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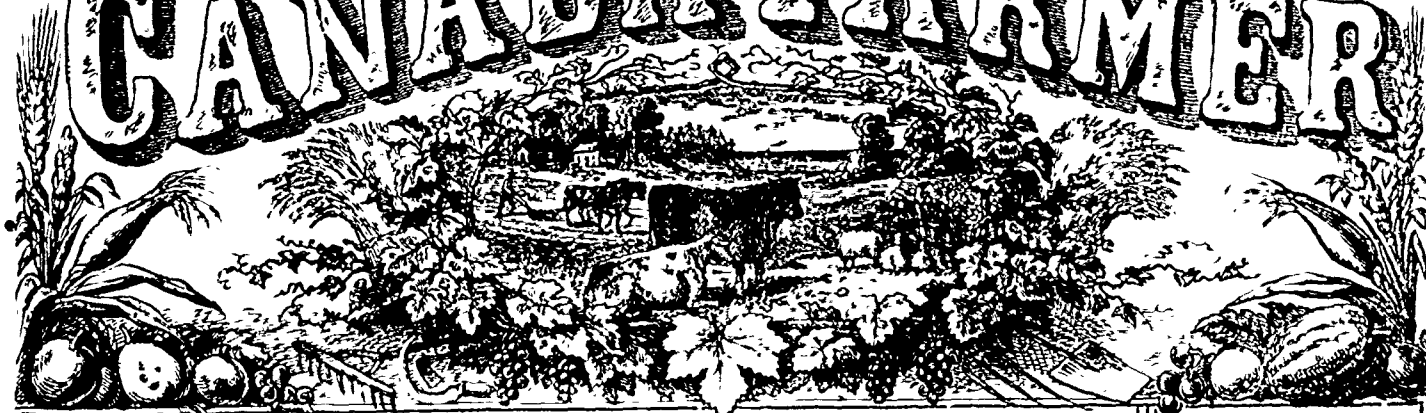
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THE

# CANADA FARMER



VOL. III. No. 3.

TORONTO, CANADA, MARCH 15, 1871.

NEW SERIES.

## The Field.

### Maple Sugar Making.

The season has now returned when the operation of maple sugar making is usually undertaken by those who have a sufficient number of maple trees in their wood lots. The mode of tapping the trees, attaching the spouts, collecting the sap, either in pails suspended from the spouts, or in rude troughs placed on the ground underneath them, can be learned by the novice from any old settler in his neighbourhood. The boiling of the sap is usually conducted in ordinary kettles or pans, but a considerable improvement has been recently introduced, and one that is not costly, by the use of a shallow evaporating pan, made of sheet iron, and divided by partitions extending nearly across, leaving a narrow passage on alternate sides, so that the fluid introduced at one end of the pan is compelled to follow a tortuous course through all the compartments made by the cross divisions, till it passes out at the lower end. The advantages of this contrivance are, that the sap is exposed to the heat of the fire in a shallow and continuous stream, being subjected to the fiercest temperature at the outset when it is thinnest, and to a gradually lower heat as it thickens, so as to diminish the risk of burning. A description and cut of this improved pan are given in the CANADA FARMER for January 15th, 1868, and an account of a similar contrivance for boiling beet-root syrup in the first number of the current year. For the guidance of those who are inexperienced, we re-produce from one of the earliest numbers of the same publication a few practical hints respecting the processes of boiling and "sugaring off":

Cleanliness at every step of the process is the prime thing to be secured. Boil the sap as fresh as possible. It should never stand twenty-four hours if it can be avoided. Sap varies in quality, and requires reducing by boiling to from one-twentieth to one-thirtieth of its bulk to make good syrup. What-

ever dirt and scum arise on the surface of the sap while boiling, should be removed with a skimmer. On taking the syrup from the fire, it should be strained through one thickness of home-made flannel into a clean tub or barrel, and left to cool and settle from twelve to twenty-four hours. Sugaring off may be done either in one of the pans, or in a separate brass kettle. Pour off the portion of syrup that is clear into the pan or kettle, leaving the sediment in the tub. In sugaring off, the fire requires to be under control either by a damper in the flue, or by means of a crane for the kettle to hang upon. If it is thought needful to clarify the syrup, add a beaten egg and a gill of milk to every gallon, keeping it hot but not boiling until the scum has risen and been skimmed off. Some good sugar-makers think the milk and eggs unnecessary, and contend that if every vessel is kept clean, and the syrup is thoroughly strained and settled, it will be free from all impurities. The final boiling must be carefully and rapidly performed. There are various ways of telling when the sugar is boiled enough. If it is to be put into tubs and drained, it requires less boiling than if it is intended to be put up into cakes. When snow can be obtained, a good plan is to take a dishful, and when some of the hot sugar is put on the snow, if it cools in the form of wax on the surface of the snow, it is done enough to put in tubs to drain. But when it is to be caked, it should be boiled until, when it is cooled on the snow, it will break like ice or glass. On this point the *Register of Rural Affairs*, says:—

"When the bubbles rising to the surface burst with a slight, or just perceptible explosion, from the tenacity of the thickening liquid; or if a drop hot from the kettle into an inch of water forms a distinct solid globule slightly flattened when it strikes the bottom; or if a drop between the thumb and finger will draw out into a fine thread half an inch long, the process has gone far enough." Another mode is thus described by a correspondent of the *Country Gentleman*: "Take a short twig, limber it by dipping its end into

the boiling sugar, and then form a loop with a hole, half an inch in diameter. Dip the loop into the sugar, bring it up quickly and blow through the loop-hole. When it will go off into a ribbon eight or ten feet long, it is done. It will ribbon a few feet before it is done, but wait a few moments and try again till it will perform according to order."

When sufficiently boiled, it is poured into vessels to cake. It must not be allowed to cool too much before being put into the moulds, as it hardens fast at this stage. If fine sugar is desired, it should be stirred moderately while cooling. The mould should be wet with water to prevent the sugar from sticking to it. To obtain dry sugar, place it in a tub, barrel, or hopper-shaped box, with holes for draining off the molasses. The sugar may be whitened by laying a few thicknesses of flannel on the top of it while draining, the flannels to be daily washed in cold water. They will absorb and wash out the colouring matter.

### Beet Root Sugar

NO. XIV.

The next process which claims our attention is that of Champonnois, and is called after him the Champonnois process. It is a brown or raw sugar process, but from its simplicity seems to promise well for the use of the farmer, whilst the resulting potash and other mineral salts are entirely left behind in the refuse and feeding stuff, and as such pass to the manure heap, and from thence to the crops—a most desirable result; for notwithstanding that the whole of the cake of the beet root, when pressed, may be fed to the cattle, and thus restored to the farm, yet in the concreting and other processes hitherto described there is a certain and serious loss of the mineral elements of the farm, and which in time must be restored in one shape or other, or the farm suffers.

The Champonnois process is not very fully described in the latest English publica-

tions, possibly because that way of working has, as yet, hardly become of sufficient age to be public property, and also that, as the process is essentially French, it may not as yet have been well translated into English. Such as it is, we give it, and we have sent to Europe for further information, which shall in due time be laid before our readers.

In the Champonnois process the beetroot is grated down as fine as possible, the ground or grated stuff is then mixed with 30 per cent. of its weight of water, and pressed as in other processes; the resulting liquor is filtered or strained as fine as possible, and is then boiled with the addition of one per cent. of fine animal black—this is bone or ivory black, made from burned bones, and reduced as fine as possible. This is a purification which is considered equal to a filtration through coarse material in the ordinary manner by the old process (in which, after defecation with lime and boiling down into syrup, the syrup was strained and filtered through bone charcoal). The juice containing the fine animal black is finally concentrated by boiling down to 22° Baume (the thickness of thin molasses). This is then again filtered, and again boiled until the thermometer shows a heat of 115° centigrade, or 239° Fahrenheit. This will bring it to the thickness of thick treacle or molasses, or the thickness which maple sugar attains when you are about sugaring off. This mass is then left on a stove, or a warm place such as the top of a brick oven, or near the kitchen stovepipe for five or six days, during which the sugar crystallizes. It is then drained, and freed from the molasses by any of the ordinary means used for that purpose. The resulting sugar is very good, and crystallizes in large grains, so much so that the smallest particles of syrup adhering to the vessel crystallize completely and in large crystals.

The resulting molasses or drained syrup, which does not crystallize, is then diluted with about sixty per cent. of water—that is about twice as much water as was originally used with the pulp. This solution is heated on a water bath, or in such a way as that it will not burn, and is added to a fresh quantity of the pulped beet root. This mixture is then raised to the heat of from 158° to 177° Fahrenheit (70° to 80° centigrade) and maintained at that heat for from ten to fifteen minutes. It is then pressed, strained and boiled with fine animal black, exactly the same as in the first instance, then concentrated down to treacle, set aside to crystallize, and the resulting sugar and molasses divided as before, and the molasses again watered with 60 per cent. of water and applied to the obtaining extract from fresh pulped roots, as before.

This process is stated to leave all the mineral salts and other impurities in the pressed cake, which therefore pass at once to the

cattle feed and manure heap. It also does away with all the troublesome and expensive apparatus and machinery for the reduction of the molasses in the old method, and which form a business of themselves. The only objection to the process is the extra amount of water to be evaporated, and the larger size of the vessels. But that is far more than counterbalanced by the greater simplicity of the process, and the banishment of the machinery used in the after processes.

In the old processes two-thirds of the mineral matter of the roots pass into the molasses, the other third being in the pressed cake. In the Champonnois process, the whole of the mineral matters, from being worked over and over again into the newly ground root pulp, is absorbed by it, and thus is retained on the farm, and for manure.

Now, it will be observed that in this process lime, which is so extensively used in all others, appears to be omitted altogether, and that the operator trusts entirely to the fine animal black as the defecator, and for the purification of the juice. Skimming the juice is not mentioned, but common sense will tell any one that if scum is formed during the boiling and concentration of the juice, it ought to be removed, and that any deposits formed in the boiling ought to be removed also, so that the operator may only have to filter the clear syrup.

As we said before, the process is imperfectly described, and we hope for further information on it; but in the meantime we recommend to all who may be experimenting on the beetroot and sugar, to try the process as here described, and to use their previous experience with maple sugar and their own common sense, and no doubt the results will be satisfactory.

It is, however, remarkable that lime should have been dispensed with; but it is also possible that lime with this process is quite unnecessary, and that although it produces some benefits it may also produce difficulties, which have to be got over in other ways. People not connected with manufacturing have no idea how errors will be perpetrated and continued in the production of matters of everyday life, nor how what things which at some times have appeared to be necessary, and have afterwards been dispensed with, have subsequently re-appeared in another shape, and have been and are considered of vital importance. Thus, in the oldest printed systems of brewing beer from malt and hops, one of the great secrets of the trade consisted in putting into the water, before the mashing of the malt, a small portion of sulphate of iron, or green vitriol. The reasons for this were not understood, but one hundred years ago it was generally practised, and no doubt with good effect. Subsequently to that time it came to be considered an adulteration, and by special

enactment this substance was, with all others except malt, hops, and isinglass, banished from the brewery. The writer has brewed thousands of barrels of excellent beer without the use of sulphate of iron, or any other chemical matter, but nevertheless it was always observed that beer brewed with hard water kept better, and did not sour so much, as that brewed with soft water, and in time it came to be observed that beer brewed in certain localities, particularly at Burton, in England, could be made weaker and would keep better than beer brewed anywhere else. The chemists of the day analysed the Burton ale, and found a notable quantity of sulphuric acid in it, and so stated it in their publications. The Burton brewers, feeling perfectly innocent of the charge, were furious, and brought actions for damages against the chemists. The latter stuck to their first statements and analyses, and showed at the trial that sulphuric acid did exist. This finally led to the examination of the water, and it was found that all the water used at the Burton breweries contained in a natural state sulphate and sulphite of lime; that this was caused by the water filtering through strata containing those substances—so that the chemists were proved right, and at the same time the brewers were proved innocent, and the secret of the Burton ale became known. This caused a concentration of the brewing interest of England in and around Burton, and finally in and around other places possessing water of similar quality. Then, by chemical people, the old original system of the sulphate of iron became understood. The small quantity used was only sufficient to combine with the lime naturally in the water, and the malt. The required amount of sulphate and sulphite of lime for enabling the liquor to be kept from souring was made at the time of brewing, and the desired result produced without any one knowing why.

Now, the London and other great brewing establishments attain by chemical means the advantages which their Burton brethren attained by natural means, and as good beer is brewed in the old centres as in the new. We need not wonder, therefore, at any changes which may take place in so new a manufacture as that of beet root sugar.

VECTIS.

ADULTERATION OF SEEDS.—The unprincipled dealers in the seed trade in Europe are not to be baffled, it seems, by the British Act of Parliament framed to put a stop to their nefarious practices. Adulteration with old, killed, or dyed seed being interdicted, they have taken to mixing cleverly coloured sand with clover and other seeds. Farmers who buy imported seed should be on their guard. Shaking the sample in a vessel of water, when, of course, the heavier sand will sink to the bottom, or trying to chew a little of the seed, are ready means of detecting the new trick.

## Rotation of Crops

### I.

The following is the substance of a paper read before the Ancaster Farmers' Club, by Mr. C. E. Whitcombe :—

In no art are the prejudices of habit so strongly rooted or so difficult to surmount as in that of agriculture; and although I consider it far from expedient to oppose such too suddenly, or to eradicate them, except by the progressive and enlightening effect of practical experience, yet it behoves each one of us to discontinue customs that we have good reason to believe should be abandoned, or that are radically bad in themselves

In the introduction of a proper system of cropping by rotation we strike a blow at the very root of bad farming.

It is impossible to drive in any direction in this our fair Dominion, without being struck by the appearance of an utter want of system among too many of our brother farmers.

We see fields so run out by continuous cropping as to show plain indications of deterioration in the very colour and consistency of the soil, while others, which have been pampered, petted, and crowded with manure (because perchance they are handy to the barnyard), are so strong and rich that no grain crop can stand upright upon them.

It has been well observed that no branch of agriculture requires more sagacity and skill than a proper rotation of crops, so as to keep the ground always in heart, and yet to draw from it the greatest amount possible of profit.

The reason which renders it imperative upon our part to consider and weigh well the benefits which will most assuredly accrue from the adoption of some regular system of rotation in our crops, is that no two plants of different kinds require for their nourishment the same substances in the same proportion.

For instance, the grains draw largely from the silica contained in a soil, and will therefore soon exhaust the supply of this ingredient in ordinary land. I say ordinary land, for in the virgin soils so great is the proportion of the humus or putrescent animal and vegetable matter, the most fertile portion of land, that wheat, or indeed, almost any crop may be and has frequently been grown with unvarying success for many succeeding years. Under the old system of farming this repeated cropping with wheat was adopted, and with apparent success. But it has been found that, even to the virgin soil made rich with that decaying vegetable matter, which has been deepened with each successive shedding from forest leaves, a time will come when the land, under an everlasting course of wheat, will begin to show signs of exhaustion

The important principles which should rule the farmer in the adoption of a regular rotation of crops are :—

1. That, though a soil may contain all the mineral substances necessary for the nourishment of every variety of cultivable plant, yet there is only a limited supply of mineral food necessary for each particular species of plant.

2 That some plants, as for example the grains, draw their chief nourishment from near the surface of the land, while others, like carrots or beets, seek for food at a greater depth.

3. Clover and all plants that put forth a luxuriant foliage absorb much of their food from the atmosphere, while cereals depend almost entirely upon the earth for their sustenance.

4. Certain insects live upon certain plants, and as long as their peculiar variety of food is furnished them, so long will they grow and multiply (instance the midge in the white wheats); but if a crop should intervene which is not the natural food of these our enemies, their larvæ will perish for want of nourishment.

Variety is then one of the first rules by which the farmer should be guided in adopting a regular rotation of cropping.

Doubtless, by means of a copious supply of manure, sufficient to return to the soil those ingredients which the harvest has withdrawn, a succession of the same crops may be grown without the grain being either diminished or deteriorated, but the most practicable and convenient plan is to alternate the crops so that after a particular species of plant has been raised the land may have time to recuperate ere it be again required to supply a large quantity of the same kind of food.

### II.

The general principles upon which different farmers may work will, of course, vary with those differences, climatic and of soil, which exist in their several localities. All considerations of proper rotation should be carefully guarded by the following rules :—

To avoid the immediate succession of similar crops, especially if such be of an exhaustive nature, and to throw their return as far distant from each other as practical circumstances will admit.

To grow intermediate crops of grass and roots, soil permitting, between cereals.

To give the preference to such green crops as afford the best prospect of food for live stock, and particularly to those which will admit of cultivating by hoc.

Never to lay down to grass until land be free from weeds.

The subject of this paper is, like newly cleared land, all but inexhaustible. I will therefore simply note a few of those courses

which are now in vogue in Great Britain, only premising that in Canada wheat is undoubtedly the staple product, and that, owing to the length of our winters, we require much more fodder for our stock.

First, a Quadrennial Rotation:—

1st year, summer fallow; 2nd, wheat; 3rd and 4th, clover.

Now, I hadly dare here give my private views on the subject of summer fallowing, for I know that many farmers advocate, and indeed practically adopt it. The use and abuse of the summer fallow may well form a subject for future discussion.

The advantages claimed for the above rotation are, that the system is economical, requiring nothing but the most simple operations, and the most inexpensive implements; that it does not require so much attention to the management of the land as does a purely alternate system, for the repetition of the summer fallows affords plenty of time for the preparation of the land for wheat; that the labour is evenly divided throughout the seasons; that if the clover be ploughed under after the second year, the land is kept in good heart, and will be still more enriched by the application of our barn-yard manure to the fallow; that the fallow cleans the land, and is undoubtedly followed by a good crop of wheat.

We now take a Five Years' Rotation, usually adopted upon the light lands of the east

England, a part of the kingdom famed as a great turnip raising country:—

1st year, roots; 2nd, barley; 3rd and 4th, clover; 5th, wheat.

