entreaty were alike in vain. The truth seemed to be that the fruit grower of Western New York was at the mercy of two great and irresponsible monopolies—the New York Central Railroad and the American Express Company. The meeting expended its energies in appointing sundry committees charged with various duties of vigilance, legislation and remonstrance, which will probably never find time to do the work assigned them.

Much stress was laid upon the importance of a careful selection and assortment of fruit, and a resolution was adopted strongly advising the growers of fruit to assort their fruit into different grades, to mark them accordingly, and to place their names on every package of fruit they send out. This is sound advice and cannot be too carefully observed. He who puts up his fruit hou-

estly, and strictly in accordance with the quality marked in the package, need not be ashamed to have his name or brand known, and in a short time will have won for his brand a reputation that will sell his fruit at highest quotations, while others wait for buyers. The "Beaver" brand of apples in the Glasgow market is an instance of the truth of these remarks, for within a very few years the shipper of this brand of Canadian apples has obtained for his fruit such a reputation in that market that they are sought after by buyers at the best prices.

On the subject of pears, Mr. Charles Downing, of Newburgh, N.Y., remarked that if he could have but one variety of pear he would choose the Beurre Bosc, and if a second it would be the Beurre d'Anjou. These expressions show the estimation in which these pears are held by the ablest and most experienced pomologists of the United States.

On the subject of the raising of grapes for market, it was stated by Judge Larowe, of Hammondsport, that it costs two cents a pound to raise grapes, and that they can all be readily sold at prices varying from four to fifteen cents per pound. There are several large wine manufacturing companies at and near Hammondsport that buy all the grapes that can be brought to their press-room, so that the grower is sure of a market at reasonably remunerative prices.

There was considerable discussion upon the Curculio and Coalin Moth, but nothing new or more efficient than the means hitherto employed for their destruction was cited.

#### To Protect Trees from Mice—Another Method.

Take one spadeful of hot slacked lime, one of clean cow's dung, one half of a spadeful of soot, and one handful of flour of sulphur; mix the whole together, adding sufficient water to bring the mass to the consistency of thick paint. At the approach of winter paint the trunks of the trees sufficiently high to be beyond the reach of the mice. It does no injury to the tree.

I have practised this receipt for several years, and have not had one tree injured by mice or rabbits since applying it. I first clean off all loose stuff that might be a harbour for the vermin, from about the trunks of the trees, for ten or twelve inches from the trunk; then on a dry day give the tree a coat as directed, covering every spot. I put in more sulphur than the recipe calls for—say two or three times as much, and I find no injury therefrom.—Correspondence of *Small Fruit Recorder*.

THE WHITE FRINGE (*Chionanthus virginica*) can not be readily grown from cuttings, nor from layers, but is easily grown from seed, if sown soon after it is ripe. It is a very handsome shrub, and probably hardy throughout Western Ontario.

#### Starting Plants in the House

Before long many of our readers will be thinking about sowing seeds of tomatoes, egg-plants, and the like, so that they may get them forward early, and have the comfort of them in advance of the general public. Perhaps a few suggestions that may help them to a more full realization of their wishes will be acceptable to most of our readers.

And first a word of caution. In the great eagerness to get the plants forward very early, it is a common mistake to begin too soon. In our climate it is not generally safe to plant out tomato plants in the open ground before the tenth of June, lest they be caught by some late nipping frost, and the care and labour of weeks be cut down in a single night. It will be found, then, to be quite early enough to sow the seed about the twentieth of March, which is some eighty days before they can be planted out, and quite enough to make fine, large, strong plants.

The seed should be sown in light friable soil, and placed in some sunny window. If there be such a window in the kitchen it will be the very best room in the house for the box of seeds, for the reason that the air is more full of moisture than that of any other. In a few days the seeds will begin to grow, and the plants in all probability stand quite too thick together. They should be carefully thinned out, so as to give each plant plenty of room without crowding its neighbour.

The plants may be allowed to remain in the box until the weather will admit of their being removed to a cold frame, where they can be planted out in the soil, or potted off into separate pots, and protected from chilly storms and night frosts by a few boards, and freely exposed to the sun and air in pleasant weather.

A box may be very readily divided into compartments with strips of common pasteboard, and one plant be set in each separate division. This will be found very convenient in transplanting, as each plant can be taken out with its own ball of earth about the roots, without in the least disturbing its growth.

Water when the soil needs water, but not oftener, and use tepid water. Give plenty of light, and when the weather is mild enough, set the box out for a few hours in the open air on the sunny side of the house, until the plants can be safely placed in the cold frame.

The cold frame is merely a wall of boards, such as is placed on a hotbed to protect the plants, which may be placed in some warm, sunny spot, and be covered with boards when needed to protect the plants from storm or cold.

In our climate the weather is usually mild enough to allow of the plants being placed in such a frame about the first of May, and

if they have been freely exposed to light and air, they will be stocky and healthy. Here they will continue to grow, not rapidly, but gradually increasing in size and strength, until the weather will admit of their being placed in the open ground. Treated in this way, any one of them will be worth a hundred long-drawn, puny, sickly things that have been grown in heat and crowd.

#### On Tomatoes

Perhaps no vegetable has ever come so generally into use in so short a time as the tomato. In America, Europe, the East and West Indies, wherever it can be grown, the tomato finds a prominent place in every garden. By the market gardener, the tomato is set down as one of his leading productions. The varieties are now numerous, and may be multiplied *ad infinitum*, as no plant "sports" so much as it, and these sports are readily preserved and continued by keeping the seeds of the kinds desired.

To obtain this vegetable early appears to be the ambition of every one who raises it either for his own table or for market purposes. For this object some sow the seeds in hotbeds in the spring, others in the open ground in the fall; others again grow them in windows in the house. There is, however, no doubt in my mind, from practical experience that *cuttings* taken from the plants in the autumn, just before freezing up time, struck in damp soil, and when well rooted removed to six inch pots, kept in an atmosphere of from 40 to 50 degrees, and watered just sufficiently to keep them alive during winter, and by keeping the shoots as they appear properly pinched, and also a part of the larger leaves, so as to retard growth as much as possible, is the true way of obtaining the earliest fruit. It will be found that, if the plants are well attended to, by the spring they will be thick and strong at the base, and as woody, almost, as a wallflower. Growing tomatoes as almost all gardeners do, in hotbeds, is decidedly the wrong method, as no doubt many of them have found out. The hotbed plants are weak and spindling. Many put down seeds in this way so early that the plants run up to the glass before the weather becomes sufficiently warm to put them out in the open ground, and the leaves either scorch or get frostbitten. I have seen many a frame of tomatoes for which I would not give five cents for the best five hundred plants in them.

The right plan I believe is—after testing several—to start the plants in a hotbed in the beginning of April, and when they get four or five leaves on, plant out into cold frames six inches apart, in rows twelve inches apart, with a row of lettuce between them, which have been also started in the hotbed at the same time. By giving plenty of air in warm days, and covering close on cold nights, by the middle or first week in

May the plants will be fine, healthy, and stocky, looking like young trees. These plants having been copiously watered, may be taken up with a transplanting trowel, and set out in the open ground without danger of wilting or drooping, as those from the hot-bed, however hardened, always do more or less, as at the age at which they are generally removed they must at first meet the bottom heat.

Every one should have their own hot-bed in the spring. One small sash will grow all the lettuce, melons, tomatoes, peppers and egg plants required for a large family, and the plants are much better than those brought from a distance. There is very little difficulty in managing a hot-bed if a thermometer is kept under the glass, and the spirit kept between sixty and eighty degrees. A little watchfulness of the females about the house in the absence of the male population may soon regulate the heat, by raising or lowering the sash as required.

Having now raised the plants, the next thing is to train them, which is done in various ways. I shall only mention two:

For earliness, the best plan is to spread the plant with the hand, having previously placed some straw, hemlock, or cedar brush, or other substance, if any be at hand, to keep the fruit from the ground, but nothing of this kind is essential.

The other method is to tie the plants to a stake six feet high, pinching off all side shoots, leaving, of course, the leaves which grow from the main stem, and those branches which only have fruit on them.

I have often seen it remarked in agricultural works and papers that the soil for growing this vegetable should not be too highly manured. This is, no doubt, true when they are allowed to lie on the ground or are tied to trellises; but when attached to stakes it matters not how rich the soil is if the side branches are pinched off so soon as they appear. By this way of training the plant is entirely under the control of the gardener. It will, however, be found that in highly enriched, deep soils—I mean a well-drained, soil two and a half feet deep, made of well-rotted soils, mixed with about one-eighth of short stable manure and ashes, and a top-dressing of hen manure half an inch deep, watered with rain water every one or two evenings during drought—that the plant, after in vain trying to make its escape by side branches, will throw out shoots from the ends of the fruit branches, but these also should be taken off.

Last summer I raised some tomatoes on this system which I stopped at seven feet high. The plants were alternately leaves on one side of the stem and fruit branches on the other the whole way to the top. On many of the fruit branches I counted fourteen tomatoes, the largest of which weighed only 11½ ounces, at which I was much disappointed, as I have seen accounts of toma-

atoes weighing one and a half pounds. So, I suppose, my seed was not of the description of tomato of which these individuals spoke. I must frankly admit that those plants in the poorest soil and laid down on the brush ripened first, both beds being in very favourable positions, those on the stakes probably the most favourable. I notice that many people cut the ends off the vines. This is a great mistake, as it only induces fresh growth in another direction. If it is desired to trim the plants, the side branches should be cut out as close as possible to the main vine.

Plants for laying down should be at least four feet apart each way, and then they will cover the ground. Those tied to stakes may be one foot apart, and two feet between the rows. I regret to say I am unable to state which way of training would give the greatest number of bushels per acre, as no account was kept.

P. E. BUCKE.

Ottawa.

The *Small Fruit Recorder* for January has been laid on our table, and we are pleased to notice that this valuable publication, especially devoted to the interests of the small fruits, has been doubled in size and much improved every way. It is well worth the subscription price of one dollar per annum. That this number has appeared late in the month is owing to a disastrous fire in the job room of the Printing Company from which it is issued, which wholly destroyed the "form," which was all ready for the press. It is published by A. M. Purdy, Palmyra, N. Y., to whom subscriptions can be sent.

The *Horticulturist* for January is full of interesting matter to every one who has a garden. This oldest American horticultural journal now enters upon its twenty-sixth volume, with every promise of a long and useful career yet to come. Published by Henry T. Williams, 5 Beekman Street, New York, at \$2 50 per annum.

*Tilton's Journal of Horticulture* enters upon its ninth volume with its usual variety of interesting and valuable reading, and beautiful illustrations. The January number contains a fine engraving of the Wilder Grape, the best of Mr. Rogers' seedlings for our Canadian climate. We notice that the price has been reduced from three dollars to one dollar and a half per annum. It is published by J. E. Tilton & Co., Boston, Mass.

California is by far the best grape region in the United States, and perhaps in the world. The pure air and equable climate prevent rot. The vines are planted five by six and six by eight feet apart, and produce with but little cultivation, five hundred to one thousand gallons of wine to the acre.—*Robert Buchanan* in *Journal of Horticulture*

## Paint for Fruit Trees.

To the Editor.

Sir, In reply to the enquiries of your correspondent "Cautious," respecting the effect of white lead paint on fruit trees, I can only give the result of my own trials. In all my experience, extending over twenty years, I never knew one tree of any sort injured by its use. I have seen it extensively employed, having been brought up on a large estate in the "old country," where I worked from boyhood up to manhood about the gardens, pleasure grounds and plantations, and where we used the paint on all kinds of trees for dressing wounds, whether caused by pruning or accident, and as a protection against rabbits. These creatures were very destructive on young trees. We applied the paint also as a remedy for partial decay, and found that it would in many cases arrest the decay, and start the tree into new life.

Since I came to Canada I have used it often both for myself and others. I have applied it to apple, pear, and plum trees. I have induced others to try it with good results. A neighbour of mine, three years ago, planted an orchard of about two hundred trees. They scarcely made any growth for two seasons; indeed, they scarcely did more than just come into leaf, and presented altogether a miserable appearance. Last spring I advised him to paint them, which he did, and during the season following they grew from one to two feet, and now look healthy. I do not know of any application equally beneficial to unhealthy scrubby trees. Even old trees, partly decayed, if they are of a sufficiently good kind to be worth the trouble, may be renovated by the aid of paint, first pruning all dead limbs and rotten wood, and scraping off the rough bark.

Let every one remember that a fruit tree is a plant, and not a post. The ground requires to be lightly cultivated, occasionally, for them to do well, especially if young. I would advise those who have never used paint in the way I recommend, and who are doubtful of the result, to apply it to a few of their least valuable trees, and note whether they grow any better, or if the mice or borer will trouble them. About the middle of April is the best time to paint trees.

OBSERVER.

FLOWERING THE DOUBLE GERANIUMS.—The greatest profusion of bloom will be secured by growing in soil not very rich, and allowing the roots to become pot-bound. These beautiful novelties are disposed to make a luxuriant growth, and it is by keeping this disposition in check that their full capacity for floral display can be brought out; but when the wood growth has been checked they flower profusely, and are a most charming sight.

### Double Geraniums

So rapid has been the development, and so general the interest felt in this now and beautiful class of geraniums, that we have prepared an engraving of one of the best, in order to give our readers some idea of the truly splendid effect of such a noble truss of bloom.

The variety here represented is named "Andrew Henderson," and received a first class certificate when it was exhibited before the Imperial Horticultural Society of France. The colour is different from that of previous varieties, this being a deep scarlet lake. Its truss is of extraordinary size, each containing from sixty to eighty blossoms, all very double and beautifully imbricated.

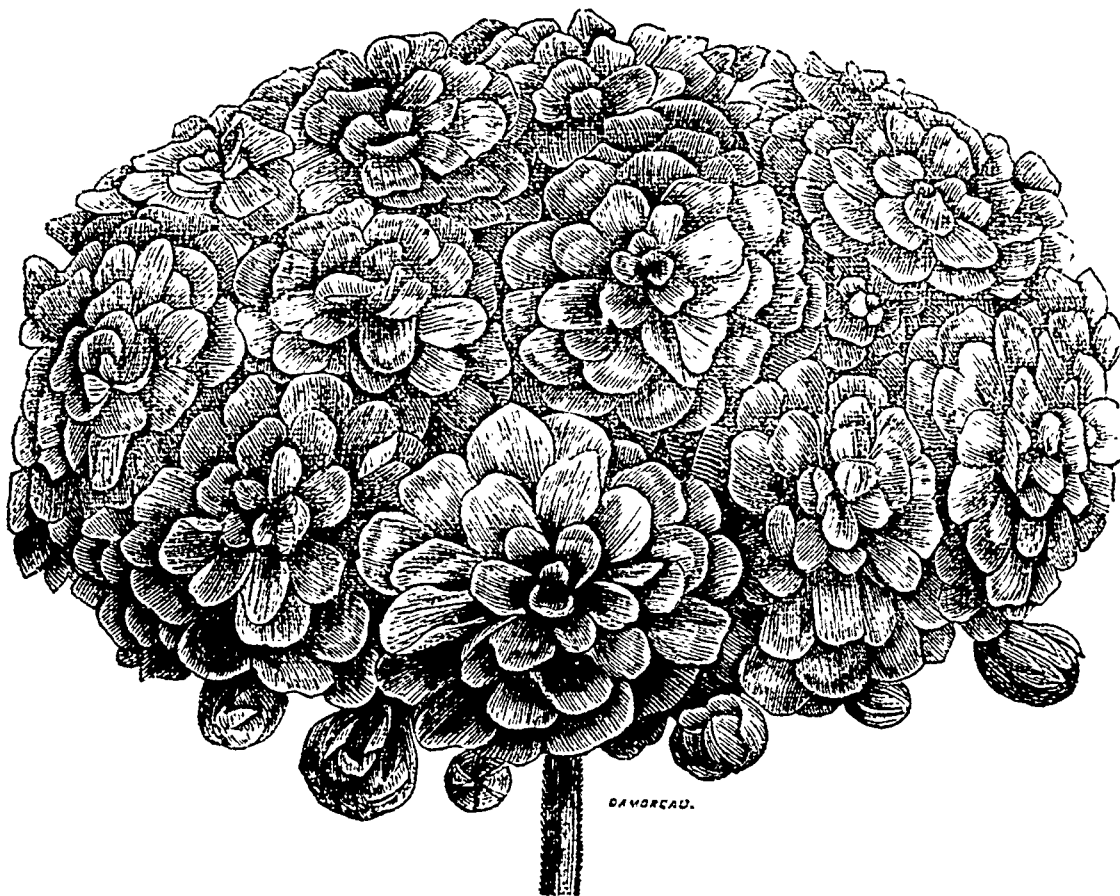
### Floral Window Boxes

What adds so much to the ornamental appearance of a room as flowers? They can be procured with little expense, and the few moments required each day in watering and careful training and pruning, are amply repaid by the sweet fragrance and rich bloom. A window box can be very easily and cheaply made of wood, and fitted to the windowsill of a south or east window, which can be made very attractive. Ours is made of pine boards, is about five inches deep, and covered with wall paper; it would be better painted, or still better made of zinc and neatly painted. The more expensive are made of potters' ware or of tile. Good rich garden soil is suitable for most plants.

A plant of the German Ivy is very pretty

in the same manner. I have mentioned only those which are in reach of all.

A more glory came up self-sown in our window box, and was allowed to grow, only taking care to pinch off the ends of the shoots occasionally, and common as it is, it has given us much pleasure. The petunia can be grown as a house-plant, and trained on a trellis, presents a much prettier appearance than in the garden. A very neat trellis may be made of old hoops, forming pieces of them into three circles, seven, five and three inches in diameter, fastening each circle firmly with the clasps taken from the hoops. This can easily be done with the aid of a knife and pair of pincers. Then a fine stick, two feet long, nicely polished, and sharpened at one end, must be put through the circles, first under one side of the small-



These beautiful flowers have not been so long in cultivation here as to enable us to decide upon their merits for bedding out, but they certainly do make most beautiful pot plants, retaining their bloom much longer than the single sorts. If the flowers are cut when in their prime, and dried, they will retain their colour and form, and make most beautiful winter bouquets. There are now a number of varieties in cultivation, of various shades of colour, many of them producing large trusses, and all possessing much beauty. The following are probably the best in cultivation in this country, namely, Madame Lemoine, Marie Lemoine, Victor Lemoine, Andrew Henderson, Wilhelm Pfitzer, Imperatrice Eugenie, Victor (Smith's), Gloire de Nancy and Le Vesuve

to place at either end of the box, and can be trained up the window casing and festooned over the top of a window. The Kenilworth ivy is useful as a border plant on the inner edge of the box, and allowed to trail down over the sides, but it will require severe pruning, or it will cover and crowd out other plants. For the centre, a few plants of verbena, geraniums or fuchsias, or the more common, but not less beautiful pansies, double stocks, pinks, camellia flowered balsams and wall-flowers. There is also the English daisy (*Bellis perennis*)

"Wee, modest, crimson-tipped flower"

Be careful not to get too many plants; two or three are sufficient, and will grow more luxuriantly than if crowded. Many other plants can be successfully cultivated in the

est, then over the same side of the one next in size, then under the other side of the first, etc., weaving them in and securely fastening the upper side of the largest one with a little wire staple.

A very neat hanging basket may also be made of old hoops and broom wire, using these for a form and lining with moss. Some pretty trailing plant, inside, trained to hang over the sides, gives a very agreeable effect. I have one in which, after lining half way with moss, I placed a row of Kenilworth ivy, then filling up with moss, a geranium is placed on the top. These baskets require to be copiously watered. I have found the best way to be to suspend the basket in about two inches of water, allowing the soil to absorb the moisture, which it will do very readily.—*Cor in Country Gentleman,*

### The Fruit Growers' Association of Ontario.

Members are notified that the Directors have decided to distribute among those who now are, or who may become members, on or before the first day of March, 1871, a tree of the Beurre d'Anjou pear, and a plant of the Early Wilson blackberry and of the Mammoth Cluster raspberry, on the usual condition of receiving a report of their success or failure for five years. Those members who may chance to have already planted the Beurre d'Anjou pear may notify the Secretary of the fact, and state which of the following varieties they prefer to receive: Flemish Beauty, Clapp's Favourite, Beurre St. Nicholas, Josephine de Malines or Tyson.

Members are also notified that their annual fee of one dollar for the year 1871 is now due, and only those will be considered entitled to receive the tree and plants mentioned above who send the same in to the Secretary on or before the first of March next.

The report of the Association for 1870 will soon be mailed to all members.