It is not customary, nor indeed convenient to grow such a large proportion of roots in Canada. We may therefore put part of this field in roots, peas, &c.; but should, when the rotation again comes round to this field, reverse the division, sowing grain where we before planted roots, and roots where we grew grain.

The advantages of this system are that it is peculiarly suitable to our lighter lands and loams; the roots get a thorough cleaning, and prepare a mellow seed-bed for the barley; and a young sod is held to be, when broken up by a single ploughing, a good preparation for a sound seed-bed for the ensuing wheat crop.

I will close by laying down for consideration a rotation for such land as we have generally through this township of Ancaster.

This extends over six years, and is as follows:—

1st year, wheat; 2nd, 3rd, and 4th, grass; 5th, hoed crop; 6th, barley.

By bringing in grass for three years—say one in pasture and two in hay—we have an excellent sod to plough down, and we also have plenty of opportunity to enrich that land, which may have been put to barley, by a liberal dressing of dung before putting in fall wheat.

The advantages that I claim for this rotation are an even distribution of crops over the land, a thorough enriching of the soil every sixth year, and a good proportion of superior hay and of wheat—the two most valuable products of a Canadian farm.

C. E. W.

### Our Roads

#### III.

BY ALAN MACDOUGALL, C. E.

The roughest road one can travel upon is undoubtedly the crossway of logs or corduroy, and from the out of the way places in which it is usually met with, it is seldom considered worthy of repair, and seldom is any care bestowed upon it. But, perhaps, of all the roads that are cared for, it is the easiest to look after and cheapest to keep in order. It is too often the practice, in making these crossways, for roads they certainly are not, to burn up every bit of brushwood that can be got. All the branches and topping are burnt up or cast aside, and the logs generally cut so narrow that two wagons can hardly pass each other. Sometimes one sees a little gravel thrown over the logs to fill up the holes, or a little clay may be cast over the surface, but one never sees the branches carefully laid on the bottom, or rather on the surface of the swamp, as a bottom for the logs.

If the branches were carefully preserved and spread over the roadbed to a depth of two feet, and the logs put on, after the practice of the great engineer Macadam, then a good foundation would be got for future operations. The bottom layer would always be wet, and the top ones more or less so. The decay of the branches would not affect the roadway nearly so much as it is affected under the present system of resting on the surface of the swamp. The branches would also act as a good cushion on the roadway, and make it springy.

But, of course, with the improvement of the roadbed must come the improvement of the surface. With logs to work upon there ought to be no difficulty in making splendid roads at a cheap price. In nearly all swamps there are gravel ridges, and these having to be crossed make great ups and downs in the road. From these ridges, gravel ought to be taken year by year, and laid out on the roads, and the tops of the hills cut off, thus improving the grades of the roads. In doing this work, care ought to be taken not to put large stones on the surface—that is, stones larger than a hen's egg—as stones of greater size than that do not hold well together. Clay from the side ditches will do if gravel cannot be obtained, but from its fault of getting sticky in wet weather is not a proper substance to use. Also, it is always objectionable to break the surface of a swamp, that is, of a regular deep swamp; if there is clay bottom at two feet, then it does

no harm to open a side ditch, but where the bottom is six to eight feet deep, the surface should never be touched.

Another point in the cross roads is deserving of attention, and that is the hewing down of a little of the top, so as not to make such a constant bump—bump—bump. This could easily be done in the original construction, or after the road is made a man with an adze would improve the quality of a road for a considerable distance in one day. In nearly every road wet places are to be encountered, either regular swamps, or low wet places—swales, as they are called in many parts of the country. These ought to be treated exactly like a big swamp. If a good dry road bed is required, get the road either above the water or lead the water off it. If it be cheaper to raise the road or crossway do so, for it is sure to improve the grades also; if it be cheaper to drain off the water effectually by side drains, do so, and the road will always be dry after moderate rains, and dry sooner in spring and fall.

#### What Is Our Soil Made Of?

Here is a great and important question, with a true answer for which every farmer should be prepared. What is our soil made of? Dirt, muck, or what?

Upon a knowledge of the composition of soils is based the leading principle of successful farming. It has been said that our forefathers, and especially the monks of old, were better versed in the science of farming than are we of the present generation. Be that as it may, it is certain that they were able to distinguish the capabilities of soils with great accuracy, for it is a significant fact that their infield land, around the villages and the ecclesiastical lands attached to ancient monasteries in England, have been found, when broken up in more recent times, to be composed of the cream of the neighbourhood.

The difference in the quality of farm productions, and more especially of grains, though often distinguished in name by locality, yet depends entirely upon the nature of the soil and climatic influences.

Such are the endless combinations of vegetable and mineral matter observable in different soils, that no two farms can be found possessing perfectly similar powers of fertility. In this nature has provided for the best, for it has been well said that "farms thus variously soiled are spurs to ingenuity, obliging their occupiers to break through those confined opinions and narrow prejudices which are too frequently contracted in countries where a uniformity of soil and regular routine of management prevail."

Minerals are the chief ingredients in the formation of the surface of the earth, and among them stand chief—clay, lime, marls, gypsum, fluor, talc, sandstone, slate, quartz and barytes.

Such are the names given by geology to the various kinds of rocks, whether whole or crushed, and upon the proportionate parts of the combinations of these in a given soil depends the nature of that land.

I propose first to lay before your readers a brief notice of the different earths, in order to convey a clear idea of the components of arable soils.

CLAY is formed by a combination of many different varieties of earth, which are chiefly distinguished by degree of tenacity and colour.

CALCAREOUS EARTHS are those which are chiefly composed of lime in combination with acids. These in their fullest development are simply chalk, but they are also found in a powdery state intermixed in all our best soils. Calcareous earth is an improvement in all soils, but is a necessary addition to the very heavy clays and to the gravelly soils. Lime having a great retentive power for moisture, helps the frost in the work of pulverizing the clay, and has the opposite effect of giving further consistence to our very light lands.

MARL is also a calcareous earth, and is mixed with clay. A marl bed will always be of great value to the light land farmer, as applied to such soil it gives a further consistency, and also supplies a large amount of vegetable food.

GYPSUM, another calcareous earth, is in its properties very similar to marl.

In my next I propose to briefly review the composition of, and the general principles that should be ever borne in mind by the farmer in the management of his soil or soils.

C. E. W.

#### Stone Fences.

In travelling through Caledon and other parts of Ontario where stony land exists, I was much impressed with the improved manner of building stone fences. Perhaps the best way of abating the nuisance of stony land is to utilize the stone in building such fences with them. It would never pay to be obliged to build a fence at the same speed and cost as a mason would build a wall. Fences of stone so built would cost more than the land they enclosed would be worth. The inhabitants of stony districts well know this, and hence soon acquire the knack of building fences, and are accustomed to lay up the stones with great rapidity.

They first mark out the line of the wall, and at regular distances of about seven feet, set small cedar posts, similar to those required for an ordinary board fence, but much smaller. They then commence to lay up the walls, and form the foundations 2½ feet wide at the base. Much depends on the care with which this is done. In fact, the entire success of the undertaking depends on beginning right.

The stones must be carefully yet quickly placed in their positions; practice will soon enable the builder to avoid having to fit them, or move them a second time. The way a stone is laid is also of great consequence, as it must always be so placed as to have the largest end outside, so that all the stones will have a tendency to fall inwards instead of outwards. The two sloping sides thus formed will, if the stones are large enough, bear one against the other; or if too small, they will press against the middle stones used to fill up with; gradual ascent is thus made, and when the wall reaches three feet high, the top is about 12 to 16 inches wide, and is finished with a rounded capping of smaller stones. These fences are permanent and good, and when finished, one or two fence boards are nailed along the top from post to post, that project about two feet through the wall. The boards may be narrow, and placed several inches apart, as smaller animals are not likely to be tempted to get on the top of the wall, and the boards effectually prevent larger ones from disturbing the stones.

C.

#### Proper Application of Manures.

The way manure is generally applied to the fields, is one which ensures a great deal of loss, both of time and plant food. It lies in lumps over the meadows. These lumps are stores of food which are supplied to the plant by instalments as each shower saturates these lumps; but it requires a deal of rain to do this, for they get crusted over with a hard shell by the burning heat of the sun, and can be found any time during the summer, kicking about like so many coprolites. Like these same coprolites, they are of little use until they are ground.

The fact is, manure should be manipulated before it is applied to the soil, if most of its value is to be utilized and its effect to be felt at once. There is indeed a way of applying manure in a raw state which saves time, and is also valuable on heavy soils. I may write of this hereafter, but at present I wish to suggest the necessity of breaking up as small as possible every particle of manure, and spreading it on the fields as a top dressing evenly. I should suggest a cribble or sieve for this purpose, to be attached to a frame on wheels, a thing I would invent myself, if I only had the money to spend on the necessary models. Such a machine would save manure, which is always too hard to procure. To save manure is equal to saving money put out at interest; manure and its management are the key to good farming.

In England I have heard old farmers remark that "two waistcoats are better than one coat," and I think they are right. Whether we look upon the manure as food or stimulus, in either case the application must be in the form of a top dressing, and it is certain that the nearer you can approach to

applying the manure in pieces as small as peas the more certain the result.

I would advise my farming friends, then, to try this experiment: get a boy to chop up as fine as possible about two thirds the quantity of manure they usually apply to a given piece of land, and apply it evenly at two distinct periods, as far apart as half the growing time of the crop, and note the result.

PHIALA.

Mr. Rawlinson, an eminent English engineer, in a report to Parliament about the sewers of London, estimates the marketable value of the matter accumulated there at £1,000,000, and states that it would enrich 70,000 acres of land.

The Illinois Agricultural Report for 1864 says:—"The fences of the United States have cost more than the houses, cities included; more than the ships, boats and vessels of every description which sail the ocean, lakes and rivers; more than any one class of property aside from real estate, except, it may be, the railroads of our country."

The manufacture of beet sugar, which was commenced about a year ago at Sacramento, and from which much money was to be made, has been suspended. The cause of this is said to be the incompetency of the superintendent to make the business a paying one. The sugar produced from 3,000 tons of beets would, under the present system, sell for \$46,800; but it would cost \$76,000 to produce it.

LARGE FARMING.—E. W. Stewart gives an account of the extensive farming of John T. Alexander of Illinois, who cultivates some 36,000 acres. One cornfield was twelve miles long, and from one-half to a mile wide, containing 5,500 acres. Standing on a corn crib, the eye could see over five miles of corn in opposite directions. A little boy visited this farm with his father, and after riding miles and miles, he became thoroughly tired and exclaimed, "Pa, let's go home—I don't want to see no more corn, never!" During spring 85 ploughs were run constantly to plough it; 15 planting machines put in the seed; and 20 cultivators dressed the rows. This field yielded 220,000 bushels, or 40 bushels per acre. A meadow of 2,500 acres of timothy and blue grass, yields 3,000 tons of hay. Fifteen machines are run in mowing it, and horse-forks stack it. Timothy for seed is cut with a header, cutting ten feet wide, and 400 acres yield 1,500 bushels. There are 6,000 acres of prairie pasture, and 12,000 seeded to timothy, blue grass and clover—carrying about 4,000 head of cattle. An Osage orange hedge encloses 27,000 acres, and several intersect the farm, making a total length of hedge equal to 130 miles. There are 80 miles of board fence on the farm. These facts we have gleaned from an article in the *Rural New Yorker*.

## Stock Department.

### A Word about Shorthorns

Much difference of opinion ever must exist as to the relative value to the farming community of our several breeds of cattle. We must, however, all admit that the Shorthorns present themselves to us under peculiarly favourable circumstances.

Possessing in a eminent degree a combination of qualities at one time thought incompatible, they have, by the good points which they have exhibited, by the perfect symmetry of form, and the compactness of their frames, become objects of public curiosity, and are now looked upon as the noblest and handsomest type of cattle. They have realized enormous sums to their owners, and not only in Great Britain and America, but in nearly all foreign countries, they are in great request.

Some more light might perhaps be thrown upon the principles and science of breeding, if we could trace back with certainty our present improved Shorthorns to those native stock from which they have originally sprung.

So much has been written, within the present century, and so generally have the plans, opinions, and results of successful breeders been diffused over the agricultural world, that the art of breeding has been brought within the compass of every intelligent farmer.

How much credit do we then not owe to those early breeders who first began, without the aid of the experience of others, and relying solely upon their own thought and energy, to lay the foundation of that noble class of animals which to-day take the foremost place in the showyard and in the market.

From the earliest records that are extant, the counties of Durham and York have been noted for their breed of cows; but they were only celebrated for their feats at the pail. They were wonderful milkers, but when put up to fatten, were found slow feeders, and produced but an inferior meat, not marbled or streaked, and without the due admixture of fat and lean which gives fame to the beef of the improved Shorthorns. This very same peculiarity exists to the present day in the unimproved Shorthorns; they are splendid milkers, but make poor beeves.

It is now a full century ago since the Shorthorns on the banks of the Tees, hence called the Teeswater breed, had assumed a more improved condition. In colour they resembled our present Shorthorns—red, white and roan.

We have not records to show by what crosses these early Teeswaters attained such improvement over the original Shorthorns. We can only conjecture the breeds

with which the crosses were made, for it is certain that such cattle as the Teeswaters could not have been raised by the inbreeding of the early Shorthorns. No doubt the breeders were well seconded in their trials by the excellent pasture and meadows for which the banks of the Tees have ever been celebrated. It is probable that one cross to which they had recourse was with the wild white breed, from which we obtain so many improved Durhams of that colour.

It is also asserted that bulls and cows were imported from Holland for purposes of crossing. It is useless, however, to dwell upon these mere conjectures and uncertain reports—the fact remains that soon great improvement was observed, and has advanced unto the present day.

The Teeswaters were all large cattle, and like all such, soon developed a tendency to looseness of frame, coarseness and disproportion. To retard this tendency seems to have been the first aim of the earliest breeders, and they appear to have at an early date recognized the impossibility of rearing large and good animals. From the first, their purpose was to reduce the size and improve the form.

One of the earliest fathers of the present best Shorthorn herds was a bull named "Durham Ox," an improved Teeswater which was sold in 1801 to a Mr. Bulmer for £140 sterling.

The next breed with which the improved Shorthorns were crossed was the *polled Galloway*.

The deep massive frame and short legs of the latter were calculated to bring the Shorthorn nearer the ground, and to dispose the weight in a more compact form. The hair of the Galloways, the red cows of which were only selected, was good, the skin mellow and the offal light. Moreover, their hardy habits were essentially useful to the progeny of the cross.

When Mr. Charles Collings first resorted to this cross, great was the ridicule to which he was subjected by the advocates of pure blood breeding; but the principle upon which he worked was to take one cross and then breed back to the Short-horn, the only way, it has since been fully shown, in which crossing can meet with a maximum of success.

From that day to this, the Durham improved Shorthorn has steadily progressed in the hands of breeders whose constant aim has been to supply a want in the dam by a counteracting well marked quality in the bull, until this breed of cattle has arrived at such perfection that, it has been frequently observed, no advance has been made for the last nine years in the quality of the improved Durhams exhibited at the Royal Agricultural Society's Show in England.

They seem there to have reached perfection, and the example of the early breeders must, I think, be followed if we would not

have this stock degenerate. We must find another cross.

As to the milking qualities of the improved Shorthorns, we would observe that though they never equal in quantity the yield of the unimproved, yet it has been found that a moderate milker of the former kind will yield as much butter in the week as one of the latter.

C. E. W.

Economy of Agricultural Machinery.

CHAFF-CUTTER.

On this subject the following pertinent remark was made to me a few days since by a farmer who generally feeds from twenty to thirty head of cattle every winter: "I might as well have no barn in which to house my fodder as no machine to cut it up with. In the one case I should lose perhaps twenty per cent. by exposure to the weather, and in the other case I should lose the same or more by the wastefulness of my men and the daintiness of my well-bred and highly-fed cattle."

In Canada, owing to the length of the season in which we are compelled to supply dry food to our cattle, it is of the greatest importance that we utilize every particle of both hay and straw. Moreover, cattle-feeding is now fast becoming the most profitable part of husbandry to the Canadian farmer, and an increase in this branch of farming certainly exercises a great improving influence upon the heart of our lands, in that we thus return a greater proportion of the produce of the farm to the soil in the shape of manure.

Without going into the advantages of steaming cattle food, I propose to review the great saving of fodder effected by the use of the chaff-cutter.

When straw alone is not considered rich enough fodder for stock, it is often advantageous to mix it with hay. This mixture cannot be fed in its long state, for the cattle will pick out the hay and throw aside the straw; but when the two are cut and thoroughly mixed, they will be consumed together, and will thus answer the required purpose. Moreover, the beasts will digest the same proportion of fodder in less time, and thus cattle will be able more thoroughly to perform that process of chewing the cud, so necessary to their perfect digestion. Again, when hay has been kept long in the barn, or has been cured in rainy weather, there is always a certain proportion of dried up and inferior stems; these when cut into chaff may be thoroughly mixed with the more juicy part of the hay, and will not then be set apart and wasted by the animal when feeding.

The saving in fodder thus effected has been variously estimated. My own experience leads me to consider that fifteen cwt.

when it is passed through the chaff-cutter, will fodder cattle thoroughly where it would require a ton of long hay. Allowing the standard price of clover hay to be ten dollars per ton, we should thus effect a saving of ten dollars in every four tons fed. The expense of cutting is very slight, for enough chaff can be worked up in one day by two teams and three hands to serve fifteen or twenty head of cattle for a full month. The cost of a good serviceable chaff-cutter, which can be worked by hand or horse-power—such as are made by Messrs. Maxwell & Whitelaw, of Paris, Ont.—is about forty-five dollars.

Ten head of fattening cattle will consume about four tons of clover hay in a month. If these cattle are put up for two months, we shall have saved twenty dollars directly by economy in feeding, and more in that better fitness for the butcher which is the result of allowing them plenty of time to lie in their boxes.

C. E. W.

Relative Proportion of Offal to Beef in Fat Cattle

"Scotch Emigrant" wishes to know "what are the respective proportions of marketable beef and offal in an ox of say 1,000 or 1,500 pounds gross live weight." The usual allowance made in Canada for offal is one-third of the gross live weight, and such is a safe proportion upon which to base general calculations.