Members, or those wishing to become members, who reside at or near London, may hand their fee to William Saunders, Esq., one of the Directors of the Association; those at Hamilton to the Reverend R. Burnet, President; those at Sarnia and vicinity to Townsend, G. Vidal, Esq.; those at Paris and vicinity to Charles Arnold, Esq.; those at Brantford to William Sanderson, Esq.; those at Toronto to Dr. Ellis, at the CANADA FARMER Office; those at Goderich to A. M. Ross, Esq., one of the Directors of the Association; and others by mail to the Secretary,

D. W. BEADLE,  
St. Catharines.

### Best Varieties of Potatoes

To the Editor.

SIR,—During the last seven years I have cultivated, with a view to testing their good qualities, several hundred varieties of potatoes, and in order to elicit the opinions and the experience of some others of the readers of your widely circulated journal, I beg to give my experience in a few words, and to name what I consider the best six varieties, taking them in their order of merit.

If I were confined to one potato, it would be a little difficult to decide between Climax, Breze's Prolific and Excelsior. This year, when all the varieties grew side by side in the same field, and after cooking them and taking a vote in my family upon them, Climax has always got the largest number of votes, but Breze's Prolific is nearly equal in table quality, and a little more productive.

Then follows Excelsior, which is but a little behind, and always comes in for its

share of votes, and perhaps with some people would be preferred to either of the two last named; still it does not crack open so much or look so nice and tempting.

Then comes Willard's seedling. This variety, it seems to me, should be in every collection. It is so smooth and pretty, and of excellent quality withal. Then again, it will ripen in a shorter season than any of the late potatoes.

In regard to early sorts, as Early Rose is good the greater part of the year, I will choose it for the fifth variety. Still, if I were living near a large city, and were raising early potatoes for market, I would plant Early Prince or King of the Earlies, which are both a few days earlier than the Rose.

These varieties, in my opinion, possess more good qualities than any others, and none of the four last named varieties have yielded with me the past two years, at a less rate than 500 bushels to the acre, and the two first named at the rate of nearly 700 bushels per acre.

For a large coarse potato, on rich land, for feeding stock, Cuzco and Harrison are perhaps preferable to any other.

CHARLES ARNOLD.

Paris, Ont.

### Correction.

To the Editor.

SIR,—In the report of the Fruit Growers' Association I notice the following:—

"Messrs. Samuel Storm, A. B. Moore, A. Morse and A. Francis speak of some varieties as being too tender, naming Cayuga Redstreak, Ladies' Sweeting, &c."

I cannot see how my name is associated to be made to say that those varieties mentioned were "too tender," when the opposite is the fact, having grown those varieties with success in my own orchard, and also noticed them in others. All those varieties succeed well throughout the Niagara Peninsula.

Please insert this correction.

A. MORSE.

Pomona Farm, near Smithville, }  
Dec. 19, 1870.

### A Hint to Greenhouse Builders

In an article describing the greenhouses &c., of G. Chilson, Esq., of Mansfield, Mass., which appeared in *Tilton's Journal of Horticulture* for July last, the writer mentions the fact that the flue of a large span-roofed house leads first the whole length of the house, then half-way across the end, *under a walk*, then rises again to the chimney in the centre; and that no difficulty is found in securing sufficient draught, even where a portion of the flue is depressed below the level of the rest, *provided the chimney be kept warm*, and this is secured by placing it in the centre of the house instead of in the outer wall.

## Entomology.

### Silk Culture in Canada

During a short sojourn in California, last winter, my attention was directed to a number of articles appearing in the newspapers there respecting the different modes of treatment of the silkworm, and the causes of success or failure in growing silk for the market. All the writers agreed on one point, namely, that the raising of silk and silkworms' eggs was then assuming gigantic proportions, and was destined before many years, if not to overtop all others, to be at least one of the most important and profitable industries in California, and for which that genial clime is peculiarly well adapted. Many of the writers of the articles were experimental growers; some had been a number of years in the business on a large scale. The figures given of items of cost in producing and price of the articles when ready for market gave the extraordinary result of from *one to eight hundred dollars per acre, clear profit!*

Knowing that the mulberry (the leaves of which are the food of the silkworm) flourishes in Canada, I made further enquiries on the subject of silk culture, and visited the plantation and cocoonery of Captain Wm. Haynie, at Sacramento. Captain Haynie (one of the pioneers of silk culture in California) kindly gave me much information on silk growing, and to him I am indebted for most of the information contained in this article. He now carries on silk growing quite extensively, and had, when he last wrote to me, in June last, seven hundred thousand silkworms hatched out and doing well; but I regret to say I saw by the newspapers a short time after that a fire destroyed his cocoonery and all his silkworms when nearly ready to spin.

The result of my enquiries determined me to try the experiment of growing silk in Canada on my return, which I did, and from personal experience I can say that silk can be grown in Canada of fine quality, and if properly managed, profitably, thus adding another source of wealth and another industry to our rapidly developing country.

I do not claim, however, to be the first who has grown silk in Canada; but no native-grown silk, to my knowledge, has ever been exhibited at our Provincial Fairs, which is pretty conclusive proof that its growth has never been attempted on a large scale here.

A few hundred cocoons of my raising were on exhibition about the time of the fair in Toronto, in the window of J. G. Joseph & Co., jewellers, King Street, Toronto, and attracted considerable attention.

Silk is one of the most beautiful, costly, and useful articles of commerce, and all na-

tions that have dealt in it largely have gained immense wealth thereby. It forms one of the principal articles of commerce of England with the extreme East.

The specialty of the silk industry has given to Lyons the importance that the cotton industry has given to Manchester. It is to textile substances what the diamond is to precious stones, and what gold is to metals. It is not now regarded as an article of luxury, as it was some twenty or thirty years ago, but of necessity, entering argely into and forming part of the daily dress of nearly every person in this country.

Several millions of dollars of Canadian money are annually sent abroad for the purchase of silks for use in Canada. Could we succeed in detaining a part at least of that amount at home by the production and manufacture of silk, our country would be that much the richer. So important a branch of industry was this silk-growing considered in California, that the Legislature passed a law granting large bonuses for several years to encourage and stimulate the enterprise.

The following table will show the places of production and value of raw silk produced, as near as can be ascertained, in the world, and its vast importance in the commerce of the world in 1866:—

Asia	.....	\$141,000,000
Europe	.....	73,480,000
Africa	.....	220,000
Oceania	.....	120,000
America	.....	\$0,000
Total	.....	\$214,900,000

But it must be taken into account that no knowledge can be obtained of the vast amount of silk raised for home consumption in China and Japan. It will suffice to say, however, that their home consumption must be immense, as it is the main article of dress, of both sexes and of all ages, of the countless millions of the middle and upper classes of those countries.

Silk has from time immemorial been grown and manufactured in China and Japan, being introduced into Japan from China. In both these countries it is an important item in agricultural pursuits, and in China agriculture is looked upon as one of the noblest occupations. It is the custom of the Emperor of China to demonstrate the importance of agriculture, every year, in presence of his princes and nobles, the very great mandarins of the empire, to publicly plough a field and sow the same. So also it is the custom of the Empress to visit the cocoeneries, and work with her own hands therein in feeding and otherwise tending the silkworms.

From China the culture of silk was introduced into India, Persia, Turkey, and nearly all the countries of Central and Southern Europe, the islands of the Pacific, South America and California; and even the Mormons of Salt Lake City are making an effort to include that as one of their industries.

As early as the time of James the First an effort was made to introduce the culture of silk into Virginia, but tobacco swamped the effort. During the last century another effort was made to introduce this industry into all the American colonies with fair success, and Queen Caroline wore a beautiful robe, on a state occasion, manufactured from Georgia grown silk. The storm of the Revolution crushed out the enterprise, and tobacco and cotton took its place when that was over.

Silk is a crop produced in six weeks in the summer, and in favourable seasons nothing will prevent a second crop of as good quality being raised, but perhaps the best way for this country would be that practised by Capt. Haynie, who allows a certain quantity of eggs to hatch at one time, keeping the rest of the eggs in an ice-house or other cool place, where the thermometer does not rise above 40° or 45°. When the first batch is sufficiently advanced to be soon out of the way, he brings out another lot of eggs to hatch, and so on through the summer, having a succession of three or four crops.

#### MULBERRY PLANTATIONS.

The first and great requisite in growing silk is to have a sufficient number of mulberry trees to yield an abundant supply of leaves, for these are the food of the silkworm.

The mulberry trees may be procured of nurserymen for a start, after which large numbers may be propagated by cuttings, and the extent of the plantation increased, according to the desire of the grower. The varieties known as *Morus alba* and *Morus moretti* are those best adapted to this climate, and produce a superior quality of silk.

The trees should be planted in the warmest location on the farm, and in regular plantations between three and four feet apart each way, and they should be kept as dwarf trees, thus saving the trouble of using step ladders to gather the leaves. In California the rapid growth enables the growers to cut off the branches to feed the worms, thus keeping them up from the shelves, allowing a circulation of air around the worms, and conducting to their health; but in this country this system of feeding can only be resorted to partially; the great bulk of the leaves will have to be gathered. Care should be taken not to gather the three crown leaves of the trees, as it impedes their growth.

#### THE COCOONERY.

Having planted your trees (they should be two years old before the leaves are fit for food), your next care will be to form a cocoonery, or place for feeding the silkworms.

A rough building of any kind will do, so long as there is plenty of light and good ventilation. The vacant rooms of a house or a barn will do. Erect standards of scantling

about two feet apart, fastened with cross-pieces to lay the boards on for shelves; the tiers of shelves should not be placed too close together, say about two feet six or three feet apart. The passages or alley-ways between the shelving should be wide enough to give freedom of motion in feeding the worms, and good ventilation without the wind blowing directly on them.

A second floor may be laid temporarily on the cross-pieces, which may extend across the alley-ways at about eight feet high, and so the tiers of shelving and other temporary floors may be continued to the top of the room.

The worms should not be exposed to the direct rays of the sun.

The size of the cocoonery will, of course, depend on the number of worms to be fed. Those persons who only wish to raise a few may use a vacant room in the house, and spread their worms on tables, or on boards laid on tressels.

The shelving should be covered with newspapers, on which to lay the worms and their food.

In Germany, France and Italy, nearly every house is a cocoonery in the summer season.

#### HATCHING THE EGGS.

The eggs I procured from Capt. Haynie were all good; they are on cards and smaller than a pin's head, and some are of a dark and some of a light transparent colour. I unfortunately lost a large number, through their hatching out before I had feed for them in the early part of May. All that is necessary to do to hatch the eggs is to expose them to the air some time in June, when the foliage is sufficiently developed; in the course of four or five days the little worms will appear. They are then exceedingly minute, and require the tenderest leaves of the mulberry for food as soon as they come out.

Each day's hatching should be kept separate, as one day in the life of an insect, whose whole life is about a month, is a considerable time. The life of the worm is divided into periods by moulting, during which time it is very necessary that they should be undisturbed; consequently, when they are all of the same mind to be quiet, they are undisturbed. Keep each batch of the same age on the same paper, for experience has shown that upon this proper separation of the various days' hatching depends in a great measure the success of feeding, and consequently the crop of silk you will gather.

The eggs remaining unhatched three or four days after the worms first appear, may be thrown away as useless. The worms should be fed little and often, so as to keep them well supplied with fresh leaves. All refuse leaves, &c., should be removed, at least, every other day; cleanliness is an important item.

The worms should never be handled. When it is required to move them, lay on fresh leaves or branches on which they will



crawl, when you can take hold of the branch or leaf carefully and remove them to a fresh paper. They should be spread out from day to day to give them room, as their growth is rapid, and they should not be crowded. Dry timber should be used in the construction of shelves, &c., as the strong smell and dampness of green pine lumber injurious to the worms.

The room should be kept as clean and fresh as possible; raise no dust, make no noise, move quietly about while feeding them. Do not on any account disturb the worms while moulting.

#### MOUTLING.

When five days old the first moulting will take place. When the worm is about to commence moulting he leaves off eating, attaches himself firmly to whatever is to hand and stretches up his head as if in pain the fore part of his body increases and the latter part decreases in size, and the whole body assumes a glossy appearance; thus he continues to swell about the head, until the skin bursts and slips back towards the tail, he then crawls out of the old skin, looking shrivelled and hungry, and at once seeks for food and commences to eat.

I have said the first moulting takes place, as a general rule, when the worm is five days old, the second moulting when nine days old, the third when fifteen days old, and the fourth when twenty-two days old.

#### SPINNING COCOONS.

When within a few days of spinning time, they are full grown and they consume with a ravenous appetite enormous quantities of food. When ready to spin they begin to climb up whatever is to hand, and seek to get in some quiet corner. A few of mine, last summer, crawled up the window curtain and spun their cocoons thereon. Small dry branches from which the leaves have been stripped should be laid on the shelves for them to climb on. Asparagus tops which have been allowed to ripen are good.

When the worms have found a suitable place they commence to spin, attaching five threads to the prominent places near by, and finally wind themselves up in a ball of silk of an egg shape, generally of a light yellow colour.

If allowed to remain for eight or ten days, they will emerge from their prison in the shape of moths; the female then lays several hundred eggs, and dies. The cocoons out of which the moths have come, are called perforated cocoons, and their market value is small. Those not required for breeding should be gathered and exposed to the direct rays of the sun for a couple of days, to kill the larvæ. Your silk cocoons are now ready for market, or ready to be reeled off into the various grades of raw silk.

Let me venture to hope that silk culture may be tried extensively in Canada, and that handsome prizes may be given at the next or future Provincial Exhibitions.

BEAVER.

#### Dung-beetles.

Do not turn away in disgust, fair reader, on glancing at this title, it is certainly not an attractive one, but we could think of no better that would include the insects we have now to deal with. Though depraved, it may be, in their tastes, they have yet been objects of peculiar interest to mankind for many thousand years, and will no doubt continue to attract the attention of all observers of nature as long as the world lasts.

It has been for some time our practice during the winter months, when the world of insects is entombed in frost and snow, and when the farmer and gardener are at rest from their almost ceaseless summer combat with myriad insect foes, to devote a portion of our space to the consideration of beneficial, or, at any rate, non-injurious beetles, hoping thus to be the means of rescuing some of our friends from the slaughter that is apt to be too indiscriminately waged against the whole race. In the CANADA FARMER for April last, we described a family of "Scavenger Beetles" (*Staphylinidae*), whose business it is to remove from the face of nature much decaying animal and vegetable matter, that would otherwise prove offensive to the senses and injurious to the health of mankind. The next conspicuous families that we come to are those of the "Dung-beetles" (*Scarabæidae*, etc.), who devote their lives to the removal of excrementitious matter from the surface of the earth. These creatures would be simply disgusting to us, however valuable in themselves, were it not for their extraordinary habits, and for the reverence which was accorded to some of them in ancient times.

Every one has, no doubt, heard of the Sacred Beetle of the Egyptians, which was worshipped by them as a god, and revered in various ways. It was called the Scarabæus, and belongs to the tribe we are now considering. "Hor-apollo"—according to Louis Figuier—"the learned commentator on Egyptian hieroglyphics, thinks that this people, in adopting the Scarabæus as a religious symbol, wished to represent at once *the unique birth a father—the world—a man*. The *unique birth* means that the Scarabæus has no mother. A male wishing to procreate, said the Egyptians, takes the dung of an ox, works it up into a ball, and gives it the shape of the world, rolls it with its hind legs from east to west, and places it in the ground, where it remains twenty-eight days. The twenty-ninth day it throws its ball, now open, into the water, and there comes forth a male Scarabæus. This explanation shows also why the Scarabæus was employed to represent at the same time *a father, a man and the world*. There were, however, according to the same author, three sorts of Scarabæi; one was in the shape of a cat, and threw out brightly shining rays (probably the Golden Scarabæus), the two others had horns (Copris)."

There is a colossal granite figure of a Scarabæus brought from Egypt in the British Museum, and other smaller representations that we have seen appear to have been worn as amulets, suspended from necklaces or bracelets. It is supposed by some that the plague of "flies" inflicted upon this people in the days of Moses consisted of swarms of this beetle, thus rendering the object of their superstitious worship a means of punishment; but we can hardly think that so innocent and harmless a creature, in other respects, would have been chosen by the Almighty for such a purpose; we do not, however, insist upon any particular view of the subject, as so little is told us in the pages of holy writ.

In Canada we have one species (*Cantlon (ævis, Drury)*) which bears a strong resemblance to the Egyptian Scarabæus in appearance and habits; it is not very common, but is, however, generally distributed throughout the Province of Ontario. There are also several species of another genus (*Copris*), which possess similar habits but differ in their striated wing-covers, and in the extraordinary curved horn with which the head of the males is armed. A remarkable peculiarity of these insects exists in the structure and situation of the hind legs, which are placed so near the extremity of the body and so far from each other, as to give the insect a most extraordinary appearance whilst walking. This peculiar formation is, however, particularly serviceable to its possessors in rolling the balls of excrementitious matter in which they enclose their eggs. These balls are at first irregular and soft, but by degrees, and by continued rolling, they become rounded and harder; they are propelled by means of the hind legs, and the insects occasionally mount on the top, when they find a difficulty in urging them along; probably in order to destroy the equilibrium. Sometimes these balls are an inch and a half in diameter; and in rolling them along the beetles stand almost up on their heads, with their heads turned away from the balls. These manœuvres have for their object the burying of the balls in holes, which the insects have previously dug for their reception; and it is upon the dung thus deposited that the larvæ feed when hatched (MacLay). These rhinoceros or unicorn beetles—as they may be termed—frequently fly into houses through open windows, when attracted by light in the warm summer evenings. They are especially abundant on sandy soils.

Another family of Dung-beetles (*Geotrupidae*) performs a similarly important part in the economy of nature, by feeding upon and burrowing under newly fallen dung. Its species, however, do not make up pellets and roll them along the ground, as those above mentioned, but content themselves with sinking shafts immediately under the mass of excrement, and there hoarding up the supply of food for their young. They are much more common in this country than the pre-

ceding, and may often be observed on a warm summer's evening, when the shadows are growing long, hovering about the droppings of some horse or cow, and preparing to do their part in the removal of a nuisance, and the fertilization of the earth.

Yet another family (*Aphodida*) must be briefly noticed, before we leave these useful creatures. One species is almost the first beetle to greet us in early spring, as it flies about the manure of the hot-bed, and expands coral-red wing-covers to the sun. It is the *Aphodius finetarius*, Linn., and is common in England as well as in Canada. Another tiny species (*A. inquinatus*, Fab.) swarms in the spring along the highways, resembling a fly as it hovers in the air, but easily distinguished when captured in the hand, or otherwise arrested in its flight; both of them feed upon horse-dung. The species of this family are especially numerous in the temperate regions of the northern hemisphere, and devote themselves entirely to the consumption and removal of the excrement of the larger herbivorous animals. Need we say that they should, on no account, be destroyed.

#### Insects affecting the Apple.

The following formidable list of insects injurious to the apple in one form or other, is taken from a recent paper by Mr. Riley, State Entomologist of Illinois:—

Beginning at the root, we find it rendered knotty and unhealthy on the outside by the common Root louse, (*Eriosoma pyri*—Fitch,) while the heart is often entirely destroyed by one or the other of two gigantic Root-borers, (*Prionus imbricornis*, Linn, and *P. laticollis*, Drury.) The trunk is riddled by the larvæ of several Long-horn beetles, and pre-eminently by the Two-striped Saperda, (*Saperda bivittata*—Say,) as well as by other smaller beetles; the liber and alburnum are destroyed by the Flat-headed Borer, (*Chrysobothris femorata*—Fabr.) the outer bark eaten by bark beetles (*Scolytus* family) and sucked by Bark-lice peculiar to it. The branches and twigs are bored along the axis and pruned by the larvæ of the common Pruner (*Elaphidion villosum*—Fabr.) and by that of the Parallel Pruner (*E. parallelum*—Lec.) girdled by the Twig-girdler, (*Oncideres cingulatus*—Say,) sawed and rasped by the Periodical Cicadas, (*Cicada septendecim*—Linn, and *C. tredecim*—Riley,) otherwise known as Seventeen-year Locusts, by tree-hoppers and a dozen other Homopterous insects; bored into from the side by the Twig-borer (*Bostrichus bicaudatus*—Say)—wounded by the bites of such beetles as the New York Weevil, (*Ilyceus novaboracensis*—Forster,) or pierced as by a red-hot wire by small boring beetles (*Scolytidæ*)