In small animals in very high condition, the proportion of tallow to beef will be greater, while in large heavy steers it will be less.

The following will give a near estimate of percentage of beef in the carcasses of steers and heifers in good condition:—

Live Weight in lbs.	Well-bred Cattle, especially Shorthorns.	Common Breeds.
Steers.. 2000 to 2500	69 to 72 p. cent	
Heifers. 1700 " 2200		
Steers.. 1400 " 1700	63 to 65 "	57 to 62 p. c.
Heifers 1200 " 1400		
Steers.. 1100 " 1400	67 to 52 "	51 to 56 "
Heifers. 900 " 1200		
Under 900	.....	47 to 50 "

Thus, the fat heifer, with her lighter offal, gives a greater proportion of beef to her live weight than the coarser and heavier-offal bullock.

The beef of a young animal which has been generously fed is specifically heavier than that of such as have passed much of their young days upon poor pastures.

Bulls will give a larger proportion of beef than steers or heifers, while cows that have had several calves have a very large proportion of offal.

### Fearing and Training of Oxen.

There are few undertakings so shamefully bungled in Canada as the proper training of oxen. These useful, docile, and steady-working animals are very often the objects of cruel thrashing, lulling and starving. Now, to train an ox to the best advantage is a matter which requires both delicacy and patience, and these are qualities too seldom found in those to whom the care of the young steer is intrusted.

Steers, which are to be trained for work, should be selected when calves, and fed and handled from their earliest days with an established object in view, namely, to make them docile, and to put on muscle as against fat.

When weaned and put out to pasture they will do better upon old pastures than in rich clover, as long as they find sufficient picking to keep them constantly growing. For the first and second winters they will grow well on good straw, but should be supplied moderately with turnips, and an addition of a small quantity of grain will be found very beneficial. It is greatly upon their early feeding that will depend their growth, the set of their limbs and the gradual development of muscle. It is an important point to break steers young. They are thus rendered more docile, will learn to apply their strength with more effect to the draught, and if properly taught, may be trained so that their natural pace will be greatly improved. To perform this, however, they must be at first lightly driven. There is no more certain way to render the pace of the ox crawling than the common habit of putting them, when young, to heavy loads. It is too often the way among our farmers to say, when they come with a heavy load to a bad hole, "Take out the horses and put in the young steers."

The patience of the ox is proverbial, and his perfect training is a simple matter, if his patience be met by the same virtue.

He should be governed by mildness, and gentle usage, and should gradually be accustomed to his work. A young steer, intended to be used as a beast of draught, should be constantly handled, and be taught to look upon man as a daily companion and as a friend. If he be kicked and buffeted for the slowness of his actions, he only looks upon man as his enemy, and then that stubbornness which is so often found in the ox is brought out, and when once it has become the ruling nature of the animal nothing in the world will cure it. That innate stubbornness should never be brought out in the ox, and need never be, if all appearance of cruelty and brutality are carefully avoided in our treatment of him. Let him be early tied in the cow-house with the yoke or a substitute upon him. He will then become accustomed to the use of his harness. When first put to draw he should be placed alongside of a steady old ox, without forcing him

to his work. If he draws back from the yoke, he should be urged forward with gentleness and firmness. Pat him and encourage him by voice.

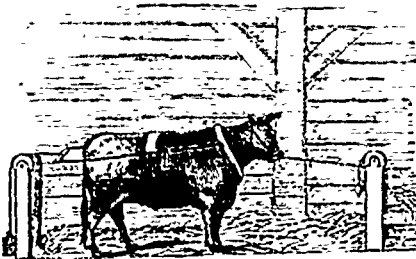
If very obstinate, starve him, and feed him only after work; use all means rather than the gad.

If broken in thus at two years old, they will be very little trouble, but it must be borne in mind that they are not at that age at their full strength and they should be worked carefully and only put to comparatively light work. They must not be strained or overheated. If they be carefully worked the exercise will be good, their muscles will develop more fully, and they will be far more valuable as a team when they reach the three year old stage and from then to six years old, than if they had been allowed to run at large for another year.

I do not think it advisable to keep oxen working after six years old, as they will lessen in value after that age, for they will fatten to more advantage when in their sixth or seventh year, than they ever will after.

Aged oxen may have, as asserted by many farmers, the advantage in strength, but they certainly lose whatever quickness of step they may have been noted for as they advance in years.

The following plan of teaching an ox to pull may not be known to all your readers. I have certainly never tried it myself, but have heard it highly recommended as an effectual method.



The animal is harnessed by yoke or collar, and fastened by whichever of these is used to a cord or chain, which runs in a ring and to which a weight is appended at the manger; he is thus enabled to approach or retire from his manger at pleasure. Another weight is hung to his chain or traces by the centre of a whippetree, and rests upon the ground, behind him, the connecting chain passing through a pulley fixed at a suitable elevation from the floor. The manger is then filled with provender, and if he approaches to eat he must also draw up the weight bearing upon his yoke or collar. He thus accustoms himself to move a load, and will not find his position so strange when yoked to the waggon or implement. C. E. W.

The Short-Horn bull calf Second Duke of Glo'ster, the son of Seventh Duke of York (17754) and Eleventh Duchess of Geneva, was sold by his owner, Edward H. Cheney of Gaddesby Hall, England, Dec. 29th, 1870, when 34 days old, to R. P. Davis, for 850 guineas.

### Breeding from Young Stock.

Mr. Walcott maintained, in a paper before the Central New York Farmers' Club, that breeding from young stock is a prolific cause of abortion in cows. Heifers are more subject to abortion than other cows. A yearling bull is unfit for breeding, and should be discarded altogether from use. This rule will apply with equal force to all kinds of domestic animals. Pigs bred from young stock are not only little runts, but usually too weak to walk, and commonly die within two hours from birth. Texas cattle but seldom breed until they are three years old, or older, and they are fed upon grasses and forage grown upon soils abundant in mineral plant food. Their calves, when a few hours old, will run like elk across the prairies, and a herd of cattle stampeding will run ten or twenty, and sometimes twenty-five miles in less time than horses could be driven, showing strength and endurance. Mr. Walcott believed that breeding from too young stock was one prolific cause of abortion in cows. It deteriorates the constitution of animals.

### Cooked vs Raw Food.

Experiments made by M. M. Raspail and Biot, of the French Academy of Sciences, seem to have resulted in establishing the following points:

- "1. That the globules constituting meal, flour and starch, whether contained in grain or roots, are incapable of affording any nourishment as animal food until they are broken.
- "2. That no mechanical method of breaking or grinding is more than partially efficient.
- "3. That the most efficient means of breaking the globules is by heat, by fermentation, or by the chemical agencies of acids or alkalies.
- "4. That the dextrine, which is the kernel, as it were, of each globule, is alone soluble, and therefore alone nutritive.
- "5. That the shells of the globules, when reduced to fragments by mechanism or heat, are not nutritive.
- "6. That though the fragments of these shells are not nutritive, they are indispensable to digestion, either from their distending the stomach, or from other causes not understood; it having been found by experiment that concentrated nourishment, such as sugar or essence of beef, cannot long sustain life without some mixture of coarser or less nutritive food.
- "7. That the economical preparation of all food, containing globules or fecula, consists in perfectly breaking the shells and rendering the dextrine contained in them soluble and digestible, while the fragments of the shells are at the same time rendered more bulky, so as the more readily to fill the stomach."



**Useful Rules for Farmers.**

Sometimes we are short of hay, or that article is too valuable in the market to be fed to cattle. It may be useful to know in what proportions we may feed other articles in the place of meadow hay.

Taking as our hypothesis that we feed 40 pounds of good meadow hay, with nothing else, per day to a fattening beast, the following table will closely approximate the quantity of each different kind of new feed that will form a substitute for one pound of hay withdrawn.

WINTER FOOD.		
	Lbs.	
Oat straw, cured like hay .....	1 1/2	
Chopped oats, peas or barley, from .....	1-30 to 1-35	
White turnips .....	8	
Swedes, parsnips, carrots or beets.	6	
Potatoes .....	2 1/2	
SUMMER FOOD.		
Vetches .....	3 1-15	
Grass .....	4	

LIVE WEIGHT.

To find the carcass weight of cattle by measurement of the live animal. Measure for length from a slight hollow which will be found just in front of the withers, to the point on the tail exactly over the hindermost part of the buttock. Measure the Girth immediately behind the elbow.

Now multiply the girth by itself, and this product by the length, then multiply the product last found by the decimal multiplier to meet the case required, according to the following table, and the result will be the carcass weight in pounds:—

Condition of Beast.	Decimal Multiplier.
Half fat .....	3.22
Moderately fat .....	3.36
Prime fat .....	3.5
Very fat .....	3.668
Extraordinarily fat .....	3.85

Example—A short-horn steer, in good order for the butcher—or prime fat—measures 4 feet 9 inches in length and 7 feet 6 inches girth. Required to find the carcass weight.

The girth, 7 feet 6 inches, or 7.5 feet, multiplied by itself, gives 56.25; this multiplied by 4 feet 9 inches, or 4.75, gives 267.1875; this again multiplied by 3.5, the beast being prime fat, gives 927.15.

Therefore, the carcass weight of this animal is 935 lbs. From this deduct the usual proportion for hide, horns, offal and tallow, and we have the amount of beef.—*Ex.*

**Too Much Fat.**—As an example of the excess to which the fattening process is carried, in some of the English show pigs, the *Irish Farmers' Gazette* states that three of the fat pigs at the Islington agricultural show died of apoplexy. It seems that these interesting creatures had been accustomed to pillows, on which they rested their heads

when not engaged in eating. The pillows in question, consisting of billets of wood, had unfortunately been forgotten, the pigs dozed off as usual after their meal, and such was their plethoric condition that they passed away in their sleep. It is stated as a fact that some of these fatted pigs require at times such stimulants as port wine and sal volatile to keep them up.

**A HINT IN HORSE-SHOEING.**—A writer in the *Western Rural* says that a great saving of wear and expense may be effected in "rough shoeing" by having the smith drive a small piece of cast steel into each heel-caulk and two into each toe. They can be cut very conveniently from a strip of steel five-eighths or three-fourths of an inch wide; they can be easily put into the toe-caulk while the shoe is being made. A new shoe is most easily fitted up in this way, yet an old one may be. After the shoe is fitted, the caulks should be hardened so that the steel will be as hard as a file. This plan is better than putting on steel toes, which will wear dull and not sharp, as the steel will in an iron toe.

**CLYDESDALE HORSES.**—This breed appears to be very favourably regarded in Australia, if one may judge from an article on the subject in the *Australasian*, Melbourne, Sept. 10th. We condense the following extract:—Scotland must be well off for Clydesdales if she can spare, without missing them, even as many as are brought to this country each season. Like the Scottish men the Scotch horses are a hardy race, prolific in their own country and thriving well out of it. That they are becoming the dominant breed here, to the exclusion of all, is proved more clearly at each annual show. The number landed increases every year, and supply and demand seem to increase in a like proportion. More horses were sold this week, at prices ranging from £400 to £600, than at this time last year, two fetching respectively £850 and £875, a sure sign that the market is far from overstocked yet. Had we fifty Clydesdale mares for every Clydesdale horse, our plough and road teams would soon be better worth looking at, but forty-nine out of every fifty brood mares are mongrels, and blood will tell even in the breeding of cart horses. \* \* \* The stock of the imported horses is seldom equal to themselves in appearance. They are improved according to the modern fashion of overfeeding. We must take them as we get them, but in regard to fat and superfluous flesh, so obtained, we must not expect like to beget like. It is quite useless to repeat that sires of moderate size, from remaining unpampered in their youth, always get the best stock, if their blood be right, for animals brought out on speculations must be of a kind to sell, and the heaviest draught horses, as well as the heaviest bullocks, fetch the most money. However, the Clydesdales are, as before said, a hardy breed, and can bear a large amount of good treatment without injury to their constitutions, and have mostly legs sufficiently strong to carry a good weight of needless flesh without becoming unsound. Therefore improvement of the modern sort will be long in spoiling them, and for this we should be thankful, as we are plainly destined not to have a vestige of any other breed left here soon.

**Veterinary Department.**

**Diseases of Dairy Cattle**

I — HOOF DISEASE.

In proceeding to notice a few of the diseases incident to dairy stock, and of frequent occurrence in all large dairies, we would first advert to one that demands special attention from the excitement it has created among owners of stock in various parts of Ontario during the past year. The affection to which we allude has generally been called "hoof disease" from the circumstance that it only attacks the extremities and feet.

We have it stated on good authority that, for a very long period, cattle have been subject to various diseases of the extremities; and one frequent complaint has been known by different names in different countries, and even in different parts of the same country, as "hoof disease," "foot disease," "dry gangrene," "rot," "foul in the foot," &c. Within the last thirty years there has appeared in Britain a malady called "foot and mouth disease," and according to the latest accounts it has made its appearance in the United States.

STRUCTURE.

Before explaining the nature of these affections, it will be advisable to notice briefly the structure of the parts affected, so that the changes which occur as the result of disease can be the more readily comprehended.

In describing the foot, we notice the internal, or what are called the sensitive structures, and the external or insensitive parts, the former being composed of bone, of tendons, of ligaments, of blood-vessels, nerves, absorbent vessels, cartilage, or that substance covering the ends of bones forming a joint, together with the synovial membrane and its secretion, the synovia, or what is familiarly known as "joint oil." There are also the sensitive laminae and sole. The external or insensitive parts termed are of the horny covering or case which nature has provided for the support and protection of the highly developed parts within. This horny box or casement is called the hoof.

Taking the structure of the limb of the horse as a standard, and comparing with it the leg of the ox from the fetlock downwards, we observe there is a marked difference, the parts being double in the ox, which comes under the class of quadrupeds known as Didactyles, or two-toed class.

The bones that have a direct connection with each division of the foot are three in number, two of which—the coffin and navicular bones—are enveloped by the horny covering, but only the lower extremity of the other (lower pastern).

The union of the three bones forms a joint called the coffin joint, presenting all of its

important structures in a well marked degree. The tendons or sinews are those attached to the large muscles extending from the arm or thigh downwards. The one in front is called the extensor, the other being known as the flexor, passing over the back part of the navicular bone to become firmly attached to the sole of the coffin bone. As it passes down the back part of the fetlock and pastern, it is covered by a sheath which supports and protects its passage to the foot, and it glides smoothly over the cartilages and bursal membranes, so beautifully arranged and situated to facilitate the motion of the limb.

Covering the front part or wall of the coffin bone are a great many highly vascular plaits or folds, running in a parallel direction downwards, and designated the sensitive lamina, in contradistinction to those on the inner side of the wall of the hoof, that are named the horny or insensitive lamina.

The sensitive laminae are continuous with a highly organized and glandular part called the coronary substance, which forms a connecting medium between the skin and the hoof. This is a very important structure, and is formed of a basis of fibro cartilaginous matter, of a cuticular covering continuous with the skin; and between the tissues is placed a beautiful and complete arrangement of blood-vessels.

The laminae are attached to the bone by an under layer of fibro-elastic tissue, which appears to give them a certain amount of elasticity, and their external borders pass into the divisions of the horny laminae, to which they are firmly united. The sole is the portion attached to the under surface of the bone, and is more highly organized than the laminae.

The foot is well supplied with blood, and the large vessels passing to it give off numerous branches which form minute and intricate plexuses. These tissues are also abundantly provided with nerves, and the whole parts possess great sensibility.

In comparing the laminated structure just described with that of the horse, it will be noticed that the connection between the horny plates of the hoof and the foot is not so strong as in the horse.

The hoof is formed of two parts, each division presenting two parts, the wall and the sole—the former being the portion visible when the foot is on the ground—and it differs from the horse's hoof in forming the straight side of the cleft of the foot, and is developed from the coronary substance. The sole is thinner in structure, and is produced from the secreting villi of the sensitive or fleshy sole.

The tissues forming the divisions we have just been pointing out are firmly united to each other above the hoof by connecting tissues, and by the inter-digital ligament, and the whole covered by strong and well-developed skin, which in its composition and in

its attachments to the parts underneath shows a variety of structures, as sebaceous glands, &c. The portion of skin forming the upper part of the cleft is exceedingly strong, and devoid of hair, and in its substance are numerous small glands for the purpose of secreting mucus, which renders the parts pliant, and gives ease to motion. The least alteration in the structure or functions of this part soon leads to greater disease. The foot of the ox, although not equal to that of the horse in organization, is nevertheless a beautiful but complicated structure.

#### II. HOOF DISEASE

Every one is aware that the foot of the horse is very liable to disease; so also is the foot of the ox; perhaps even in a greater degree, if exposed to the same exciting causes.

In what has been termed the "hoof disease," the parts already described are all more or less affected, according to the severity of the attack. In mild cases the irritation first appears in the cleft of the foot; the skin is broken, and an ichorous matter is discharged; and this stage is speedily followed by the appearance of fungoid granulations, or "proud flesh." The irritation extends, producing a considerable swelling of the pastern and fetlock joints. Small sinuses or pipes form around the coronet, discharging matter, and frequently a bleeding fungus appears. A marked peculiarity is the great tendency of the inflammatory process to spread in every direction, and owing to the increased vascularity of the parts above the hoof, and from the largeness of the venous bloodvessels, together with their tortuous course, it proves very serious in its consequences.

When inflammation attacks any part of the body it must necessarily have a termination, and it terminates in various ways. When ending without altering the structure or functions of a part, the process is called "resolution;" when it runs on to the formation of yellowish matter, it is known as suppuration. Inflammation of the parts under consideration frequently terminates in suppuration; and when matter forms in any part of the body where it cannot freely escape, it is attended with great pain, and particularly when forming in the foot, covered as that is by the hard and resisting horn, the pain is increased tenfold. Unless relieved by an artificial opening, the suppuration gradually extends, and breaks out around the head of the hoof. It may also proceed inwards, causing such an amount of irritation as to affect the bony structures, and if continued, resulting in the separation of the sensitive and insensitive parts, either partially or completely, so that the hoof or horny covering falls off. The inflammatory action may even be so great as to terminate in gangrene, producing a sloughing of one or more of the inferior articulations. Gangrene, however, may result from other

causes, for instance, the arrest of the circulation from exposure to extreme cold, as in "frost-bite," or from internal inappreciable causes.

Such irritation and suffering usually produce well marked symptoms. There is lameness, the animal walking with difficulty, and when standing, occasionally moving his feet in a manner indicative of pain. A swelling appears around the coronet, and extends upwards to the fetlock, the lameness and swelling increasing. The unnatural prominence becomes soft and fluctuating, the hair comes off, and if the imprisoned matter is not artificially liberated by a free vent, it will produce ulceration of the skin, forming an opening communicating with a sinus or pipe within, and the upper part of the hoof becomes separated from its connections underneath.

In many cases, the swelling is not confined to the region of the coronet, but involves the upper joints, the irritation being extreme, finally leading to extensive sloughing, and exposing to view the tendons and ligaments. Such severe pain and suffering must necessarily affect the system generally. The secretion of milk is impaired; the animal soon loses condition, becoming greatly emaciated, and even death may be the result.

The symptoms enumerated vary in degree according to the intensity of the attack and the extent of the tissues involved.

The causes of disease of the feet are numerous and varied. The foot of the cow, from its peculiar form, is especially liable to the lodgment of foreign bodies within the cleft, to punctures from nails or other sharp substances, and to bruises from stones or from irregularities in the surface of the ground during frosty weather. But perhaps the most common cause, and one which produces the most inveterate form of disease, is the injurious effects arising from wet and dirt, common to some straw-yards and other low-lying localities, or consequent on being housed in badly drained and ill ventilated byres. The obnoxious gases continually generated from the decomposition of animal matter are also the prolific source of many disorders.

We find a parallel case if we look to the horse, and observe what is the consequence of exposing him to the baneful influences mentioned. In a short time are generated many diseases of the extremities, as "scratches," "grease," "thrush," and "canker;" and the cow is more predisposed than the horse to diseases of the parts so affected. Extreme cold, as in exposure during severe frosty weather, may affect the limb to the extent of arresting the circulation and producing gangrene.

It is a well established fact that cattle grazing in low, damp pastures are exceedingly liable to disease of the feet—a fact very often noticed both in Britain and on the

continent of Europe. The wet and damp cause a softening of the hoof, and render the foot unable to resist the accidents to which it is continually exposed.

Another cause occasionally noticed in cows that are kept housed during the greater part of the year is the irritation set up around the coronet from the extreme length of the hoof at the toe. When the toe becomes preternaturally long it throws a great strain upon the heels and coronet, and this condition, combined with the injurious effects of wet or exposure, will very soon bring forth disease.

### III.—DRY GANGRENE

It was mentioned that the extremities occasionally present an abnormal condition, that has been called "dry gangrene," which is supposed to result from some peculiar irritant or poison acting on the system. Now, certain plants, or rather a diseased growth of these plants or grasses, then technically said to be ergotized, are supposed to produce this gangrenous condition. We have undoubted facts proving the effects of such diseased plants upon the human being; but upon the lower animals we consider this peculiar action extremely doubtful; and recent experiments and investigations are decidedly opposed to this theory of ergotism as a cause of "dry-rot."

It is recorded that in 1099, a pestilent year in certain districts of France, "many persons became putrid in consequence of their inward parts being consumed by St. Anthony's Fire. Their limbs were rotten, and became black like coal; they either perished miserably, or deprived of their putrid hands and feet, were reserved for a more wretched fate." Christison, in speaking of the action of ergot of rye, says that "two distinct diseases have been referred to its protracted use, and since 1696 both of them have been repeatedly observed to prevail as epidemics in various parts of the European continent, where rye constitutes a considerable portion of the food of man. One of these is termed convulsive ergotism, and is distinguished by the characteristics of acute comatose affections. The other is termed gangrenous ergotism, and commences with fever, and a peculiar feeling, as if myriads of insects were creeping over the body, and in a short time dry gangrene of the fingers and toes, or even the legs, takes place. The gangrened parts drop off by the joints, and the patient either recovers, or expires worn out during the process of repair."

In regard to the action of fungoid and ergotized grasses upon the lower animals, we consider it is not well marked, and from the comparatively recent and careful experiments of Dr. Wright, it seems extremely improbable that gangrene occurs in the domesticated animals from that cause.

In the treatment of hoof disease, the patient must be kept in a cool and comfortable

place, and be supplied with plenty of dry food. The foot must be carefully examined and medical treatment must be adopted or varied, in accordance with the stage of the affection. In mild cases, washing the parts daily with soap and water, and dressing with a lotion of carbolic acid—about one part of the acid to twenty parts of water—will bring about a healthy action. In other cases a linseed meal poultice, applied to the parts as soon as the inflammatory process is observed, will either abate the inflammation or hasten the suppurative process; and when the matter appears to form, the knife or lancet must be used to allow the pus to escape, and prevent its extending inwards. It is very often necessary to use the drawing-knife to remove part of the wall, or give the matter a free opening at the sole. The granulations must be treated according to their extent. When very large, they may be removed with the knife, and the surface touched with a mild caustic, as the chloride of antimony, carbolic acid, or the nitrate of silver. When small, they can be effectually reduced by the action of any of these caustics, without excision. Pressure is also beneficial, and an easy method is to cover the parts with a pledget of tow saturated with carbolic lotion, and secured by means of a bandage carefully and evenly applied around the limb and between the hoofs. If the toe is long, it must be cut down so as to give to the foot its proper and natural bearing.

There are other remedies that can be employed with very good success, their action being similar to that of the treatment above mentioned. In using caustics they must be carefully applied. We have no hesitation in saying that many of the remedies frequently recommended and injudiciously applied are worse than the disease, increasing the pain and suffering in place of giving relief. In all cases, we cannot speak too forcibly of the necessity of keeping the parts scrupulously clean. All these diseases of the feet can be very much prevented by care and attention to cleanliness, and providing cows comfortable and well drained stables, by keeping the feet in proper condition, and during wet seasons, where the pastures are low and marshy, removing the herd to drier ground for two or three days at a time.

### IV.—ABORTION.

A serious drawback to dairy farming is the great yearly loss resulting from cows slipping their calves, or aborting, and this misfortune appears to be on the increase. The usual period of gestation in the cow is seven months, or two hundred and seventy days; but the period of natural delivery may vary considerably from the usual time. From close observation it has been noticed that the shortest period was 240 days, and the longest 321

Abortion is the act of expulsion of the fetus before the completion of the full term of gestation.

Of all the domestic animals the cow is the most subject to this affection, and it may occur at any time from the second up to the eighth month, and usually about one of those periods corresponding to the period of estrum or heat, if the cow was not in calf. It is of most frequent occurrence among high-bred cows, that are highly fed, and kept in what may be termed a somewhat artificial condition, for experience tells us it is not so common amongst wild animals of the bovine species. There are many other circumstances, however, that appear to produce abortion, through some influence either direct or indirect, as injuries, over-driving, exposure; and on some occasions it assumes an epidemic or epizootic form, possibly the result of sudden or extreme changes in the temperature, which from their effect upon the system, have a tendency to react upon the uterus, and impair the connection between the fetus and the mother. We have no doubt but it is also brought on from the eating of certain herbs or grasses, some of which may have a direct action upon the organs of generation, whilst others may prove injurious to the digestive organs, and affect the womb from the intestinal irritation created.

It has been found that cows grazing on the coarse and rank grasses of low, marshy, and woody countries, are very subject to abortion, and the same has been noticed from allowing cows to eat turnip tops when partially frozen, or covered with hoar frost; and Youatt informs us that in Switzerland the commencement of the hoar frost is the signal for the appearance of abortion.

There is one circumstance attending abortion which is often noticed, and that is the rapidity with which the malady runs through a herd when one or two cases have occurred. The cow is a highly sensitive animal, in some respects, her sense of smelling being very keen, and during the period of pregnancy there is an increased irritability, rendering her very liable to sympathetic influences. She can very readily detect the smell arising from the putrid discharge following abortion. The fetus is often putrid before it is expelled, and the placenta, or after-birth, is usually retained, becoming decomposed and dropping away in small pieces. The extremely offensive odour has a sympathetic effect upon other cows, as is very well exemplified by the state of excitement into which a whole herd is thrown when one of their number chances to be delivered in the open field. It is probable that this sympathetic influence is a great exciting cause.

Impure water, or an insufficient supply of liquids, may cause derangement of the system, and form an excitant cause. We have also seen a few cases where it was attributed to the position in which cows had to stand, from the fore quarter being elevated, as is the case in some stables, and causing a constant strain upon the posterior viscera.

The signs of approaching abortion in some cows are very noticeable. There is dulness and uneasiness; rumination is suspended, and issuing from the vagina is a glairy discharge. The abdomen is enlarged, and the secretion of milk is impaired. If grazing in the field, she shows a tendency to leave the other animals, and occasionally there is noticed an irregularity in the walk. The discharge from the vagina increases, and alters from a yellowish to a reddish colour, the labour pains come on, and the expulsion of the fetus is sometimes attended with difficulty.

Whenever a case of abortion occurs, the necessity and importance of removing the affected animal from the rest of the stock cannot be too strongly recommended. Even when any of the premonitory symptoms are shown, the animal should be segregated.

If the placenta does not pass away readily, it should be removed with the hand, which is very easily done, and the vagina and womb injected daily with carbolic lotion, one part of the acid to forty parts of water. Also, give a saline laxative, as four to six ounces of Epsom salts. It is advisable to have the byres well cleaned and aired, and the floors dusted every second day with a small quantity of the chloride of lime. The diet to all the cows should be restricted for a few days to food that is easily digested, as bran mashes, &c.

#### Crib-biting

To the Editor.

SIR—I have a valuable horse, an inveterate crib-biter. One well skilled in horses and their diseases, advised me to line the edge of the feeding box and manger with sheep skin saturated with tanner's oil. This I did; but next morning found my work thoroughly undone. I afterwards learned from my adviser that he meant sheep skin with the wool on; I had used the bare skin. With the wool on I have not yet tried the experiment.

I tried zinc. The edge of the manger being three inches wide and rounded, I thought he could hardly catch hold of it, but the zinc suffered the same fate as the sheep skin. Stewart, (in his *Stable Economy*), suggests a remedy; but it appears to me unhandy and uncomfortable to the horse. Your correspondent's experiment, (see *Canada Farmer* 1865, page 71) seems to satisfy him, but before trying it, it appears to me that the raising of the iron an inch above the wood, while it is more troublesome to apply, and keep it in order, would answer a better purpose by having the iron on the wood and projecting a little over it in width. But should this not cure him speedily it would soon destroy his teeth.

Perhaps you or some of your correspondents may help us out of the difficulty.

I. C.

ANS.—There are many different remedies recommended for the cure of crib-biting, some of which are effectual in a few cases and fail in others. The habit of crib biting is often

brought on from standing too much in the stable, and especially where the stable fittings are made of unseasoned wood, which horses are very fond of gnawing. The remedies in these cases are plenty of regular work, and the use of well seasoned and proper stable fittings. A broad strap around the neck in some cases has the desired effect, for when the horse seizes hold of an object with his teeth, the strap presses upon the wind pipe, and he has to let go his hold without accomplishing his purpose. This remedy, however, is not altogether free of danger, as it might lead to distortion of the windpipe, or even cause congestion of the brain, and the cure would be worse than the disease. Covering the edges of the manger with some bitter substance, as aloes, will prevent him catching hold for a short time, but it soon wears off. The only effectual cure for crib-biting, however, is to do away with the manger, or any object in his stall or box against which he can crib. The rack for hay can be so formed that he cannot catch sufficient hold, and a portable manger can be used without a great degree of trouble; of course, it must be removed whenever he finishes his corn. For a valuable horse this is the only remedy we would recommend. Some English veterinarians recommend an apparatus constructed on purpose, to be constantly worn by the horse, and which allows him to open his mouth just sufficiently to take his food, but not enough to obtain a hold of the edge of the manger.

#### Mange in swine

Swine are more subject to disorders in winter than in summer, owing, no doubt, to close confinement, and lack of green or vegetable food. In summer, when allowed to run at large, they are physicians to themselves, and keep healthy. When confined in the pen, at any season, more particular pains should be taken than is usually exercised in providing health regulators.

Mange is often troublesome, particularly among shoats; this arises from filth, bedding in hay, and also from continuous feeding of certain kinds of food. Minute insects, which are believed to be hatched from eggs adhering to the skin, begin work and the pigs begin rubbing themselves. On examination, multitudes of small pimples or water blisters will be found on the under part of the body, which from irritation soon spread and become blotches and scabs. The disease spreads rapidly, and if not checked, which can only be done by killing the insect, death will follow.

Mange is contagious, and for this reason as soon as a single individual of the piggery is affected, he should be removed and cared for, and the remaining ones closely watched to be in time for checking the disorder in the beginning.

Various remedies are given, but it is better to avert an attack than to risk attempting to

cure the disease. Keep the pen clean and well ventilated, bed with clean straw, never hay, and make frequent changes in food. Scalded oats are excellent as an occasional and regulating food. Lard and sulphur in equal parts well rubbed together and applied plentifully over the body, are very effectual after the disorder has made its appearance, and a little sulphur, say a tea-spoonful, given in each meal is good; washing in a strong decoction of tobacco, or scrubbing with strong soap-suds will usually kill the insects.

Jennings recommends keeping swine afflicted with mange, without food for five or six hours, and then give to a hog of average size, two ounces of epsom salts in a warm bran mash—to be increased or diminished, of course, as the animal's size may require. This should be previously mixed with a pint of warm water, and added to about half a gallon of warm bran mash, and it will act as a gentle purgative. Give in every meal afterward one table-spoonful of flour of sulphur, and as much nitro as will cover a dime, for from three days to a week, according to the state of the disease. When the scabs begin to heal, the pustules to retreat, and the fiery sore to fade, a cure may be anticipated.—*Ohio Farmer*.

INFLAMED SHEATH.—For the relief of the trouble complained of by "A Farmer," as affecting his ox, we advise that the parts be cleansed twice a week with soap and water, and afterwards injected with carbolic lotion—one part of the acid to thirty parts of water.

RINGWORM.—A correspondent from Markham writes concerning a cutaneous disorder affecting a calf, and causing the hair to come off. The disease is probably ringworm, which is a parasitic growth of organic cells, and is best treated by washing the parts thoroughly with soap and water, and applying every second day, a dressing of compound iodine ointment. The animal should also have a generous diet, good feeding and cleanliness expedite recovery.

RHEUMATISM IN HOGS.—A correspondent from Russell sends the following: "Many hogs in this part of Canada have been seized with a disease of lameness, which would appear to be something like rheumatism, attacking first one leg and the other in succession, and causing apparently much pain, with a disposition to lie still the greater part of the time, the animal only rising to take food when compelled so to do. Many have died, in spite of all efforts to cure them, while others have recovered without care. I have had one lying now about three weeks, without any apparent change." Possibly, the disease is the result of exposure to the extreme changes of weather. We recommend a comfortable pen, with plenty of straw, and rubbing the limbs daily with a liniment composed of equal parts of laudanum and tincture of camphor.

## The Dairy.

### Dairy Farming

For several reasons, the attention of the Canadian farmer has of late been aroused to the advantages of dairy farming. For some years the price of dairy produce has advanced rapidly and steadily; while the price of grain has in the last five years come down to a very low ebb, and the average crop has also been greatly reduced, a steady advance in the market value of cheese and butter has ruled.

It is true that dairy farms do not offer the same chance of rapidly realizing a large return as do grain farms, but neither is their produce liable to the same sudden reduction and the same fluctuation in price as the latter. There is nothing speculative in the business of butter making, and it is but little affected by variations of seasons.

The most essential points in the establishment of a dairy are:—

First, to have a good breed of cows.

Secondly, to possess proper buildings and appliances.

Lastly, to be provided with an attentive and skilful manager.

**Stock.**—The opinion of dairy farmers is much divided as to the best breeds of cows for successful butter making. In Canada, the balance of favour is with the Ayrshire. A cross with this breed upon the Durham Shorthorn has been well recommended. By adopting this cross judiciously we increase the richness and creaminess of the milk, while such animals are more readily and profitably turned into the shambles. But, whatever breed we patronize, we must not neglect the great importance of obtaining and keeping the best of cattle—not only the best class, but the most productive individuals.

There is no quality in cows more certainly transmitted to their progeny than that of free and rich milking. If you have a cow that is a good milker at one time and uncertain at another; that is an "unkind" beast, a thin milker, subject to sore teats after calving, apt to miss the bull frequently, or has once become barren, it is better to put her up to fatten at once, and on no consideration again attempt to breed from her. No cow will pay which is allowed to run over a season without producing. Watch your cows individually, compare their milk and the weight of their butter, and keep weeding them out, holding on and breeding from the best, and regularly infusing new blood into your herd. Never use a bull which is not noted for producing good milking stock. Say an average cow makes five pounds of butter per week for five months. In that time her produce at twenty cents per lb., would amount to 160 lbs., equivalent to twenty dollars. If, by careful selection of

ones, we can improve the same cow's produce by only one pound of butter per week, we should have an increase of value in that cow of four dollars for the time we mentioned, or \$9 60 per year. It is in the aggregate of these apparently small increases that the far-seeing farmer becomes successful in his calling.

Two years old is the age at which to put the heifer to her first bull, thus bringing her calf when she is just arriving at her most healthy age, and when she is well able to bear the pains of parturition.

Now, with regard to the length of time which should elapse between the drying off of a cow and her calving, opinion varies between one month and ten weeks. Repeated experiments by the most eminent dairymen seem, however, to justify the prevailing estimate that six weeks is quite sufficient.

Of course, for those who keep a large dairy, it is advisable to bring in the cows at such different times as will yield them a good average produce at all seasons. The most proper season is from the beginning of May to the end of July, although the general season in Canada appears to be confined to April and May.