The buds before they expand are infested with the larvæ of the apple bud-moth, (*Grapholitha oculana*, Harr.) or entirely devoured by voracious climbing cut-worms, (*Agrotis Scandens*, Riley, etc.) The blossom has no

sooner unfolded its delicate and beautiful petals than it is devoured entire either by the Brazen Blister Beetle (*Lytta anua*, Say,) the Striped Cucumber Beetle, (*Diabrotica vittata*, Fabr.) the Rose bug, or by a great many other insects that might be mentioned, some, as the different bees, confining themselves to the pollen or honey from the nectaries, while others again prefer other parts. The young fruit is either eaten partly or entirely by Snapping-beetles, (*Melanotus communis* and *M. incertus*) or punctured by either the Plum or the Apple Curculios, and afterwards bored through and through by their larvæ or by that ubiquitous Apple worm, (*Carpocapsa pomonella*;) as it matures it is eaten into by the larvæ of the Plum Moth (*Semasia prunivora*, Walsh,) rendered putrid by the Apple Maggot (*Trypeta pomonella*, Walsh,) and by the Apple Midge, (*Mo. lobrus mali*, Fitch;) as it ripens it is gouged by the Flower Beetles, (*Euryomia inda* and *E. melancholica*;) and disfigured by a variety of other insects, while the skin is often gnawed off and corroded by the larvæ of the Rose Leaf-roller (*Loxotenia rosaceana*, Harr.) and even the seed, if it should be preserved, will be attacked by the Grain Silvanus, (*Silvanus surinamensis*, Linn, the Dwarf Trogosita, (*P. nana*, Melsh,) and the larvæ of one or two small moths. And, as to the leaves, they are not only sapped and curled by the apple Plant-louse (*Aphis mali*, Fabr.) and by leaf-hoppers; rolled by several leaf-rollers; folded at the edges by a small pale, undescribed worm which I shall soon describe; blistered by the Rosy Hispa, (*Uroplata rosea*, Weber;) crumpled by the Leaf Crumpler, (*Phycita nebulo*, Walsh,) mined by the Apple Micropteryx, (*Micropteryx pomivorella* Pack;) skeletonized and tied together by another undescribed worm, which I shall some day name *Acrobasis Hammondi*, in honour of one of your members—but they are greedily devoured by a whole horde of caterpillars, from the tiny *Micropteryx* to the immense Cecropia Worm, some of which confine themselves to the parenchyma, some to the epidermis, some to the tender parts, without touching the veins, while others bodily devour the whole leaf. The sap forms the sole food of some insects, and even when the poor apple tree dies, a host of different insects revel in its dead and decaying parts, and hasten its dissolution so that it may the more quickly be resolved into the mould from which it had, while living, derived most of its support, and through which it is to give nourishment for the young trees which are to take its place.

Thus we perceive that there is not a single part of the apple tree which is not made to cradle, or to give nourishment to some particular insect, and the same might be said of almost every plant that grows on the face of the earth, even those which produce resinous or gummy substances, or which are pithy in the centre, having special insects which feed upon those parts and nothing else.

It would be difficult to mention a substance, whether animal or vegetable, on which insects do not subsist. They rovel and grow fat on such innutritious substances as cork, hair, wool and feathers; and with powers of stomach which the dyspeptic sufferer may envy, will live luxuriously on horn: they insinuate themselves into the dead carcasses of their own class; they are at home in the hottest and strongest spices, in the foulest filth, in the most putrid carrion; they can live and thrive upon, or within the living bodies of the larger animals, or of those of their own class; they are at home in the intestinal heat of many large animals, reveling in the horse's stomach, in a bath of chyme of 102° Fahr., or in the bowels of man, in an equally high temperature. Some have even been supposed to feed on minerals, and, not to dwell upon Barchewitz's tale of East India ants, which eat iron, certain it is, that the larvæ of our May flies do eat earth, and I have known the larvæ of the common May Beetle to feed for three months upon nothing but pure soil; but in both these cases the insects undoubtedly derive nourishment from the vegetable matter which is extracted from the earth by the action of the stomach.

These facts will serve to show you that, seek where you may, you cannot find a place or a substance in which or on which some insect does not feed. They people the skyey vast above, swim at ease in the water, and penetrate the solid earth beneath our feet; while some of them inhabit indifferently all three of the elements at different epochs of their lives.—Riley.

Labour on, good entomologists, and find out the secrets of these and similar little enemies of mankind, and we will heartily aid your cause by disseminating the knowledge you acquire as widely as we may, for we deem the subject of insect pests to be the most important question now before the agricultural community of this country.—*Scientific American*.

THE CANADIAN ENTOMOLOGIST.—We are requested to state that no number of this little periodical has been issued since No. 9 of Vol. II., owing to the engagement of its editor and his principal assistants upon the Insect Reports of the Entomological Society, alluded to above, that are now in the hands of the printer. A double number will be issued in a few days, as some compensation for the delay that has unavoidably occurred, and the remainder of the volume will be published as soon as possible.

THE COLORADO POTATO BEETLE.—In consequence of the ravages of the Colorado potato bug the St. Paul, Minn., papers state that thirty to forty thousand bushels of potatoes have been imported to that State this Fall. The Watertown (Wis.) Democrat says several car loads of potatoes from Michigan and Iowa have been brought to that city the first time it has been necessary to import potatoes. The Beloit papers report a similar state of affairs.—*Prairie Farmer*.

## Household.

### Music for the Farm.

To some the heading of this article may seem superfluous. Music, in their opinion, is not wanted on the farm. To such I would say, why not on the farm, as well as in the mechanic's home? We all know that the middle or mechanic classes of England, France and Germany, especially the latter, are the very best performers, as a rule, and always attend most regularly at musical gatherings.

If a choir is wanted, it is of little use to expect that the more affluent class will do much towards forming its vocal or instrumental members. They may, it is true, buy or assist in buying the instruments, but as to relying on them to form a choir for church or other purpose, it would never succeed. They will not attend regularly, or give the required attention to it, and often have not the talent if they would.

Why, then, should the farmer and his family be debarred a musical instrument, and the cultivation of musical talent, more than others of the same class, who so much delight in it? I am very much of opinion that all deprivation of such innocent household enjoyments as productive of anything but a love of home. The musical faculty, especially, is a talent often lavished on the poor and denied to the rich. How often do we hear a little uneducated boy in the streets whistling some new tune which he probably has heard only once or twice, or singing at the top of his voice some new popular song, heard only once at some circus or other place of amusement. I say that such musical talent is God's gift, and falls at least as often to the lot of the poor as the rich; and one reason for this is the rugged health such people usually possess—which is of itself a great assistant, and for this gift, combined with a healthy constitution, we ought to be most thankful. And where it exists, I say, shame on the man who says music is not wanted on the farm.

Indeed, there is no place in the world where it is more wanted. The farmer's family are often comparatively isolated from very near neighbours. The female portion cannot walk out at night as the city mechanic's wife and daughters can. On the farm there are no gas-lights, and but very rarely board-walks to keep their feet out of the mud. And let me tell you, if you do not already know, that the farmer's daughter may have and very often has, as dainty little feet, and is quite as proud of a well-fitting boot as her city sister. But circumstances have placed the lot of one in a different position from that of the other. Still, feminine nature is the same, and I, for one, will always raise my voice in reprobation of the man who says music is not wanted on

the farm. I know that it is required there, and furthermore, that a good piano, and the instruction requisite to make it available, ought always, if possible, to be provided for the girls. As a means of education and lightener of toil it is as desirable as any other implement the farmer himself uses, and whereby he lessens his labour, betters his circumstances, or raises his standard in the opinion of his fellow men. Women's work on the farm, or in any home where they do their own work, some people say, is never done—that is, we suppose, there is always more to do. Very true; but that is no reason why the piano should not be used to lighten such continual toil and care, but, on the contrary, forms a most excellent plea in its favour.

There are many other reasons why the introduction of such an additional source of pleasure should be advocated. In fact, I could number by scores the reasons why a good piano should be introduced into every farmer's family, and only two reasons against it: One of these is the want of means to buy, and the other is the want of knowledge of how and where to get a good one, and avoid being deceived, as an inexperienced person, by the various dealers and agents who are employed by unscrupulous manufacturers of pianos to puff off the instrument, and sell it at any sacrifice of credit and honesty. Beware of all such agents. Come to the city and the head office; buy direct from the proprietor, and you will, in nine cases out of ten, be well treated.

I know of many such sales effected by agents as above described, with men who were anxious to introduce music into their houses, and who did not know the tricks of the trade. These tricks of trade are, however, less dangerous than formerly; there are now several respectable and reliable manufacturers in Canada, all of whom make some first-class pianos, but they also make some inferior ones, and it may cost just as much to one cent to make a bad piano as a good one. In fact, the manufacturer does not know whether the instrument will have a very good tone, or only middling; and not until he puts the last finishing touches, and begins to play on it, is the point settled; up to that moment all is doubt as to tone. But all is not doubt as to manufacture. The maker knows perfectly well whether or not such a piano will stand in tune—whether it is thoroughly and honestly built or not, and he also knows if there is any certainty of its proving a serviceable instrument for many years to come, or whether it is simply "run up" to sell. There are some tricks, then, in the piano trade as well as in others, and an honest, forehanded, reliable manufacturer only can be depended on.

Good pianos can be rented at a small sum for three or six months, the rent so paid in advance to be so much towards the purchase at a previously fixed price, provided the instrument give full and entire satisfaction.

For the price and means of saving the money there needs only the produce of a couple of cows placed apart, to meet all but the first payment.

I would especially advise all persons to be cautious in purchasing American manufacture, unless of the three world-renowned makers, Steinway, Dunham and Chickering. But these instruments are almost always far beyond the reach of the Canadian farmer; and even these makers are not always equal in their work, and their inferior instruments have to be sent to some market away from home.

But our greatest danger is from makers of less or no note, who send their surplus stock to our market, in spite of 15 to 30 per cent. duties and other charges. Beware of such instruments, especially if offered by agents or at auction, and let us buy from our Canadian manufacturers, from men who have to live or die by the excellence of their make of pianos, and let us get five years warranty, and we shall be comparatively safe in buying.

So girls, I say, do not do without a piano; lay your heads together, and the piano will soon be got; and every information that can be given to assist such a good work will cheerfully be rendered. C.

**MINCHEMEAT**—Six pounds of currants, three pounds of raisins stoned, three pounds of apples chopped fine, four pounds of suet, two pounds of beef, the peel and juice of two lemons, a pint of sweet wine, quarter of a pint of brandy, half an ounce of mixed spice. Press the whole into a deep pan when well mixed.