It is, I think, advisable, unless they be exceptionally good milkers, only to take three or four calves from a cow. After that age, a cow is very apt to deteriorate in her milk, and moreover, a cow at five or six years old makes the most primo meat.

These things are all matters of management, and the farmer is greatly in error who thinks that no head work is required and that book learning is useless in carrying out such arrangements as will combine the advantages that we have pointed out, in the face of accidental circumstances of time, disease and death. That cows may be managed so as to produce a large proportion of both dairy produce and beef, has been fairly proved by the experience of many intelligent farmers, but such is a work requiring much thought and constant supervision.

C. E. W.

### Floating Curds, &c

To the Editor.

SIR,—In the discussion on the subject of floating curds, and taint in milk and cheese, at the late meeting of the Dairymen's Convention, it seems to me that, although several of the speakers were on the right track, yet no theory as to the cause or cure of that evil was evolved. I would beg leave to lay before your readers a few jottings of my experience, hoping thereby to bring out a fuller expression of the experience of others on that important matter. Milk, we know, is a highly organized fluid, agreeing in many respects, in character, with the blood of the producing animal. It is, in fact, a sort of external blood, prepared for the subsistence

When healthy, its composition is definite as to the character of its elements, but varying as to their quantity, and when freshly drawn from the cow it is never in a state of absolute purity, but contains superadded matters in more or less quantity, and that varying with the seasons, and other circumstances. Now, how to get rid of these matters becomes a question of importance equal to that of cleanliness itself. For as the one prevents the highly sensitive milk from absorbing external heterogeneous matters, the other is to eliminate matters equally heterogeneous, and equally, if not in a greater degree, productive of that putrefactive fermentation in the milk that induces a state analogous to that of a putrid egg, thereby causing the curds, where the degree of putrefaction is high, to float, and producing, in minor degrees, all the various grades of huffing and ill-flavoured cheese. Of course, huffing will be aggravated, and it may be in a certain measure produced, by curing in an overheated room; but a well made, well flavoured cheese will never huff to do itself any hurt by mere heat, although it will lose in richness, and consequently in weight. Assuming then as cardinal doctrine the importance of cleanliness in the air and utensils of the dairy, as well as in the necessity for clean-flavoured rennet, and as we have no doubt seen the effect of those other inherent impurities referred to, let us consider shortly how we are best to get rid of them. I have said that there is an analogy between the milk and blood of the same animal. The moment either is disconnected from the living organism the work of disintegration begins, but in the vital heat that they both take from the body there is an inherent vital force that we may utilize for the purpose of purification. Take, as an illustration, the dark venous blood, while the heat and living forces are within it, agitate it in a pure atmospheric air, and the carbonic acid, and other impurities, readily become volatile, and are carried off, leaving the pure bright arterial blood behind. But should the blood be deprived of the vital forces before being brought into contact with the atmosphere, we shall find that it has lost that power of self-purification.

So with the milk—if it too be agitated in a clean atmosphere while it has those vital forces within it, those matters that give to it its animal odour, as it is called, and that, as we have seen, are so fatal to pure flavoured cheese, will, as in the case of the carbon of the blood, be carried away; but allow these forces to escape before the milk is disinfected, and the impurities become dissolved and fixed, and beyond the power of removal. The milk is dead, and its inherent corruptions within it.

With cleanliness, then, agitation, while the milk is living, as it were, and warm, is the remedy. Let it be begun immediately after straining in the milking yard, and a very little labour, by each individual who

sends milk to the factory, towards disinfecting the milk he sends, would go a great way in improving the quality of cheese. But beware of cooling down, either by setting in cold water, or by the use of any ice apparatus, until it is well ventilated. Have every portion of it brought repeatedly into contact with the air until the odour is well diminished, and then cool down. There is a machine which ought to become a useful adjunct to the cheese factory. By means of a fan, it blows a strong current of air through the milk in its passage to the vat, thus performing the work of a cooler and an almost instantaneous disinfectant.

Such are a few remarks of a general character. They do not profess to exhaust the subject, or to resolve every difficulty to be met with in the making room; but I believe they tend in the right direction. The remarkable difference between the living fluid, fresh from the cow, and the same after the vital forces have been withdrawn, has yet to be diagnosed. The question of making up—whether twice a day from all fresh milk, or once only by mixing the fresh milk of the morning with that of the previous evening—is yet an open question, each method having its advocates. The point will have to be settled by the matured experience of the trade. Of course, economy in making up is altogether in favour of once a day.

One more remark, and I will not seek to trespass further on your space at present. In making up fresh milk, after using the vital forces, as above mentioned, in bringing it to a desirable purity, the residuary heat, call it animal if you will, is just simply heat, and may be used as such in preparing for the rennet. I make this remark, as many insist on cooling down, with a view to re-introduce a heat not animal from the heater.

WILLIAM JOHNSTON.

Lawson's Cheese Factory,  
Dereham, Feb. 18, 1871.

### Winter Feeding Milch Cows for Butter.

W. H. White, of South Windsor, Conn., has the following valuable suggestions on this subject: The making of good butter in winter requires especial attention to the feed and care the cows receive. If the food is rich and suitable, the milk and its product are correspondingly rich and good. It is impossible to make good butter abundantly from the milk of any cow, unless she has abundant food of the best quality.

From observations, experience, and the testimony of others, I believe feeding cooked fodder to be the most economical, and to give the best results in all respects. Nearly as good may be had without the actual steaming or cooking, and this will come within the reach of all, and at the same time effect quite a saving of feed. First, the fodder should be cut fine—it may be mixed of different qualities, or all alike, but there should be a proportion of good hay—it should then

be packed in a box, which may be a bin in one corner of the barn floor, mixing in two quarts of corn meal and bran or shorts, mixed in equal quantities, to feed to each cow for each mess; scatter it evenly through and wet down with boiling water; pack and press tight, giving water, all the feed will absorb, and then cover tight to steam; in about twenty-four hours the whole mass will be equalized and in the best condition to feed, almost equal to green fodder. If two bins are had, one can be filled each day, and while one is cooking the other can be fed. Give this feed twice a day, morning and evening, and other fodder at noon. A few carrots or sugar beets may be given in addition, but the main dependence should be on the chopped fodder and corn meal. This will bring out the golden butter, which, with the constant good care of the cows, if the dairy-woman understands her part, will equal fall-made from grass.—*Utica Herald.*

### An Improvement in Setting Milk.

The following account of an improved method of setting milk is communicated by a correspondent to the *Country Gentleman*:—

The present season I have adopted a new plan of setting milk for butter, which I think is a very great improvement on the old method, and one which, I think, as it comes to be better known, will be in general use. The method is this:

Each milking is put into a single tin vat, made of the heaviest cross tin. The vats are 28 by 40 inches and 14 inches deep, with a  $\frac{1}{2}$  inch wire around the top, and handles at each end.

These vats set into water-tight wooden boxes, with an inch space on the bottom and three inches on the sides for cold water.

I use water from a well at a temperature of 48°. If one has running water it would save labour. Five vats are necessary, and with this number milk can be kept 48 hours and have one vat ahead ready for use, or 60 hours if skimmed just before using. The wooden boxes are of clear inch pine, painted inside and out, the vats painted on the outside. I am milking 20 cows and heifers, and find that they seldom fill the vats eight inches deep; so I conclude that vats the size of mine would do for a 30 cow dairy, as I have learned that cream will rise as well when the milk is 10 to 15 inches deep, if kept at the right temperature. My tin vats cost \$4 50 each, my wooden ones \$3; total cost including painting and metal faucets for drawing off the water, not quite \$40.

Now for the advantages: It is much easier straining the milk; is not over one-third the labour to skim and wash the vats; the butter is of better quality, (I have not seen a "white cup" thus far;) and when the mercury is up among the nineties, as it has been for weeks together this season, more butter can be made. On this latter point I cannot yet

speak definitely, but if I only make as much as by the old method I shall be well satisfied. It pleases the women. There is not a stack of 30 to 50 rattling tin pans to be skimmed, washed, scalded, and aired, but a single pan which can be skimmed, emptied and ready for use in twenty minutes.

In this neighbourhood there are four dairy-men owning 120 cows, using these vats, and others will do so next season. There is no patent—no farm rights to be paid for—and all who choose can use them.

### To Purify Dairy Utensils.

Stand on end, in a convenient place for use, an open-ended vessel of suitable dimensions for the size of the dairy, say from half a barrel to a hoghead. In this slake some good quicklime, enough to make a thin whitewash when filled full of water, and cover to keep out dust and dirt. The lime will settle, leaving a saturated solution of lime over it, as clear as spring water. After using the milk pans, &c., wash them as other utensils are washed and rinsed, then dip them in the adjoining cask of clear water, giving them a quick turn, so that every part becomes immersed therein; set them to drain and dry, and the purification is complete without any scalding process, from the new pan to the old worn-out one.

The lime in the clear water instantly neutralizes the acidity of the milk yet remaining in the cracks or seams, &c., of the milk vessels, to destroy which the process of scalding has been performed. In the case of a very small dairy, or one cow, the clear water may, if preferred, be dipped out for the time being and poured gently back again, the lime purifying the water and keeping it good all summer.—*Et.*

### Cheese Markets of Canada

To the Editor.

SIR,—The growing importance of the cheese factory system and its advantage to the farmer are now too generally acknowledged to require any argument, but there are some features in the cheese trade to which I desire to direct attention.

There are in this county of Oxford hundreds of tons of cheese manufactured and quietly floated to the seaboard, where it is shipped for the European markets, without regular reports of sales or prices. Now, what we need is an established market in the cheese-producing counties of our noble Province, where the producer can sell his goods when he desires, and receive in return a full marketable value.

How it is in other sections of the country I know not, but I do know that it would be very impracticable for a dairyman to drive a load of cheese to market here without first contracting with the cheese factor. We have, it is true, some enterprising men in the

shipping trade who are doing a good business for themselves and some of their patrons. The front rank of factories are receiving full prices, while those more distant in many cases are not. These men have others employed, who are constantly on the alert in different parts of the country, and not unfrequently take advantage of those with whom they are dealing.

Take as an instance a factory some twenty-five or thirty miles distant. A message is flashed over the wires to the effect: "I will give you 10, 11, or, as the case may be, 12 cts. for your cheese." As the shipping season is now advanced, the factory man, finding himself financially or otherwise embarrassed, returns a message, "Come on; I will contract," and by early dawn the next morning these gentlemen are on the ground. The dairyman, not being aware of an advance in the markets, closes a contract, when, at return mail, he finds that he has been "lured" to the tune of some ten, twenty, or perhaps forty dollars in the ton. In this case the factor is becoming enriched at the expense of the dairyman. One-fourth or one-half cent. is a fair margin for handling from the waggon to the cars, but when it amounts to one, two, or two and a half cents, it may indeed be considered unjust.

Now where is the remedy for this wrong? I know of none but the establishment of permanent markets in each of the large cheese-producing counties. Let any one look over the statistics for the county of Herkimer, with its impartial reports of the state of the markets there, and I think it will show the propriety of adopting similar measures here.

The cheese manufactured in Canada is made principally for the English markets. Should there not be a broad and impartial invitation given to the Canadian and European shipper to enter our markets and purchase direct from the producer, and do away with this indirect system of passing through the hands of some half-a-dozen men, all realizing a profit, of course, before it arrives at its destined market?

C. D. INGLESBY.

### Comparative Profit of Butter and Cheese-making

Mr. N. A. Willard communicates the following statement to the *Rural New Yorker*:

In September last the boiler in the Davis cheese factory in Herkimer county, N. Y., gave out, and operations had to cease until replaced by a new one. Meantime Mr. Davis, not wishing to decline the usual supply of milk for his factory, concluded to go on receiving it and making butter out of it. He did so. On the 12th of that month the cream was gathered in large vats and not in the careful manner of a farmer's family. It was churned, and he found that the cream from four thousand pounds of milk yielded two

hundred pounds of excellent butter, being twenty pounds of milk to a pound of butter—it taking nine and a half pounds of milk to a pound of cheese. Hence, the 200 lbs. of butter at 40 cents per lb., the price at which it sold, yielded \$80; but the milk converted into cheese at 15 cents per lb. would have yielded but \$63 15! Thus by the fact of the renewal of the boiler, a mere accidental circumstance, the discovery was made that by the manufacture of butter instead of cheese, the actual increase of profit per day was \$15 62, besides the increased value of the skimmed milk over the whey!

The profit of butter making may be less in Canada, where the price is lower than in New York State; but there is no doubt room for some changes amongst ourselves from the exclusive manufacture of cheese, and more attention might be paid to supplying a first-class article of butter, with profit to the manufacturer as well as benefit to the consumer.

**FACTORY CHEESE MAKING.**—A subscriber from Lanark is referred for information on the subjects of his enquiries to Gardner B. Weeks, Secretary of the American Dairy-men's Association, Syracuse, New York, and to R. James, Ingersoll, Secretary of the Canadian Dairy-men's Association.

**CHEESE FACTORIES IN SCOTLAND.**—A meeting was held at the Town Hall, Ayr, Jan. 13th, to consider the propriety of establishing cheese factories in the district, similar to those in operation in America and in some parts of England. The meeting was largely attended by the leading farmers and dairy-men of the district. The chairman made a valuable address presenting a strong argument in favour of the movement; and in the following discussion, a speaker who had visited the factories established last year in England, stated that all his doubts and objections had been removed by what he had seen. A committee was appointed to obtain further information and report to another meeting.

**UNCOLOURED CHEESE.**—The demand for white or uncoloured cheese, is said to be steadily increasing. It is stated upon reliable authority that the use of annatto for colouring cheese and butter has been discarded in some of the New York cheese factories. A number of the Herkimer "fancy factories" (so Mr. Willard reports) made uncoloured cheese all through the past season, and the sales of such cheese were at the highest rates received at the Little Falls market. From the fact that much of the annatto used for colouring butter and cheese is adulterated with poisons, its use should be discountenanced. It adds nothing to the palatable qualities of cheese, and if it were not for the requirements of the English market for high-coloured cheese, it is probable that there would be little difficulty in excluding annatto from the manufacture of cheese. For American use, it might be dispensed with at once.

## Poultry Yard.

### Fowls for the Farmer.

Much has been said and written about which breed of fowl is the most profitable for a farmer to keep. All have their merits and their admirers; and not one of the recognized breeds that has not some peculiar qualities in its favour beyond its fellow; and hence it is why we have such a diversity of opinion among the breeders and fanciers as to which is the most profitable to keep. It will not be denied, however, that there are some breeds possessed of such general characteristics for usefulness as to render them more suitable, and better adapted to the farmer and general breeder than others. That which combines within itself large size, good laying and flesh-forming qualities, and hardihood, requiring the least amount of care and attention, either in chicken-hood or maturity, will at once be admitted to be the most suitable fowl for the farmer. He wants not only a good supply of eggs during the year, but also meat for his table or for the market. It is useful and not ornamental fowls he requires; although if both are combined in the same breed, it becomes a still greater favourite. We have no hesitation, then, in saying that the Brahma fowl possesses all these qualities, and many others besides; and that of all the recognized breeds of fowls, it is the best adapted and most suitable to the farmer.

The size of the Brahma at once renders it an object of attention. In this respect it surpasses all other breeds, not excepting the gigantic Cochin. Hens in their second year, with moderate care, will weigh from 8 lbs. to 10 lbs., and cockerels from 13 lbs. to 14 lbs. each. The quality of the meat is also good; when tolerably well fed it will be found almost, and very often quite, equal to the Dorking. There is probably a little less meat on the breast, but this is compensated by the extra quantity of that on the thighs; indeed, many people think the leg of a Brahma cockerel one of the best parts of the bird. If the object of the farmer is simply to procure chickens for the table or the market, then a cross between the Brahma and a Dorking cock will produce truly magnificent fowls, the largest, perhaps, that have ever been reared. Chickens thus bred have, at the age of six months, attained the weight of 18 lbs. the couple, and over—no mean matter for the farmer's consideration.

As a laying fowl the Brahma is, in our opinion, equal to any other breed. There is no doubt that the propensity to sit interferes considerably with the production of eggs. Notwithstanding this, the fecundity of the hens and pullets is very great. Brahma pullets will lay with great regularity at six to seven months old, and usually sit within two months after. They may thus be made exceedingly useful, where a regular supply

of early birds for the market is desired. Indeed no breed so eminently possesses the merit of regularity and certainty in the time of incubation, without carrying it to a troublesome excess, as is the case with the Cochiti. It is also remarked that the hen in her second year lays much longer than the pullets, and in this respect makes the fowl, as a layer, far superior to the Cochiti, or indeed nearly any other.

After the second year the tendency to incubate becomes greater, and increases with age. We would, therefore, recommend that hens, after the third year, should be got rid of; nor indeed is there any necessity to keep them longer, as pullets can always be had to supply their places. In connection with the production of eggs, we may mention another cross with the Brahma well worth the attention of the farmer, that is, between a Brahma hen and a Spanish or Minorca cock. This cross produces a fowl generally black on the body, with dark striped hackle, which for average fecundity surpasses any and every fowl we know.

Altogether, then, we consider that the Brahma possesses a greater amount of usefulness and value than any other pure breed, and is also capable, in an eminent degree, of communicating its good qualities to other fowls by crossing; and for this reason we strongly recommend it to the farmer as a stock fowl.—*Canadian Poultry Chronicle*.

### Poultry on a Large Scale.

A correspondent, who does not give his real name, his address, or any intimation that he has been a subscriber for this paper, sends us a list of queries, divided into as many heads as an old fashioned Puritan sermon, and ending with *sixteenthly*, on the subject of poultry management. He proposes, he says, to start a henery on an extensive scale, and writes for information on every conceivable matter connected with the business. To publish his letter, which is simply a string of questions, would occupy considerable space, and to reply would extend an article to the dimensions of a complete treatise, and would fill a goodly volume. Had he been a reader of the CANADA FARMER, he would not have needed to make the enquiries, for every point suggested by him has been treated at one time or other in the columns of this periodical, and several of them repeatedly. The answer to some of his questions would depend entirely on local circumstances, as, for example—"Which are most profitable, eggs or chickens?" "In order to start a stock is it best to buy hens or raise them?" &c., &c. Some of the questions asked, although they have already been repeatedly discussed, will probably form the subject of further comment from time to time. Meanwhile, we would advise our correspondent not to start a henery on a large scale. Such undertakings, even in experienced hands, have hitherto failed. At

all events, let him gain experience by poultry keeping on a very moderate scale at the outset, before he embarks capital in an enterprise about which he knows so little. There are many excellent works on the subject, which will give him all the information to be derived from books. Among these is a very modest manual, and extremely cheap, but very practical, called "Poultry for the Million." "Wright's Poultry Book," is an excellent standard work on the subject, and is moderate in price. With respect to the latter, however, it may be necessary to caution a sanguine reader on this very point of keeping poultry in large numbers; for the project is more favourably entertained by Wright than most other authorities, and an instance apparently successful is given; but we have been informed that the very undertaking thus held up as an encouraging example, has since failed and been abandoned.

### Poultry Account

To the Editor.

SIR,—It is a question frequently asked, "Do Poultry pay?" Various answers have been given, and perhaps a record of my own experience during the past year may be of interest.

On the 1st day of January, 1870, I opened an account with my hens, of which I had eleven. The following is the result for the year: They laid 1,227 eggs, and raised 23 chickens. The cost of feed was thirteen dollars fifty cents. The feed I kept constantly in their trough before them, and a pan of clean fresh water by its side.

My hens are bred from the common sort, crossed with the Brahma, the Cochiti, and the Black Spanish. I have taken much pains in the crossing, and think I have as fine a flock of birds as can be produced in the county, or, I might add, in the Dominion, for the essential qualities of profit, namely, toughness, size, and the great number of eggs they produce.

The number laid each month was as follows—January, 68; February, 86; March, 128; April, 155; May, 162; June, 156; July, 114; August, 103; September, 90; October, 25; November, 26; December, 114; total, 1,227, or 102 dozen and 3, thus leaving a very fair profit, besides affording much amusement.

JOSEPH WILSON.

Belleville.

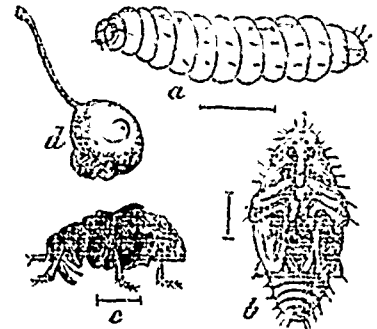
### Early Chickens.

The season of the year has now fully arrived when breeders ought to have their stock mated and placed in their breeding pens, and whenever a hen shows signs of incubation, no time should be lost in placing eggs under her. The early hatched chicken has many advantages over those of later birth; it should be borne in mind that it is in early chickenhood the frame is made that will hereafter place it in the rank of the large birds of its breed. And although feeding has much to do in the production of size and maturity, other things being equal, the early chicken is sure to be the best. It behoves breeders, then, who wish to excel in this respect, to produce early chickens, although at the cost of considerably more care and attention than is necessary in the raising of those at a later period in the season.—*Poultry Chronicle*.

## Entomology.

### The Plum Curculio, (*Conotrachelus nenuphar*.)

The accompanying figure shows the curculio in all its stages. *a*, is the larva, *b*, the chrysalis, *c*, the perfect beetle, all magnified, the adjoining lines show the natural size, *d*, is a small plum with the curculio (natural size) working on it. One egg is deposited under the crescent cut, and a second incision is being made.



I shall now refer to some experiments of my own on this subject, which will, I hope, add something to our knowledge of the creature's habits. I had seen it stated somewhere that the curculio was active at night, and I had also seen the idea ridiculed, and being somewhat sceptical on the point, resolved to test it. Accordingly I went out about midnight with lantern and sheet, and on jarring one tree down came two curculios, and from another tree one. When they drop to the ground from jarring in the day-time they usually remain motionless for a good while, feigning death. But there was no shamming about these creatures taken at this time of night, for they commenced to run about at once on the sheet, and fearing they would fly they were quickly transferred to a pill box. They were then taken into a room where there was a lamp burning, when on opening the box one of them at once took wing attracted by the lamp, and flew around the light. Thinking this activity might be due in part to the stimulus of a bright light, I placed them in a dark room for a while, and then approached them with the faintest glimmer of light, just enough to enable me to see them, when I observed them running about very quickly, faster than I have seen them move in bright daylight. This ended the experiments for that time, and the insects were closely shut up in a box for safety.

The next night the operation was repeated, and two curculios taken from one tree as before. These manifested just the same symptoms of activity as their predecessors, and along with them (now five in all) they were put into a box having a glass lid, with a small branch from a plum tree, having five plums on it, each one of which had been carefully examined and found quite free from puncture or bite of any sort. The box was placed in a darkened room and covered with a black



cloth so arranged that no light could possibly penetrate until its removal. Early in the morning the cloth was suddenly taken away and two of the curculios were found working on the plums, while the others were quiet or leisurely walking around in other parts of the box. The branch was at once taken out and examined: plum No. 1 had a puncture at the tip, hollowed out so that the skin was getting black; No. 2 was in the same state with a second large puncture in the side; No. 3 had two punctures on the tip, one large and one small one; No. 4, a small puncture near the base of the stem, while in No. 5 four eggs were deposited, and it was also punctured in four places, one of the punctures being very large, deep, and crescent-shaped, a second quite shallow, barely through the skin. I observed that they were much less active in the morning than at night.

Being anxious to see how they would do their work in the day-time, another branch was cut with sound plums on it a little before noon and placed in the box with the same insects. When exposed to the sunlight they were nearly as active as in the night, occasionally flying around the box inside. They were left exposed under a slight shade afforded by a small tree and examined at noon, when it was found that two eggs had been deposited; this was within an hour from the time of their exposure. Again it was examined early in the evening, when the number of eggs deposited had increased to nine, and a great many punctures had been made on different parts of the fruit where the curculios had been feeding.

These experiments I think clearly prove that they work in the dark as well as in the light, feeding and depositing eggs at night as well as in the day-time—that is during the warmer parts of the season, for it should be observed that at the time I operated the nights were quite warm.

With regard to the best time for jarring, experience leads me to believe that the evening is preferable, provided the work is not undertaken too early, say about sunset, or if it is done in the morning, the earlier the better. I will give you a little incident connected with evening jarring. Having just observed a curculio drop on the sheet where I was at work, and having a few minutes to spare, I resolved to watch to see how long the creature would feign death. For half an hour a careful scrutiny was kept up, during which time it did not move a muscle. How long it would have continued in this state is uncertain, as I had no more time to devote to the experiment; just then an attempt was made to pick the curculio up, when, as soon as it was touched, it began to run vigorously. While watching this specimen another was observed on a low outer branch of the same tree, which the slight previous jarring had failed to bring down. It remained quite still for a good while on the branch, then walked a few steps, stopping a while again, and so

on; during the half hour it did not progress more than two inches in all. An attempt was now made to see if shaking would bring it down on the sheet. Beginning lightly, the shaking was increased in rapidity every time until it became quite violent, much more so than any large tree could be shaken, but it maintained its hold on the limb and became more active between the intervals of shaking. Being satisfied that shaking would not do, jarring was tried, when a single tap brought it to the ground.—*W. Saunders, in the Canadian Entomologist.*

#### Entomological Society of Ontario

A special meeting of the above Society was held on Thursday, March 2nd, in the rooms of the Canadian Institute, for the purpose of reorganizing to meet the requirements of the recent amendment to the Agricultural Act. The President, Prof. Croft, occupied the chair. A goodly number of members were present, including several from the London branch of the society.

In accordance with a resolution, of which notice was given at a previous meeting, such amendments were made in the constitution as the Act requires. The following officers were then elected for the ensuing year:—

President, Rev. C. J. S. Bethune, M. A., Port Hope.

Vice-President, Mr. W. Saunders, London  
Secretary and Treasurer, Mr. E. Baynes Reid, London.

Directors, Prof. Croft, Toronto; Mr. J. M. Deaton, London; and Mr. E. V. Rodgers, Kingston.

Several new members were then elected.

On application duly made, permission was granted to the members of the society residing in Kingston to establish a branch there, subject to the constitution of the parent society.

After some discussion it was resolved to reduce the fee for membership to one dollar, and to furnish members with the *Canadian Entomologist* and all other publications of the Society free of charge—a change which it is anticipated will largely increase the membership. Any person sending their subscription to the Secretary may at once become a member.

It was resolved to continue the monthly publication of the *Canadian Entomologist* and to increase its size, and issue it in a much more attractive form, embellishing its pages with suitable illustrations. The Rev. C. J. S. Bethune, M. A. was unanimously requested to continue to act as editor of the *Entomologist*, and the following members appointed a publication committee to assist him, viz.: Messrs. Saunders, Reid and Denton.

The Entomological Society of Ontario having now become an incorporated body with a yearly Government grant to assist the carrying out of its objects, it is hoped that the efforts of this useful organization will be successfully maintained to the benefit of our farmers and fruit-growers.

#### The Currant Worm in Trouble

On the 21st of July, at a quarter past seven in the evening, we were passing around among the currant and gooseberry bushes watching the manipulations of a few of those well known foes, the larva of *Nematus ventricosus*.

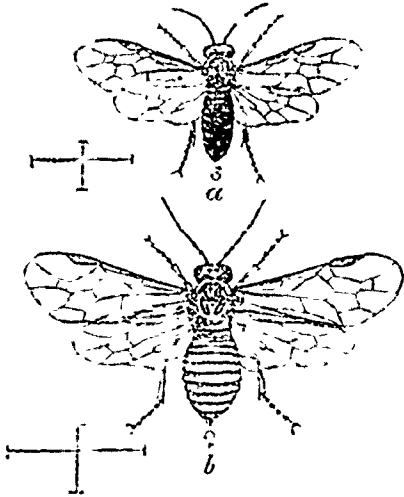
The accompanying figure will illustrate their appearance and doings.



They were feeding away voraciously with perennial appetites, when a disturbance of their peace appeared among them in the shape of a small black ichneumon fly, which fastened itself on the body of one of their number, and began to deposit its eggs by means of a sharp ovipositor, dexterously thrust through the skin of its victim, whose jerks and writhings while indicating a very uneasy state, failed to shake off the tormentor. The fly remained some time attached, and so intent was it in fulfilling the instincts of its nature that a capture was made of both fly and larva, by the sudden movement of a pill box, but while endeavouring to transfer them to the inside of a tumbler so that their further operations might be better observed, the fly suddenly escaped and was seen no more; the larva also died before reaching maturity, so that its further history could not at that time be developed.

NEW FOOD PLANTS.—A few days after this, and about the end of the month, we were not a little astonished at finding a colony of the worms about a quarter of an inch long feeding on the leaves of the black currant which we had previously supposed to be entirely exempt from their attacks. These were collected and fed on black currant leaves until about half grown, when they sickened and died. On the 7th of September a smaller number were found feeding on the leaves of a plum tree, taken and watched in the very act, the leaves were partially eaten all around them, and the worms about half grown. These were also taken and fed in confinement on plum leaves, which they ate very well for several days, but from some cause they all died before maturity, whether from confinement, or the unsuitable character of the food it would be difficult to determine. From the position of the leaves on which these larvae were found we thought it proba-

ble that the eggs had been deposited on the plum leaves by the parent fly. It was an occasion of regret afterwards that some had not been allowed to remain where nature had placed them, to see whether they would have reached maturity on food which we should regard as so uncongenial.



The figures here given represent the perfect fly on an enlarged scale, the hair lines at the sides showing the natural size; *a* is the male, *b* the female.—*W. Saunders, in the Canadian Entomologist.*

### The Pear Tree Slug

This disgusting little larva, the progeny of a little blackish sawfly, has been very abundant during the past season, and has been the subject of some notes and experiments. In the first place we noted that there were two broods in the season. The parents of the first brood, which pass the winter in the chrysalis state, appear on the wing about the second or third week in May, depositing eggs from which the slugs are hatched, becoming full grown from the middle to the end of June, then entering the chrysalis state underground; the second brood of the flies make their appearance late in July. This year we noticed them at work depositing eggs on the 21st, the young slugs were abundant and about a quarter of an inch long on the 8th of August, and by the 6th of September many of them were full grown. With us they were much more destructive to cherry trees than to pears, consuming the upper surface of the leaves, some giving the trees a scorched and sickly aspect; in many cases the foliage fell off, leaving the trees almost bare.

As soon as the slugs were observed at work in spring, they were treated to a plentiful supply of dry sand thrown up into the higher branches with a shovel, and shaken over the lower ones through a sieve, which stuck thickly to their slimy skins, completely covering them up. Thinking we must have mastered them by so free a use of this long trusted remedy, we took no further heed of them for some days, when to our surprise they were found as numerous as ever. The next

step taken was to test this sand remedy accurately to see what virtue was in it. Several small branches of pear trees were selected and marked, on which there were six slugs, and these were well powdered over—entirely covered with dry sand; on examining them the next morning it was found that they had shed the sand-covered skin and crawled out free and slimy again. The sand was applied a second and a third time on the same insects with similar results; and now being convinced that this remedy was of little value, they were treated to a dose of hellebore and water, which soon finished them. Ashes were now tried on another lot, the same way as the sand had been, with very similar results. It was also intended to try fresh air-slacked lime, which we believe would be effectual, but having none on hand just then, the experiment was postponed, and the opportunity of testing it lost for the season. We must not omit mention of an experiment with hellebore. On the 13th of August at 8 a. m. a branch of a cherry tree was plucked, on which there were sixty-four slugs; the branch had only nine leaves, so it may be readily imagined that they were thickly inhabited. A dose of hellebore and water was showered on them about the usual strength, an ounce to the pailful, when they soon manifested symptoms of uneasiness, twisting and jerking about in a curious manner; many died during the day, and only six poor sickly-looking specimens remained alive the following morning, and these soon after died.—*W. Saunders, in the Canadian Entomologist.*

### Uniting to Catch Curculios

During the past year, the horticulturists of Vineland, New Jersey, combined for the destruction of insects injurious to trees and fruits. Premiums and other incentives were offered, by which nearly all who were interested were induced to unite.

Among those who presented claims for the premiums offered for capturing the greatest number of curculios, one man was credited for having presented 4,400; another, 2,270; a third, 1,300, while the season's catch by others ranged from less than 800 down to a few dozen.

Considering the extent of the field from which these insects were gathered, their numbers seem very small, indeed, less than are sometimes taken at a single run of some of our western orchards. We recently enquired of Mr. B. Pullen, one of the most extensive and successful peach growers of Centralia, Illinois, with respect to the season's catch of curculios at that point. He informed us that most of the orchardists united for the purpose of capturing these insects, some running as many as three catchers. His own orchard the previous year was barren of fruit or nearly so, but notwithstanding this, from his own trees upwards of 70,000 curculios had been numbered as the product of this season's run.—*Prairie Farmer.*

## Apiary.

### American Bee-keepers' Association.

In accordance with announcement made some time previously, a meeting of Bee-keepers was held at Cincinnati on the 8th of February, and two following days. This movement and a similar one held at Indianapolis in December were to a great extent in opposition to one another, but a strenuous effort is being made to effect an amicable union among Bee-keepers, so as to have but one national association of the fraternity. The two societies organised at Indianapolis and at Cincinnati are each to meet at Cleveland, Ohio, on the first Wednesday in December, and it is hoped that on that occasion union will be effected. Mr. Langstroth was elected president of the association formed at Cincinnati, and the Rev. H. A. King, of New York, secretary.

The convention extended over three days, and interesting discussions were held on a variety of topics, such as winter management, swarming, hybrids Italian and Egyptian bees, honey plants, the mel-extractor, the benefit of salt to bees, &c. A proposal to raise a sum of \$5000 as a testimonial to Mr. Langstroth for his services as the pioneer of scientific bee-culture on this continent, was adopted, but not without eliciting some sharp contention arising chiefly out of conflicting interests in patent rights. There is a certain class of Apirians who seem to be apt imitators of the "busy bee" in stinging those who annoy them; with the exception of this ill-timed ebullition of jealousy, the convention appears to have been a pleasant and instructive one.

### Spring Management of Bees

A little attention given to bees at the proper time in spring will often enable the bee-keeper to save stocks that would otherwise perish.

As soon as the weather is warm enough for the bees to fly without being chilled, it will do to put out such stocks as have been housed. Every stock should be examined, as it frequently happens that good stocks have consumed nearly or quite all their stores, and would perish if not fed. When such is the case they should be fed at once, and feeding should continue until they can gather honey. They should not be fed lavishly, but a small quantity every day or every other day. Daily feeding is considered the better way, but it must be kept up, when once commenced, until the bees can gather in the field. All filth and dead bees that may have accumulated during winter should be cleared away.

The bees will in most cases do this themselves; but when it is done for them it allows those bees to gather honey that would other-

wise be occupied in clearing away the filth. Those using frame hives will find no difficulty in cleaning their hives, or ascertaining the amount of honey each stock has on hand. Often it will be found convenient to take frames from strong stocks and exchange with weak ones, thus equally dividing the honey among the bees. But where common box hives are used it is not so easy to ascertain their true condition, as any honey not consumed during winter is generally at the top or near the top of the combs, where it is impossible to see it in the common box hive. A very good plan in such cases is to take a long wire and push it down to the sides of the combs, and if there is any honey it will easily be felt when the wire passes into it, and it may also be seen on the wire when it is removed. Sometimes, on setting out stocks in the spring, or on examining those that may have remained out, some stock or stocks may appear dead, or nearly so, but they should not be hastily buried, for it frequently happens that they are only exhausted for want of food, or benumbed by cold, and if taken into a warm room or placed in the warm sun, will show signs of returning life, and if they want food, a spoonful of honey or syrup will revive the whole stock.

Brooklin, Ont. J. H. THOMAS.