**TO KEEP CELLARS FROM FREEZING.**—The following method for obtaining this desirable feature is given by the *Scientific American*. The experiment was tried by a gentleman with the cellar of an out-house, in which on several occasions vegetables have frozen, although the cellar was fortified against frost by a process known to farmers as "banking." The walls and the ceiling were pasted over with four or five thicknesses of old newspapers, a curtain of the same material being also pasted over the low window at the top of the cellar. The papers were pasted to the bare joist overhead, leaving an air space between them and the floor. He reports that the papers carried his roots through last winter, though the cellar was left unbanked, and he is confident they have made the cellar frost proof. We do not counsel the special use of old newspapers for this purpose. It is just as well, or better, to use coarse brown paper. Whatever paper is employed, it will be necessary to sweep down the walls thoroughly, and to use a very strong size to hold the paper to the stones. It is not necessary to press the paper down into all the depressions of the wall; every air space beneath it is an additional defence against the cold.

## Agricultural Intelligence.

### Cattle Diseases in Great Britain

The Foot and Mouth Disease continues, with little abatement, to infest the herds and flocks in many parts of Great Britain. But, troublesome as this complaint has proved, it is rarely fatal, and its presence does not seem to render the flesh of affected animals unfit for human food, though there appears to be some risk in using the milk of the diseased cows. Very different is the case with another fearful cattle disease, that has also for some time prevailed in Britain, namely, pleuro-pneumonia. This complaint is fatal in a large proportion of cases, is highly infectious, and renders the flesh unfit for food; hence it has been found necessary to enact stringent regulations in regard to the slaughter of the beasts and the confiscation of the meat.

In reference to this complaint, the *Irish Farmers' Gazette*, of December 10th, states that:—

"At the meeting of the Public Health Committee of the Corporation of Dublin, held on Friday, December 9th, Dr. Cameron, the city analyst, announced that during the week ending on the 6th instant, no less than ten thousand pounds of diseased and otherwise unsound animal food had been confiscated, and either boiled down to extract grease from it, or sent to the Zoological Gardens. This is certainly a startling announcement. 10,000 pounds of meat condemned in a week is at the rate of 520,000 pounds per annum. Half a million pounds of valuable food destroyed nearly altogether by the ravages of epizootic diseases!

"It would appear that by far the greater portion of the meat referred to by the city analyst was the flesh of cows affected with pleuro-pneumonia, generally of a very bad type. In most cases the animals were the property of the Dublin dairymen.

"Very recently public attention has been directed to the use of carbolic acid both as a preventive and curative agent. For some years past, says the *Veterinarian*, we have given trial to this compound without being able to satisfy ourselves that it possessed any curative power; but in numerous instances it has proved useful as a disinfectant. In conjunction with the adoption of strict sanitary principles for the purpose of arresting pleuro-pneumonia and other infectious diseases, carbolic acid ought to be employed; but apart from these, our present experience does not warrant the conclusion that it is a prophylactic."

FISH-BREEDERS' ASSOCIATION.—An association for the purpose of breeding fish has been organized in New York. Rev. W. Clift, Mystic Bridge, Conn., is the President, and L. Stone, Clarencetown, N.H., the Secretary.

### Ancaster Farmers' Club.

The first meeting in 1871 of the Ancaster Farmers' Club took place on the evening of the 23rd Jan., at Ancaster, when W. A. Cooley, Esq., read the following opening address:—

GENTLEMEN,—

When the Farmers' and Mechanics' Club, whose second anniversary we celebrate to-night, was organized, its object was declared to be the promotion of agriculture, manufactures, &c., &c.

Agriculture was rightly named first in order as the most ancient and useful occupation of mankind, the one employment upon which all others depend, and without which the human race would soon relapse into the condition of wandering barbarians.

Manufactures, &c., were also included among the objects of the organization, because, although not forming the foundation of the structure of civilization, it is yet essential to its complete development and perfection.

Farmers and mechanics' clubs form an auxiliary to our Agricultural Societies, whose exhibitions, in my humble judgment, have done a great work. They have collected at their annual gatherings the cultivators of the soil, and have shown them by the encouraging rewards that have been bestowed upon successful effort that, in this age of our country, the triumphs of the plough and of the pruning hook are more highly esteemed than those of the spear and of the sword; that we congratulate ourselves rather upon that which we have produced than upon what we have destroyed, and that there is more true glory, because more true usefulness, in subduing the ruggedness of the soil, and in rendering nature subservient to the good and convenience of mankind, than in the subjugation of provinces and all the pomp and glory of war.

Nor has the usefulness of these exhibitions been limited to this class of persons. Our show-grounds have been constantly crowded with the learned and the curious, attracted by the beautiful and interesting displays of that mechanical genius which they have done so much to foster.

There have been seen the results of patient industry and the triumphs of the inventors' skill, and there has many a mechanic received the encouragement which was essential to success, and without which some truly useful discovery might have slumbered in obscurity, and perhaps have died with its originator.

Nature has, during the past season, been most bountiful to us.

The Divine promise that "Seed-time and harvest shall not fail" has been more than fulfilled.

Peace and plenty reign in nearly every part of our vast Dominion. Our fields have been bright with the rich harvest of the golden

grain. Our gardens and orchards have yielded abundantly, and our store-houses and granaries are filled almost to repletion with the abundance of the earth.

Commerce has awakened at the call of successful agriculture. Our ships and railroads have been taxed to their utmost capacity in bearing the agricultural products of our country to distant lands.

Manufactures and the arts have felt the impetus which the generosity of nature to the agriculturist has given to every department of human industry.

The discussions of Farmers' Clubs, and the interchange of views which their meetings encourage, have been useful auxiliaries in producing these results.

The generous emulation which such societies create leads to increased care among the cultivators of the soil, who are induced to study more carefully the requisites of soil and climate, and in this manner to bring to greater perfection specimens which under less favourable circumstances would have been dwarfed and sickly.

I have always conceived that science achieved one of the greatest triumphs in the grafting of the fruit tree. By this wonderful yet simple expedient a barren stock is made productive, and nature herself is forced to bend obedient to the will of man.

It is said that observation of the crossing and growing together of two branches of different trees in a crowded forest first led to the discovery of the art of grafting; and it is precisely such facts as these, when communicated from man to man, and especially when diffused through the medium of such societies as these, that tend to increase the great sum of human knowledge and to lead in the end to the most valuable discoveries.

I envy not the feelings of that man upon whom the triumphs of agricultural skill produce no effect.

Finally, we may profit by some of the lessons which it teaches. First of all, the effect of patient care and industry in improving the good things which nature has lavished upon us.

Next, the influence of agricultural pursuits upon the individual character and upon the nation at large.

And last, but not least, a lesson of gratitude to the great Giver of all Good, who has willed that through the primitive employment of agriculture "the desert place shall rejoice, and the wilderness shall blossom like a rose."

At the close of the address the election of officers took place, which resulted in the return of the following:—W. A. Cooley, Esq., President; C. Craddock, Esq., Vice-President, and Richard Postans, Esq., Hon. Sec. and Treasurer.

A desultory conversation then took place on the value of the various hedges.

The Thorn—English and Canadian—the Willow and the Osage were all discussed.

The sense of the meeting was evidently in favour of the Canadian thorn.

Mr. Craddock called attention to the fact which he had established by constant observation for many years, that of the various kinds of Canadian thorn only one appeared to be free from the attacks of very destructive insects, and that the thorn which bears the round leaf and large haw appears to be free from these attacks, while the long and serrated leaved thorn is nearly certain to be cut down by them.

Mr. Postans, Sen., called the attention of the meeting to the fact that they had several thorn hedges which had not been close clipped, growing luxuriantly in the neighbourhood, while it was observed that thorns which are regularly clipped are almost always attacked and cut down by these destructive insects, which collect in masses, and seem to drain the thorn of all its sap.

Mr. W. A. Cooley thought that farmers made a great mistake in the cultivation of willows. He had observed a great tendency in willow cuttings to grow crooked and out from the hedge, thus causing large gaps to be formed in the fence. The speaker considered that this might be remedied by first planting in the nursery, and there training the young willow into an upright position. If the willow had a four or five foot straight stock, it might then branch in every direction, the more crooked the better.

The opinion of the meeting seemed to be that, owing to some climatic hindrance, the Osage was not a suitable hedge, or rather would not come to perfection in this climate.

On the motion of Mr. Craddock, a vote of thanks was tendered to Mr. Cooley for his very able, interesting and instructive address, and the meeting then adjourned, to meet in the ensuing week.

#### South Wellington Agricultural Society

The annual meeting of this Society was held at Guelph on the 17th of January. The report showed a satisfactory condition of the finances, with a balance of \$271 94 to the credit of the Society. Reference was made to the success of the Easter and Christmas Fat Cattle Shows, which had brought together a number of excellent cattle, and attracted many buyers from various parts of the Province and from the adjacent States. In the report of the condition of crops the most noticeable point was the comparative absence of midge in fall wheat—a fact which justifies the recommendation to pursue the culture of this crop extensively. A scheme has been undertaken to hold a central show during the Fall; and to aid the enterprise the Town Council propose to purchase a site for the requisite buildings and show ground.

The Toronto agricultural society paid for prizes and expenses last year about \$420, and have a balance on hand of about \$110.

The agricultural society of Essex expended \$880 last year, and show a balance on hand of \$264.

The Agricultural Society of South Perth disbursed last year \$1,035, and have a balance on hand of \$379.

The financial statement of the North Brant Agricultural Society shows a balance in hand of \$529 04, and no liabilities.

The report of the County of Simcoe Agricultural Society shows a healthy condition, and a surplus in hand of over \$ 00.

The Wilmot Agricultural Society spent \$593 last year, and have a cash balance on hand of \$166.

The agricultural society of the township of Lanark shows a clear balance at the opening of the year of nearly \$292,

The Halton Agricultural Society spent last year \$719 in premiums, exclusive of \$140 for the purchase of a show ground but they still have \$136 clear to commence the world with.

The Agricultural Society of Frontenac, after expending \$550 in prizes and \$200 in other disbursements last year, have still a balance in hand of \$121.

France, though not larger in area than the State of Texas, produces more wheat than the whole United States, the figures being 350,000,000 bushels for France, and 240,000,000 for the United States.

The Western New York Poultry Society propose to hold their first exhibition in the city of Buffalo during the third week of February, commencing on the 14th, and closing on the 18th. The competition is open to all. Entries for competition close on the 7th of February.