### Meal as a Substitute for Pollen.

Bees require pollen or bee-bread for food for the larvæ. It sometimes happens that the stock of bee-bread is exhausted, during the months of February and March, or before any can be gathered in the field; or the bee-keeper may, through want of knowledge or carelessness, take out all the bee-bread in a hive when he is exchanging combs, in order to equalize the honey. Such stocks will not prosper, until they can gather from the field, unless a substitute is given them. It is well, therefore, to prepare two or three shallow dishes, a common tin pie-pan will do, or shallow wooden dishes or boxes may be made, say eight or ten inches square and an inch deep, and kept for the purpose; into these dishes put some Indian meal, oatmeal, rye, buckwheat, or even wheat flour, say a tea-cup full into each dish, and when the bees are set out, or as soon as they commence to fly, set these dishes convenient to the bees and put a little honey or syrup into each dish to attract the bees, and if they require it—if their stock of bee-bread is nearly exhausted—they will use the meal or flour as a substitute. They will gather it into little pellets on their legs and carry it in, after the same manner as they do pollen. It will also excite breeding, and, if they have sufficient honey, they will be much the better for the substitute. As soon, however, as they can gather from the field to any considerable extent, they will forsake the meal for the natural bee bread or pollen, showing that they prefer it to the substitute.

Brooklin, Ont. J. H. THOMAS.

## Correspondence.

### Mercantile and Farm Life.

To the Editor.

SIR,—During the winter season, young men being comparatively free from the most pressing farm duties, have more leisure for discontent, and are disposed to think that some other line of life, or some other country would afford them a competency on easier terms, than the Canadian farm has hitherto done. Their minds are naturally turned to leaving Canada for the Western States as a remedy; or worse still, realizing any assets they can by the sale of their property, and [moving into the towns or cities to embark in some mercantile pursuit. To those who contemplate moving west to the United States, I have only to say that all accounts agree in showing that no benefit whatever can arise from leaving Canada at present. A gentleman lately returned from a pleasure tour in the States, informs me that few are doing as well there as in Canada, and so far as he could learn, none any better than those who have remained here under similar circumstances. Hundreds who have left Canada wish themselves back again, and provided they could be situated as they were before leaving, not one in twenty would remain. But this cannot be; their capital is spent, or partially invested in other purchases, and they must remain and "rough it out" the best way they can. To those who contemplate the other course, above alluded to, I would earnestly offer a word of caution, and entreat them to pause before going too far. The successful merchants of towns and cities are composed mainly of men who have been bred to mercantile pursuits; who can bear the intense application absolutely requisite to their line of life, and who feel and always have felt, that there is no earthly enjoyment like buying for six and selling for sevenpence. These men are from necessity always heavily in debt, always getting deeper and deeper as business increases; always feeling that there are huge bills to meet; dependent entirely on sales being effected, or money got in; and this is the beginning and end, until after years of successful speculation in buying better than their neighbours and selling also better, or as well, they have accumulated enough to enable them to conduct their business without such heavy and constant discount. And, verily, that time never comes to ninety out of every hundred of the business community; but, instead, comes the sad experience that "hope deferred maketh the heart sick," and that increasing years and infirmities have not increased their capital. "Young blood" opposes them on every side, and often "young blood" has capital as well as business knowledge, and has been born and nurtured on the idea that a counting-house with ledger, cash-book and journal, was their best and only place of happiness.

These men never know or want a holiday, except stationary ones, for years together, and consequently if there is any possibility of making money they can make it. To buy or to sell they have at least ten times the advantage of any "young man from the country," even with ever such good parts. They possess the quick intense shrewdness so absolutely requisite in dealing with the world at large. Each such man of business has ordinarily, at least, 300 customers on his books; all these men, as consumers, are continually striving for one thing—namely, to get their goods at the cheapest rate, combined with paying for them in the most irregular manner the storekeeper will allow. Such sales are usually effected on credit, of say six months, often and often lengthened to a year, by taking notes at the end of the above time. Now, every one knows that about 10 or 15 per cent. is the utmost that any man can rely on getting over invoice price, and that when goods are bought by the man without or with but small capital, 5 to 7 per cent. is added to what the wholesaler calls cash price, thus most materially reducing the above profit, and you have then but a very small margin on which to accumulate debts and live.

The farmer thinks, because the merchant does not absolutely work with his hands, that he has a fine easy time of it, nothing to do but sit on his office stool and write or cast accounts all day, whilst he, the farmer, is exposed to heat and cold, and bodily labour. Let him rest assured that the man in business with but small capital, and large bills to meet every two months or so, works harder, suffers more anxiety by ten fold than the farmer. Such a man knows no sound sleep, until tired nature compels him to set aside for a brief interval his pressing cares. The constant strain on the mind is first to get goods, next to sell them at a small profit, or "push them off," as it is called, and lastly, but not least, to collect the money without offending his customers. Money the storekeeper must have, and that at certain and regular periods, and in large amounts to pay for his goods. If any difficulty or irregularity once commences, he is published as "weak," and the inevitable result is that a stain is cast on his credit, and he at once takes the low grade of customers, on whom the wholesalers push off goods not exactly suitable for the trade of better or stronger men, and these goods are always at higher prices, for the very simple reason that the merchant expects some difficulty in getting paid for them.

Now, in very deed, begins trial and trouble, shaving customers' notes at 15 to 30 per cent. interest to realize, and to meet their continual want, sales to indifferently well-off customers are in their turn effected. Notes so taken are paid away to the wholesalers and are unpaid at maturity; protested notes are the next step, and bankruptcy and

ruin the result. In fact, one great truth is often acknowledged by all people thus situated, namely, that the first rest, or peace, they have known for many months, is often when the "smash" is come, and the worst happened that can occur. Then, and then only, the reaction takes place, the strain of mental labour is released, and a calm ensues, the worst has happened that can occur, and a short interval of rest is the result, only to be again disturbed by the sheriff and his ultimatum. Your young country farmer's son, who once so envied the storekeeper's easy life, now looks back on his old, peaceful, though arduous life on the farm, with deep regret at ever having left it, and the one great hope he has is to again be placed where he was before all this care and trouble overtook him. C.

Farm Accounts

To the Editor

SIR,—I observe, in a late issue of your journal, a practical exemplification of keeping farm accounts.

For many years, my attention has been directed to the same object. My managing man's wife has now kept the books of a considerable farm, and the business attached, on the plan hereafter shown; and although she has seven small children, and but little help, she has, owing to the simplicity of the arrangement, succeeded admirably, and her books are a pattern for any one so circumstanced, creditable alike to her head and hand. Now, to do this on the ordinary plan would be quite impossible, on account of her numerous avocations. I arranged this course of entries, as I found that accounts as ordinarily kept gave no information of receipts, payments, sales, housekeeping or expenditure, or cash account—the most important of all—unless all be regularly posted up.

By the plan here given all these difficulties are avoided. Farm Sales and Farm Receipts, House Sales and House Receipts, Extra Labour and Time Book, Cash Received and Cash Paid—showing the state of the cash account by simply adding up the columns of cash.

All these entries are divided, so that each is apparent at the foot of each page. The young matron alluded to, not yet, I believe, 30, and her husband, pay and receive much money, and always know how their accounts stand. At any time that I wish to know the state of any particular branch of the farm accounts, if not already added, I run up the column I wish to investigate and the task is done.

One of my former workmen, who kept all the accounts in this way, is now worth ten thousand dollars, and I attribute it altogether to his keeping accounts, and thus getting a knowledge of figures. It gave him his first initiation, and his son, now about 16 years old, is at this time doing the same for a considerable sized business, and also driv-

ing out goods. It does not signify what plan is pursued, if objection exist to any one in particular, so that some one course is carried out. The lad mentioned above is now earning \$300 a year, and will shortly get more. Both the lad's father and myself attribute his ability and wish to do as he has done entirely to his father's precept and example, and I am certain that farmers whose opportunities of pushing practically their children's education are not great, would find that keeping such accounts as are here recommended would prove of incalculable value to all their young people, as an easy and practical way of acquiring knowledge of accounts generally.

The following example of a single page shows the manner in which the account may be kept:—

1871.	CASH PAID	CASH RECEIVED	LABORERS DAY HIRE	FARM GOODS SOLD	FARM GOODS RECEIVED	HOUSE GOODS SOLD	HOUSE GOODS RECEIVED	SUNDRIES	TOTALS	
									\$	c.
January 1	10 00								\$	10 00
"		4 50	10 00						\$	14 50
"				4 50					\$	4 50
"			1 50	30 00					\$	31 50
"					40 00				\$	40 00
"									\$	10 00
"									\$	1 45
"									\$	75 00
"									\$	1 40
"									\$	1 40
"									\$	2 40
Feb 1		39 00							\$	39 00
"									\$	2 50
"									\$	2 50
	11 65	35 70	12 00	34 50	40 00	1 20	2 15	3 10	\$	3 10

It will be thus seen that you have paid \$11 65, and received \$35 70. Your labour amounted to \$12. You have sold from the farm \$34 50, and bought \$40. You have sold from the house \$1 20 and bought for the house \$2 15. Your sundries amount to \$3 10, to be paid some day when called on. The columns of totals merely afford a reference for each amount. C.

To Prevent a Cow Sucking Herself.

"Enquirer" writes from Erin: "Can you inform me what is the best method of preventing a cow from sucking herself? Several plans I have had suggested; among others splitting the point of her tongue. Is that commendable, and if so, how far should it be split? If you have any effectual remedy please let me know."

REPLY—We would by no means recommend the tongue-splitting plan, which is at once barbarous and ineffectual. A sort of yoke worn on the neck to prevent the cow getting her head round sufficiently to accomplish her purpose will answer. This yoke is made as follows:—make six bars of the requisite length, to extend from the head to the shoulder. Bore two holes in each, close to the respective ends. Carry a rope through the holes at the anterior ends, and another through them at the posterior ends, by which to tie it round the neck; have the bars kept at appropriate distances from each other by knots on the rope. If properly adjusted, this will put a stop to the sucking.

A Machine for Pulping Roots.

To the Editor.

SIR,—We have machines for cutting roots, as well as apparatus for steaming them. As yet, however, no machine has been brought out in Canada for pulping. Pulping is practised in Europe, and there machinery has been perfected for the work. I am not, however, going into a discussion upon the preparation of roots for stock. All I wish is to throw out a few hints to manufacturers and farmers generally upon the construction of such a machine. Last fall, I went to the Provincial Fair almost on purpose to ascertain if any such machine was made, but to my disappointment I found no such piece of agricultural machinery. Knowing the advantages which would arise from pulping, I set to work to devise a pulper. To assist me in my contrivings, I had accounts of the different machines used in Europe for pulping sugar beets. For these accounts I am indebted to Knapp's Technology, a book to be found in almost any public library.

After a great amount of labour, and many discouraging trials, I succeeded in producing the thing I wanted, namely, a machine which would pulp roots as fast as any other machine could slice them. With this machine I can pulp roots as fast as a man can throw them in. This is the machine the farmer wants. It is so simple that any one can get one up himself at a cost not exceeding \$15 00. Another thing, it is not patented, and never will be by me. Since I am a Canadian farmer, I wish my brother farmers to enjoy any advantage which I may discover, free of any extra expense arising from protection.

The first thing necessary to the effectual working of a pulper is a horse-power of some kind. We use the old stationary power. Perhaps some manufacturer will get up a pulper to run by hand, but I think a horse power is the better in the end.

The machine consists of a shaft about two feet long, upon which is fastened a pulley for the belt; a balance wheel weighing about 100 pounds, and a cylinder twelve inches long and ten inches in diameter, set with about one hundred teeth of a certain shape. This shaft is set upon a suitable framework, which I need not describe.

The teeth of the cylinder must be peculiarly shaped, for upon them depends the entire success of the machine. Their action much resembles that of the teeth of a circular saw. Steel must be used in their construction. Their dimensions are  $2\frac{1}{2}$  inches long,  $\frac{3}{4}$  inch wide, and  $\frac{1}{2}$  inch thick. They project  $\frac{1}{2}$  inch above the wooden cylinder, into which the remaining two inches is firmly driven.

Now, half around the cylinder an arch is made, beginning at the lowest point, where it is set, as close to the teeth as possible, and enlarging so as to take in the largest turnips. This arch should be lined with iron. A suitable hopper must be attached for conveying the roots to the cylinder, and then the machine is complete. All that is necessary in feeding is to throw the roots in, and keep your hands out.

Any farmer wishing a fuller description of this machine may obtain it by corresponding with me, enclosing stamp; or, if you wish, I will with pleasure write another article for your paper, and give full instructions. All this article is intended for is to let your numerous readers know that such a machine exists in Canada, and that its work is perfectly satisfactory.

B. J. PALMER.

Mount Vernon, Ont.

NOTE BY EDITOR—We shall be glad to hear again from our enterprising and ingenious correspondent, and fully agree with him in his estimate of the advantages of an efficient and cheap machine for pulping roots.

### Fowl Meadow Grass.

A correspondent from Illinois writes for information as to the "advisability of sowing 'Fowl Meadow Grass' on a marsh of bulrushes and cat-tail, without ploughing. Draining was done last fall, and there is no sod of any consequence. The soil is a black sand and muck from three to seven feet deep." We have no experience of the grass in question, called also False Red Top (*Poa serotina*), and common, we believe, in swampy situations in Pennsylvania and throughout the Eastern States. From the account we have received, we should suppose it would be useful to mix with other grasses. The seed would no doubt germinate, if sown

early in the spring and dragged in with a harrow. It would be well to sow other grass seeds in considerable proportion, such as Timothy, Bent Grass, White Clover and Alsike Clover. The latter is especially adapted to a moist situation. Can any of our readers give any information on the subject from their own experience, or say where seed of the "Fowl Meadow Grass" can be procured?

OFFICERS OF AGRICULTURAL SOCIETIES VOTING.—A Secretary of an Agricultural Society asks, "Has a Secretary-Treasurer of an Agricultural Society a right to vote at a meeting of the Directors?" Yes.

"ENQUIRER" will find some of his questions answered in the article on Onion Culture, in another column. With respect to rye, it would be of use in fattening hogs, if mixed with other food.

ADDRESS WANTED.—Albert Robinson has sent us \$1 for his subscription to the CANADA FARMER, but has omitted to give any address. The post-mark on the envelope is also illegible; so that till we hear from him again we cannot mail his paper. Subscribers should be particularly careful to write both name and address legibly.

## The Canada Farmer.

TORONTO, CANADA, MARCH 15, 1871.

### Report of the Commissioner of Agriculture for 1870.

The report of the Commissioner of Agriculture for the year 1870, now published, forms a goodly volume, extending over more than four hundred pages, and contains information and suggestions of considerable value. In a brief introductory summary, the Commissioner refers to the condition of the Agricultural Societies throughout the Province, and justly commends the growing tendency to combine for the purpose of holding union exhibitions, instead of frittering funds in a number of petty shows. He notices also with satisfaction the greater attention paid to the improvement of stock, and other aids to progress in agriculture, besides the ordinary annual fairs.

After briefly reviewing the operations of Mechanics' Institutes, the Fruit Growers' and Agricultural and Arts Associations, the report adverts to the subject of agricultural education. To promote this important object, it is proposed to incorporate elementary agricultural teaching in our common schools, to make it a part of the training in Normal Schools, and to supply a complete system of instruction of a higher order by the establishment of an agricultural college. To the general scheme thus sketched, few people will raise objection, but the efficiency of any plans of the kind will depend on the

manner in which the details are carried out; and on this head, though the sum set down for the purpose in the estimates has been granted, the country has yet scarcely any information.

To aid and illustrate the practical work of such an institution, a model and experimental farm is to be attached to the college, and this, if rightly conducted, might be of essential service to Canadian agriculture, by means which few private individuals could afford to carry out, except on the most limited scale—such as experiments in modes of cultivation and manures, trials of implements, testing seeds, and a variety of other investigations in the field and garden, besides introducing improved stock, elucidating the principles of breeding, and instituting comparisons relative to different methods and materials of feeding, &c.

In the appendix to the report is an account of the Agricultural department at Washington, and of the agricultural colleges in the United States, more particularly those of Massachusetts and Michigan. These are partly supported by grants of land, and appear to be conducted successfully. The course of instruction is at once liberal and practical, and an essential feature in their management is the introduction of manual labour as a regular part of the training. The benefits of this physical education are manifold. It conduces to health, familiarizes the student with the details of farm work, dignifies labour, and affords those who require it the means of defraying in part the expense of their college course; for while a certain but comparatively small amount of labour is compulsory and unremunerated, opportunity is given for extra work, which is paid for at a fixed rate. These institutions, though not confined to any one class, are very largely attended by farmers' sons. The course of instruction at the Michigan College seems especially adapted to the ends in view.

In the Commissioner's programme, it is further proposed to carry on additional farms, of somewhat similar character, though less experimental, in connection with the asylums and penitentiaries of the Province. This we think a very excellent scheme, calculated to afford the unfortunate inmates of these establishments healthful employment, which should at the same time be remunerative, so as to relieve rather than burden the public exchequer, while it would conduce more, perhaps, than any other agency, both to the sanitary and reformatory character of such institutions.

Reference is further made to the project of establishing a school of practical science and art. All the advantages contemplated in this scheme might, in our opinion, be secured by an extension of the course of instruction given in the Toronto University.

In the remaining topics of the report reference is made to the cattle diseases which

have prevailed during the past year, and respecting which a report by Professor Smith appears in the appendix. Attention is also directed to the marked progress of the dairy interest in the Province, and to the beneficial effects to be derived from drainage.

By far the larger bulk of the volume is taken up by an analysis of reports of Agricultural and Horticultural Societies, and Mechanics' Institutes. These for the most part contain little else than bare financial statements.

The volume ends with a very meagre show of crop returns, by which it is made very apparent how inadequate are the means hitherto employed by the Department to obtain anything approaching to a complete and accurate estimate of the crops in the country. From these returns the following summary is drawn, showing the average yield of grain during the past three years in the districts represented by the Electoral Division Societies:—

	1870.	1869	1868.
	48 RETURNS.	51 RETURNS	47 RETURNS
	Bushels.	Bushels.	Bushels.
Fall wheat ....	15½	21½	20½
Spring wheat ..	12	19½	14
Oats .....	29	39	24
Rye .....	12	18	17½
Barley .....	22	30½	22½
Peas .....	10	22½	14

One of the most valuable portions of the publication is the report of the Fruit Growers' Association, including most interesting accounts furnished by members of the Entomological Society, respecting insects affecting certain fruits.