The proprietor of the West Zorra cheese factory has given a statement of its operations during the past season. The number of cheeses manufactured was 1601; total weight, 111,378 lbs; average weight of cheese 92½ lbs; amount of milk received, 1,142 1¼ gallons; and amount of receipts, \$13,158 34.

KENTUCKY STOCK.—The shipments of stock from the Paris, Kentucky, stock pens for the year ending December 31st, 1870, aggregate 2,922 car loads, as follows:—Cattle, 2,020 car loads; hogs, 660 do.; sheep, 148 do.; mules, 56 do.; horses, 6 do. This is an increase over the shipments for the year 1869, of nearly one thousand car-loads.

The cultivation of cranberries is now attracting considerable attention in Maryland, Delaware, and New Jersey, and in most cases, where they have been intelligently cultivated, they have yielded very large profits, besides giving value to a class of lands hitherto considered worthless. The price of cranberries averages about \$4 per bushel, wholesale. Hundreds of bushels can be grown upon one acre. There is a steady demand for them all over the United States, and large quantities are shipped to Europe, where they find ready sale at paying profits. There are great swamps in this province, according to the local papers, which are admirably adapted for the production of this crop, and which would bring a sure fortune to the judicious speculator who should turn them into cranberry fields.

#### CARBOLIC ACID FOR PRESERVING HIDES.—

A piece of hide and the ear of the animal, as cut soon after slaughtering, were lately sent from Texas to a tanner in New York, in order to show, by their perfect preservation, the effect of carbolic acid for the prevention of decay in hides and skins. These specimens were as hard as flint dried hides, and, to every appearance, though exposed to any ordinary temperature, will remain so for almost any length of time. In fact, they have been lying now for several weeks in an office where the temperature is constantly from 70° to 75°. Experiments have lately been made in one of the largest tanneries in Pennsylvania as to the effect which carbolic acid might have on the colour and grain of leather, when the hide was thus treated. It is found here, as in the experiments previously referred to, that the decomposition or decay of the hide (without making any difference as to what extent it had proceeded) is instantly stopped by the application of carbolic acid, and that the colour and grain are in no way impaired. In fact, from the experiments thus far made, it would appear that both are somewhat improved and whitened by the use of the acid, but this matter has not yet been sufficiently tested to warrant the conclusion that either the grain or colour will be in any way improved, if, indeed, it is at all affected, by this new agent—*Shoe and Leather Reporter*.

#### SUCCESSFUL SUGAR-BEET CULTURE.—

The *Tribune* comments on the successful experiment in sugar-beet culture, made at Chatsworth, Ill, as follows: We have always believed in beet-sugar manufacture in our country, especially in the West; and that the time would come when it would be demonstrated that it was in many respects, for the farmer and the tradesman, a most valuable industry. We have waited for the confirmation of these views with "hope deferred." But it has come at last, and from Chatsworth, which, with all its early promise and advantages, had made such unfruitful returns. The causes of this disappointment have been, chiefly, a bad location and foreign management. Constant cultivation has removed many of the disadvantages of the soil, while the appointment of a good western farmer as head of the enterprise has substituted practical common sense for theory. The result is, that this season there has been a saving in the field work, or cultivation of the crop of beets, of nearly 30 per cent. over the results of the best German or French culture; the beets being put into the pit at \$2.70 the ton, as against \$4, the lowest price at the European factories. This has been accomplished by the use of machine in the place of hand labour, under the supervision and inventive genius of the superintendent, who has other plans in process of completion that will reduce the expenses of this part of the industry perhaps twenty per cent. more. Then, as to the product of the factory. The first yield of sugar has been placed upon the Chicago market, without brand, that it might thus secure an impartial test. It was pronounced by the best experts of the city A 1 New York sugar, and readily brought the price of that article. It is our conviction, however, that for complete success elsewhere in this industry, there must be hearty co-operation among the farmers of the country adjacent to the sugar mill. We believe the great success of the European mills is largely due to a recognition of this fact. No other crop has, in its cultivation, such enriching and preservative qualities; and this truth has induced the small farmers of Europe to aid in all ways the development of beet culture.

## Miscellaneous.

### Backwoods Life.

"GIVE ME THE TROUSERS, BILL!"

The above demand makes me laugh even now, though at least thirty years have intervened since I heard it. It was a beautiful warm day in August when I had been engaged in the valuation of land in the township of King, that my road led me to a small clearing, occupied by an Irishman, his wife, and fourteen children.

The father and the eldest boy were engaged in shingling the newly erected log-house, and were perched up on the roof laying "long" shingles, that is, shingles two feet six inches long, and fastened by withs and cross poles to the rafters. They had no nails, and were compelled to resort to this plan instead. The mother was cooking under a huge cedar that grew close by, and variously combined blankets, poles, and bark told plainly of the short commons as to household furniture that the family were suffering from.

The younger boys were almost naked; all had shirts on, but only one, the eldest, had trousers. I enquired my way to the next farm house, where I wished to pass the night, but was told that it was about two miles off, and although there was a path plainly enough marked for those who knew it, it would be very difficult for me to follow it in the dusk of the approaching gloom. A night's quarters where I was were not inviting, and at that establishment I question whether they had much food to part with even for money. So I determined to risk it and go on, but expressed myself quite willing and able to pay a guide who would show me the way.

The magic promise of money at once solved the question of guide or none. A bright-eyed little fellow, who had attentively heard all I had to say, all at once cried out, "Give me the trousers, Bill, and I will show the gentleman!" Down came "Bill" from the roof, and in a moment divested himself of the pantaloons, which the younger brother as quickly put on, and in a shorter time than I have taken to write it, declared himself quite ready.

I objected to the little fellow's going so far on foot, and returning in the dark, and expressed my fears that he would be lost. "Is it Jem would be lost, your honour? Divil a fear of it; the only bother will be for you to keep up with him, the gossoon, the road or path being soft in places." "Now Jem, hurry back, unless ye are late there," said the mother, "and if it's late ye are, ye can sleep wid Tim, and I'll not expect ye." "Never fear, mother, I'll be back," says Jem, and away he went like a deer over logs and swales, as light as a bird, and truth to

tell, my horse could hardly keep Jem in sight; he literally flew along, cutting off corners every now and then, until I had more than once to call him back, when he returned laughing and grinning, with a mouth full of ivory, that looked as if the toothache would never trouble him.

We arrived all safe, and directly he called out, "There's Tim's, your honour," I halted and saw the clearing through the trees. My guide announced his intention of returning, notwithstanding my expressed desire that he should share "Tim's" bed. No, back he would go; he would soon be home. His previous exertions had hardly made him draw a long breath. So I put my hand in my pocket and pulled out an English half-crown and tossed it to Jem. He caught it, and, not expecting one quarter of that amount, said, "An' is this all for me, your honour?" I said yes, and bid him good night. Off went Jem, shouting and whistling with joy, leaping every now and then far higher over any impediment in the road than was requisite, in his extreme joy. I looked after my little twelve-year-old guide, and thought I never had known half-a-crown give so much real happiness before. C.

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A FINE STOCK OF  
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On hand for Spring planting, consisting in part of  
Standard and Dwarf Apples and Grabs.  
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Particular attention is called to the stock of Pears Standard and Dwarf, which are finer than can be procured any where else; also to the fine stock of 3 year old bearing Grape Vines at very low rates.  
Trees packed carefully, so as to carry safely any distance.

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On these Generous Terms the industrious and competent can buy and pay for a good Farm and Home. In beginning, it is necessary to have money enough to pay six per cent. later on the land, obtain provisions, build a cabin, buy a team and agricultural implements till crops are raised, which can be done the first season, by commencing in early Spring.

CIRCULARS giving full particulars are supplied gratis, and any wishing to induce others to emigrate with them, or to form a Colony, are invited to ask for all they want to distribute.

A SECTIONAL MAP, showing exact location of Lands for sale in Iowa, is sold for 30 cents, and a similar Map of Nebraska Lands is sold for 20 cents.

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NEW AND VALUABLE VEGETABLES, with the return of another season I am again prepared to supply the public with Vegetable and Flower Seeds of the purest quality. My Annual Catalogue is now ready, and will be sent free to all. My customers of last year will receive it without writing for it. It abounds in fine engravings, many of which were taken from photographs of the vegetables themselves. It has not only all novelties, but all the standard vegetables of the farm and garden, (over one hundred of which are of my own growing,) and a carefully selected list of Flower Seeds.

All my seed is sold under the warrants,—1st: That all money sent shall reach me. 2d: That all seed ordered shall reach the purchaser. 3rd: That my seeds shall be fresh, and true to name. I invite all to send for catalogues, both for themselves and their friends.

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# THE NEW YORK TRIBUNE.

1871.

Through struggle and suffering, at the cost of multiform agonies, bereavements, devastations the American Idea embodied in the preamble to our fathers' Declaration of Independence approaches its complete realization. The noble, inspiring assertion that "all men are created equal," and endowed by their Creator with inalienable rights of life, liberty, and the pursuit of happiness, is no longer a glittering generality, a poet's fancy, a philosopher's speculation, but the recognized base of our political fabric. The benign Revolution, which dates from the Boston Massacre of 1770, finds its logical completion just one century later, in the XVth Amendment which gives to the equal political and civil rights of every man born or naturalized in our Republic the shield and defense of the Federal Constitution. The billows of Caste and Privilege may roar and rage around that rock, and may transiently seem on the point of washing it away; but its foundations are deep laid and steadfast, and the breakers of Reaction and Slavery are hurled against and dash their spray over it in vain.

We do not underrate the forces of Prejudice and Aristocracy. We do not forget that a very large minority of the American People still hold in their inmost hearts that Blacks have no rights which Whites are bound to respect. We fully appreciate the desperation wherewith all the warring elements of hatred to Republican achievement will be combined and hurled against the attainments of Republican ascendancy in the Presidential Election of 1872. We do not doubt that local successes facilitated by Republican feuds and dissensions, will inspire the charging host with a sanguine hope of victory, such as served it to put forth its utmost strength in the earlier stages of the contests of 1864 and 1868. Yet our faith is clear and strong that the American People still bless God that, on the red battle-fields of our late Civil War, the Union was upheld and saved, destroyed, and will never consciously decide that the precious blood thereon poured out was lavished in vain.

THE TRIBUNE believes in the prosecution of the great struggle by legitimate means to beneficent ends. To State Sovereignty, it opposes indissoluble National Integrity; to Slavery for Blacks, Liberty for All; to Proscription, Entrenchment; to Popular Ignorance, Universal Education; to intensity and eternity of wrathful Hate, universal and invincible Good Will. It would fain do its utmost to hasten the glad day when the South shall vie with the North in exultation and gratitude over the disappearance of the last trace or taint of that spirit which impelled Man to exult in the ownership and chattelhood of his fellow Men.

Profoundly do we realize that the contest is not yet ended—that Millions mourn, more or less publicly, the downfall of the slaveholders' Confederacy, and rear their children to hate those by whose valor and constancy its overthrow was achieved. If we ever seem to differ essentially from other Republicans, our conviction that magnanimity is never weakness, that vengeance is never politic, and that devils are not cast out by Beelzebub, must serve to explain alleged eccentricities whose perfect vindication we leave to Time and Reflection.

THE TRIBUNE has been, is, and must be, a zealous advocate of Protection to Home Industry. Regarding habitual idleness as the real foe to human progress, the bane of human happiness, we seek to win our countrymen in masses from the enervating lures of Speculation, of Traffic, and of always overcrowded Professions, to the tranquil paths of Productive Industry. We would gladly deplete our overcrowded cities, where thousands vainly fester and crowd in misguided quest of "something to do," to cover prairies and plains with colonies absorbed in Agriculture, Mechanics and Manufactures, and constantly projecting into the blank, void wilderness the homes and the works of the civilized Man. Holding the Protection of Home Industry by discriminating duties on imported Wares and Fabrics essential to the rapid, beneficial diffusion of Production in all its phases and departments, and so to the instruction of our people in all the useful arts of Peace, we urge our countrymen to adhere to and uphold that policy, in undoubting faith that the true interest, not of a class or a section, but of each section and every useful class, is thereby subserved and promoted.

THE TRIBUNE aims to be foremostly a Newspaper. Its correspondents traverse every State, are present on every important battle-field, are early advised of every notable cabinet decision, observe the proceedings of Congress, of Legislatures, and of Conventions, and report to us by telegraph all that seems of general interest. We have also for one day's momentous advices from Europe by Cable far more than our entire force is able to use in which these advices re-echo our readers. If lavish outlay unsleeping vigilance, and unbounded faith in the liberality and discernment of the reading public, will enable us to make a journal which has no superior in the accuracy, variety, and freshness of its contents. THE TRIBUNE shall be such a journal.

To Agriculture and the subservient arts, we have devoted, and shall persistently devote, more means and space than any other journal. We aim to make THE WEEKLY TRIBUNE such a paper as no farmer can afford to do without, however widely his politics may differ from ours. Our reports of the Cattle, Horse, Produce and General Markets, are so full and accurate, our essays and elucidation of the farmer's calling and our regular reports of the Farmers' Club and kindred gatherings, are so interesting that the poorest farmer will find therein a mine of suggestion and counsel, which he can not remain ignorant without positive and serious loss. We sell THE WEEKLY TO CLUBS for less than its value in dwelling for waste-paper, and though its subscription is already very large, we believe that a Half Million more farmers will take it whenever it shall be commended to their attention. We ask our friends everywhere to aid us in so commending it.

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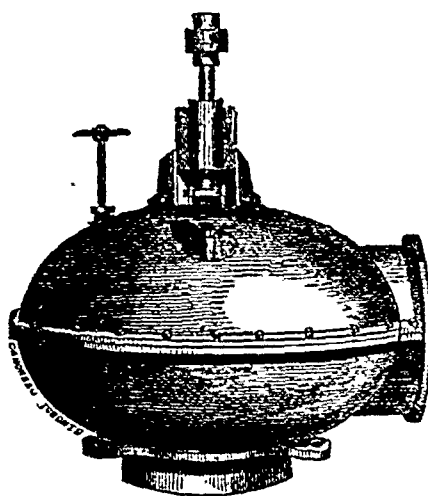
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We are prepared to furnish Water Wheels, Gears, Shafts, Pulleys, and all Machinery necessary to attach the Wheels to the Machinery they are intended to drive; and if, after two months' trial, they are not satisfactory, we will take all back, pay freight both ways, and refund any payments made to us thereon. Where parties are not satisfied with the Wheel, and cannot make a change at the time without loss to business, they may run the Wheel and Machinery a reasonable time without charge, not exceeding one year, in order that they may make a change without injury to their business.

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- Samuel Davidson..... Lindsay.
- C. E. Drewry..... Mountain View.
- M. Davern..... Napanee.
- James Elliot..... Port Hope.
- Nicholas Egan..... To tenham.
- Rufus Everts..... Everton.
- Robert Forsyth..... Montreal.
- Frances Bro..... Brooklyn.
- Farrand & Miles..... Campbellford.
- S. J. Green..... Greenwood.
- Thomas Gibson..... Wroxeter.
- Joseph Gould..... Uxbridge.
- William Gemlo..... Glasgow.
- Gibbs & Bro..... Oshawa.
- H. & G. Greenwood..... Grafton.

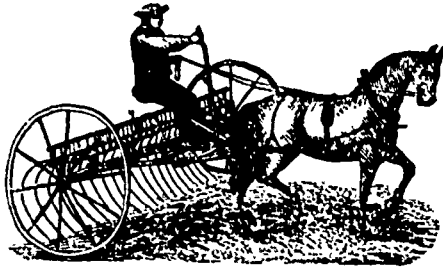
- Gordon, McKay & Co..... Thorold.
- Win. & Walter Guthrie..... Wilmot.
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I am sending hives to England, the United States, and every part of the Dominion, and shall be pleased to fill any orders accompanied with the cash for Hives, Honey Extractor, Italian Bees and Queens and everything belonging to the Apisary. CANADIAN BEE-KEEPERS' GUIDE, post-paid, 28 cents.

Bee-keepers residing in the Townships of Thorold and Sydney will be pleased to send their orders to C. G. Chapin, Belleville, Ont., as he is now the owner of that territory. Those residing in the Counties of Lennox and Addington, to Allan Pringle, Selby, Ont., as he has purchased those counties.

Territory still for sale cheap.  
THE AMERICAN BEE JOURNAL, Prince of Bee Journals, furnished to subscribers at \$1.75 Dominion currency. No Bee-keeper should be without it.

J. H. THOMAS, Brooklin, Ont.

v3-1-1f

**Markets.**

**Toronto Markets.**

"CANADA FARMER" Office, Feb. 13th, 1871.

The produce market continues quiet and firm, with very few transactions by speculative buyers. The prices given below are the present wholesale quotations.

**FLOUR AND MEAL.**

Flour—Superfine, \$5 85 to \$6; Spring Wheat, extra, \$6; Fancy, \$6 20 to \$6 25, Extra, \$6 50 to \$6 75; Superior Extra, \$7.

Oatmeal—\$5.90 to \$6.  
Cornmeal, in small lots—\$3.75 to \$4.25.  
Bran, in ton lots—\$16.

**GRAIN AND SEED.**

Wheat—Soules, \$1 40 to \$1 55; Spring, \$1 35; Spring Midge Proof, \$1 30 to \$1 35, Treadwell, \$1 30 to \$1 35.  
Barley—No. 1, 55c to 57c; No. 2, 60c to 64c.  
Oats—62c to 63c.  
Peas—77c to 78c.  
Rye—70c.

**FEEDS.**

Clover—\$4 85 to \$5.  
Timothy—\$4 75 to \$5.  
Alsike—\$6 to \$7.  
Flax—\$1 75 to \$2.  
Hungarian—75c.  
Millet—75c.  
Tares—\$1 to \$1 25.

**HAY AND STRAW.**

Hay has been in pretty fair supply, and selling at from \$8 to \$13.  
Straw has been very scarce, and in great demand at \$8 to \$10.

**PROVISIONS.**

Beef—5c to 7c  
Mutton—6c to 7c.  
Apples—\$1 75 to \$3.  
Potatoes—Per bag, 85c to \$1.  
Poultry—Geese, 60c to 75c; Turkeys, 80c to \$1 50; Chickens, per pair, 40c to 70c; Ducks, per pair, 75c to \$1.  
Pork—Mess, \$21 to \$22; Extra Prime \$16 to \$16 50.  
Bacon—Cumberland cut, 10½c; Canada, 10c.  
Hams—Salted, 10½c to 11c; Smoked, 11½c to 12c.  
Lard—in tinnets, 12c to 12½c; in tierces, 11½c to 12c.  
Butter—choice dairy, 18c to 20c.  
Cheese—Reesor's Silton, 18c; Royal Arms, 17c.  
Dried Apples—6½c.  
Hops—Superior, 16c to 17c; Ordinary, 7c to 10 c.  
Salt—Godrich \$1 55 to \$1 60; American, \$1 55, Liverpool, per bag, 75c to 80c.  
Dressed Hogs—\$7 75 to \$8 25.  
Live Hogs—\$5 25 to \$5 50.

**THE CATTLE MARKET.**

The following are for live weight:—

Beeves from \$3 to \$5 per 100 lbs.  
Sheep from \$3 to \$7.  
Calves from \$4 to \$10.  
Lambs from \$3.50 to \$5.

**HIDES AND SKINS.**

Hides—Cur d and inspected, No. 1, 8½c to 9c; No. 2, 7c to 7½c.  
Sheepskins—Green, \$1 to \$1.25, Dry, 30c to \$1.25.  
Calfskins—10c to 12c.  
Wool—30c to 31c.

**PROVINCIAL MARKETS.**

Montreal.—Flour—Extra, \$6 85. Fancy, \$6 70 to \$6 75, Welland Canal Superfine, \$6 40 to \$6 45, Superfine No. 1 Canada Wheat, \$6 50 to \$6 80, No. 1 Western Wheat, \$6 55 to \$6 65; No. 2 Western Wheat, \$6 20 to 6 25; Bag Flour \$3 to \$3.25. Wheat—Spring, \$1 40 to \$1 45. Oats—Per 32 lbs., 46c to 47c. Butter—Dairy, \$18c to 21c; store-packed, 16c to 18c. Ashes—Tons, \$5 85 to \$5 90; Pearls, \$6.10 to \$6.15. Pork—Mess \$21.75 to \$22; Prime Mess, \$16.50; prime, \$15.75 to \$16. Dressed Hogs—\$7.25 to \$7.75.

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

GEORGE BROWN,  
Managing Director