Besides the President's able annual address, and the full reports of the discussions at the several meetings of the Association, there are useful and reliable returns from several parts of the Province, giving the varieties of fruit, including strawberries and raspberries, most esteemed in those parts, and the prices usually obtained for apples, pears, and plums at those places.

The Association offered a reward of ten dollars a thousand for the beetle known as the Plum Curculio. These were sent to Mr. Saunders, of London, and he makes a most interesting report thereon. It seems that he received 13,653 curculios, from thirteen different collectors, widely scattered over the Province, and these secured thereby not only the cash premium, but also a good crop of fruit.

The prize essay on the raspberry, blackberry, strawberry and currant, also by Mr. Saunders, is a most excellent and exhaustive paper.

That part which relates to insects was written by the Rev. C. J. S. Bethune, and Messrs. William Saunders and Edmund B. Reed, members of the Entomological Society of Canada, and treats of those insects affecting the apple, the grape-vine and the plum. It is very fully illustrated with woodcuts, and cannot fail to be of great interest to all who are trying to grow these fruits.

This report, separate from the rest of the volume, will be sent to all the members of the Fruit Growers' Association, and to those who may become members before the supply is exhausted. It is well worth the membership fee of one dollar, to say nothing of the choice fruit trees and plants that are annually distributed gratuitously among the members. Any one can become a member by sending one dollar to the Secretary of the Fruit Growers' Association, Mr. D. W. Beadle, of St. Catharines.

### The Amended Agricultural Bill.

During the past session of the Ontario Legislature several amendments and additions have been made to the Agricultural Bill. A manual embodying these alterations, together with the original Act, is now, we are informed, in the hands of the printer, and will shortly be issued by the Commissioner of Agriculture, for the information of Agricultural Societies, and others interested therein. In briefly noticing these changes, we shall consider them in connection with the organizations to which they refer, rather than in the order in which they occur in the Amendment Bill. These organizations are the Agricultural and Arts Association, the County and Township Agricultural Societies, Mechanics' Institutes, the Veterinary College, the Fruit Growers' Association, and the Entomological Society.

With regard to the Agricultural and Arts Association, the most important change is that which enacts that all the members of the Council shall retire annually, instead of as heretofore, only four of their number; and that a fresh election shall take place every year—the retiring members being, however, eligible for re-election. This provision places the executive body completely under the control of the county societies, who will now certainly have only themselves to blame if the affairs of the association are not wisely conducted. Any useless or obnoxious member of the Council can be removed at the end of the year, while those who prove themselves efficient and worthy of confidence may be retained in their office as long as their constituents please, and they are themselves willing to serve.

An arrangement of minor consequence in reference to the Council is an alteration in the time allowed for the return of their report to the Commissioner. It is now enacted that this shall be sent in by the first day of April, instead of the first of July,

with a supplementary report of the Provincial Exhibition, within thirty days of holding it. This will give the Commissioner more time for the preparation of his annual report before the meeting of Parliament.

The amendments affecting Agricultural Societies are chiefly respecting matters of detail. One or two clauses of the old Act are rendered more definite; it is required that one week's public notice be given of the annual meeting; the time for sending in the affidavits is extended, in the case of county societies to the first of September, and to the first of August for township societies. The latter are also now permitted to hold a show in the same township as the county society, provided the place of exhibition be not within five miles of the county show. No person under eighteen years of age is allowed to vote at the annual meeting, and no subscription paid after the poll has been duly opened for the election of officers will entitle a member to vote in such cases; the time for taking votes is also very properly limited. Stricter regulations are made in regard to the certificates of delegates, in order chiefly to prevent unauthorized persons voting or otherwise representing societies. Legal provision is made for holding and conveying property by Agricultural Societies, in certain cases in which the power of giving a title was heretofore somewhat doubtful. The city of Toronto is put on the same footing with other electoral divisions in respect to the proportion of funds to be raised by its Agricultural Society to entitle it to the Government grant—namely, one-third, instead of the exceptional amount of two-thirds as heretofore.

The only change affecting Mechanics' Institutes has reference to the amount of grant allowed, which is now increased to a donation of \$400 instead of \$200, and in place of being equal to the amount raised and expended by the Institute, is now double the sum so contributed.

The clauses relating to the Veterinary College simply incorporate that body, and give it a legal status, empowering it to grant diplomas, and entitling its members to receive professional fees as witnesses in Courts of Justice, and making it illegal for any who are not members of a recognized Veterinary College to style themselves as such.

The annual grant to the Fruit Growers' Association is increased from \$350 to \$500.

The practical importance of entomology and the claims of the Entomological Society are recognized by incorporating that institution, placing it on the same footing as other kindred associations, and authorizing an annual grant of \$500. This society, as well as the Fruit Growers' Association, is well entitled to such recognition and encouragement by the Government of the country; and we have no doubt that the aid thus judiciously given will stimulate them to renewed efforts, increase their membership, and very materially extend their usefulness.

### Sell Grain when the Market is Fair.

Farmers "miss it," over and over again by holding on too closely to their produce. In the majority of cases it will pay the best to sell grain when we are ready to draw to market. There are times, of course, when the value of certain grains is so plainly depreciated that it would be suicidal to sell. At such exceptional falls we may with reason hold on, and if no rise takes place convert into meat and manure; but there are a variety of losses accruing from the holding of grain in hand which it would be well for the farmer ever to bear carefully in mind.

Let us take as a hypothesis on which to start, that 100 bushels of cleaned wheat are in the fall worth \$100. In all ordinary Canadian granaries the shrinkage upon this amount in nine months is not less than five bushels, or \$5.

The interest on the sum for six months, at eight per cent. per annum, will amount to \$4.

The insurance on this wheat cannot be effected for the time for less than \$1.

The anxiety of mind lest the wheat should be burned, stolen by man or beast, the constant watching of the markets, and the use of the granary, are, certainly, worth another \$5.

It can be taken to market during slack time in winter for one-half what it would cost to move it in busy times; this is worth at least \$2.

For keeping it all this time we hope for a clear profit at least of ten cents a bushel, or \$10.

It thus appears that it will be necessary that the wheat which would have brought \$100 in the spring, shall now bring in \$127, or a rise of 27c. per bushel. We would ask the farmer, how often is this realized by holding on?

And suppose that wheat should be five cents per bushel lower in price, we have then lost \$22 on our \$100—a rather awkward percentage.

Farmers, do not be greedy. Buy and sell. Keep the money rolling. Rolling money does gather moss. Ready sales and quick returns are the life of all businesses, and of none more than that of farming.

### Notes on the Weather.

The winter is passing rapidly and pleasantly away, and indeed, with the months of January and February, the brunt of the season may be considered over; and although during the succeeding month we may occasionally have severe weather, the power of the sun has become so great that snow seldom lies any length of time, and the ground usually begins to thaw and break up, so that farm and garden operations will, in some localities, probably be commenced by the beginning of April. Especially where under-draining has been secured, the soil will often

be ready for the husbandman some weeks before undrained land. The systematic farmer will see to it that he is ready for spring work—with seed selected and prepared, implements in good order, horses in strong, healthy condition for labour, and fences efficient—as soon as ever the ground and weather permit him to commence operations. There is a fair prospect, so far as present appearances indicate, that the fall crops will come out unharmed, and some weatherwise observers predict an early spring.

The month of February has been characterized by considerable changes of temperature and high keen winds. The mean temperature was 24° 3, being 1° 3 higher than the average, and about 3° warmer than February, 1870. The highest temperature occurred on the 21th, the thermometer indicating 48°. The lowest temperature occurred on the 5th, —15° 8, being the lowest recorded since 1863. The warmest day was the 24th, with a mean of 42° 4, being 18° above the average of that day; the coldest was the 5th, —8° 5, being 31° 3 below the average.

The amount of rain has been trifling, only amounting in three days' fall to 0.010, being 0.883 below the average, while the amount of snow, 23.0 inches on fifteen days, was only 3.8 above the average.

The prevailing winds have been north and westerly, blowing with great fury on several days—on the 2nd, 18 miles per hour; 3rd, 24 miles; 4th, 14 miles; 9th, 15 miles; 10th, 16 miles per hour—in many cases depriving the exposed fields of that natural cover so necessary to protect them from the intense severity of the frost.

The amount of cloud differed but little from the average, the number of clear days being 2, clouded 13, partially so 13.

### PRAIRIE FARMER ANNUAL FOR 1871.—

We have received a copy of this very useful little publication. It is compiled chiefly from articles of special interest that have already appeared in the weekly journal with which it is associated. The work contains a number of illustrations which greatly enhance its value. There are several tasteful designs for farm cottages, which are all of moderate size, and calculated to meet the requirements and means of those who form the bulk of a rural population. There are, besides, a number of short essays on a variety of practical subjects, such as the kitchen garden, strawberry culture, timber trees from seed, testing milk, rearing calves, training colts, breeding and fattening swine, poultry and poultry houses, preserving fruit, home-made vinegar, tanning and colouring furs, &c., &c. The assemblage of instructive papers forms altogether a most convenient manual for the guidance of those who live on a farm or in the country, and is well worth the small price of 50 cents, for which it can be procured from the publishers of the *Prairie Farmer*.

## Horticulture.

EDITOR—D. W. BEADLE,

CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

### Fruit Growers' Association.

#### WINTER MEETING.

The regular winter meeting of the Fruit Growers' Association was held on Tuesday, Feb. 7th, 1871, in the city of Hamilton. There was a good attendance, members being present from London, Goderich, Brantford, Toronto, Cayuga, Clifton, Niagara, St. Catharines, Winona, Milton, Oakville, Wellington Square, Thamesford, and other places.

The minutes of last meeting were read and approved.

The following papers were then read, viz: By the President on Thinning Fruit.

By A. B. Bennott, Esq., The Garden and Farm.

By G. Leslie, jr., Esq., Tree Planting for Shelter.

By W. H. Mills, Esq., Vegetable Tissues and Fire Blight.

By Rev. Geo. Bell, Experiments in the Culture of Small Fruits.

Moved by Mr. MORSE, seconded by Mr. SAUNDERS, that the gentlemen who have read papers be requested to hand their papers over to the custody of the Directors for disposal as they think fit. Carried.

Moved by Mr. HULTON, seconded by Mr. MARRIN, that a cordial vote of thanks be tendered the gentlemen who have so kindly furnished the papers we have just heard read. Carried.

Resolved, that the seedling and other apples be handed over to the Fruit Committee to examine and report.

Mr. ARNOLD brought a russet apple before the meeting, for the purpose of eliciting an opinion as to whether any one had seen anything like it before. After various opinions had been given, he stated that it was a Spitzsburg, a remarkable variation from the normal form.

Mr. ARNOLD also read an interesting letter from Mr. Thomas Meehan of Philadelphia, in relation to a singular combination of the apple with the pear, which had been sent by Mr. Arnold to Mr. Meehan. It was a fruit shaped like an ordinary apple, and having the external appearance of an apple, but found growing on a pear tree. Mr. Meehan stated in his letters that he had carefully examined the fruit sent him, and that he had found the pulp to be apple, and the stem, core and seeds to be pear, and was of the opinion that it was produced by the blossom of the pear tree having been fertilized by the pollen of an apple.

Here is a new field for investigation. Can the pear be fertilized by the apple, or the apple by the pear? If so, what new combinations are yet to be brought out by the crossing of these fruits, and what a field of experiment is opened for the fruit raiser! It is to be hoped that Mr. Arnold, who is skilled in cross-fertilization, will make such numerous and careful experiments next spring as will settle the question of cross-fertilization between the apple and the pear.

Moved by Mr. MARTIN, seconded by Mr. MONSE, that any member sending to the Secretary the names of five new members, with their subscriptions, shall be entitled to a double supply of fruit trees at the next distribution. Carried.

The discussion of the appointed subjects was now taken up.

#### BEST TIME FOR TRANSPLANTING TREES.

Mr. FRED approves of digging the trees early in the spring, as early as possible; trim the roots and heel them in until ready to plant.

Mr. WATSON, Summerville, has light land, and has found fall planting most successful with him. Does not prune, in case of fall planting, at the time they are planted, but in the spring following.

Mr. GREY, of Toronto—It depends on the soil; fall planting is to be recommended on light soil, spring planting when the soil is heavier. If planted in the fall, the trees should be banked up with earth, or mulched, to protect the roots.

Mr. HOLTON, of Hamilton, thinks, as a rule, spring planting is most successful; but when a tree survives the winter uninjured, the growth during the following year is much better. Fall planting does as well, perhaps better, to cover the roots well with earth, taking care to select a dry place for them.

Mr. BELL, of Clifton, has had excellent success with spring planting.

Mr. ARNOLD, of Paris, thinks there can be no general rule for either fall or spring planting. If the wood is well ripened, and the winters not too severe, thinks fall planting would succeed best, but taking all things into account would usually recommend spring planting.

Mr. CALDWELL, of Galt, advocates spring planting, but would recommend the taking of trees up, and root pruning and heeling in in the fall, because the cut roots become calloused during the winter, and more readily send out their rootlets when planted out.

Mr. W. BROOKING, of Dundas, believes in spring planting; if trees are properly mulched, thinks there is little danger of losing them from the heat.

Mr. HOPKINS, of Stoney Creek, has found spring planting do well. Out of 400 trees planted in spring has only lost 4. Believes that want of success in planting is often due to the length of time the trees have been out of the ground. Advocates purchasing trees

as near home as possible, so as to lessen the risk in this way.

Mr. GRAHAM, of Fort Erie, believes that there is more in the way in which the trees are planted than the time of planting; advocates spring planting, mulching, and staking.

Mr. BELL, of Clifton—Parties planting should see that the land is well drained before planting; if this be done, thinks there is little danger, providing the planting is done well, whether it is done in spring or fall.

Mr. MILLS, of Hamilton, advocates fall planting, because the roots heal over during the winter.

Mr. D. W. BEADLE, of St. Catharines, thinks the healing process in the root will not take place unless the trees be deeply covered when heeled in, sufficiently to exclude the frost. Fall planting is theoretically the time for planting, and believes fall planted trees, if the work be well done, will succeed best. If heeled in it is all important that the trench be deep and the earth well banked up, so that the roots be out of the reach of the frost.

President BURNETT has found fall planting most successful, and thinks he gains time by so doing. No fear of the want of success if the planting is carefully carried out, and the small rootlets properly spread and covered. Believes the fall planted trees keep their foliage better, make a more vigorous growth, and stand the dry weather of summer better.

Mr. HOLTON finds that there is a great deal of bad planting among those who plant trees. Has known them sometimes to be planted too shallow, with roots scarcely covered; sometimes in a cramped hole seven-by-nine inches, at others planted in a narrow post-hole arrangement eighteen inches deep, into which the tree is thrust half way up the stem. Advises planters to try to strike the happy medium in reference to depth of planting, and loosen the soil well all around the spot when the tree is set.

#### MANURES.

Mr. LEE, of Hamilton, has found the clipping from hides buried under the surface about vines, with bones broken small, to give a great impetus to the growth of grape vines.

Mr. GREY considers rotted turf the best manure; has found it much better than highly stimulating manures.

Mr. ARNOLD thinks that barnyard manure answers much the best for general purposes. Does not believe animal manure buried around the roots of trees or vines is ever good for them, unless the material is well rotted. Believes in bone dust as a manure for vines; would prefer applying manure early in the fall. Thinks there are more trees and vines killed by over-feeding than by lack of manure.

One of the members having referred to the ravages of field-mice among his trees, a discussion took place on the subject.

Mr. W. SAUNDERS advocated the use of stovepipe iron; cut one sheet into three pieces, and bring each piece into circular form with a roller; enclose each tree in one of these and tie it with string. The cost of this on a large scale will be 3½ cents per tree.

Mr. D. W. BEADLE recommended that the trees be painted with a mixture of lime, cow-dung, and soot, after a receipt given by Chas. Downing, and published in the CANADA FARMER.

Mr. GREY agreed with Mr. Beadle.

Mr. BROOKING had found stovepipe iron very useful as a protection, and very cheap.

Mr. MILLS advocated the use of 4 inch tile, split up the middle, the two halves placed together and tied with a string.

The discussion of manures was resumed.

Mr. CALDWELL thinks all manure should be composted. The fall should be the best time, and the application should be made on the surface in light soil; if the soil be heavy then it should be slightly covered.

Judge LOGIE uses ashes, and, for vines, broken bones mixed with manure from barnyards. Fall manuring on the surface is preferable.

Mr. BARNES, of Hamilton, uses all he can get; puts in salt, a pailful to a load of barnyard manure, uses plaster also; for grape, does not like high manuring.

Mr. LEWIS, of Clifton, uses common stable manure on the surface for grapes. If you wish a crop manure moderately; thinks high manuring produces much wood and but little grapes.

Mr. GRAHAM, of Fort Erie, said: All kinds of manure are good; put on all you can get well prepared, and for grapes cut back well. Prepare thoroughly for new orchards before you plant; for old orchards put on straw manure from cow yards. Sprinkling with plaster also is very beneficial; bone dust may be applied any where. I think salt not good. For new orchards I used well rotted manure and worked it in; for peaches I find ashes the life of the tree, and also keep the grass away. Ashes are good for any kind of tree. I seed my old orchard in pasture.

Mr. BELL: To determine the exact manure would require an analysis of the soil. Manure should be composted and applied near the surface. Bone dust and ashes are always good. Fresh manure, if applied to the surface in the fall, will not harm; if in the spring it should be well composted. Ashes are particularly good for grapes.

Mr. BENNETT—At first I trenched and manured largely, now I manure lightly and have less wood, but more fruit. I manure with plaster, ashes, &c., in the fall. Salt is not good for all trees. The plum, being a marine tree, is greatly benefited by the use of salt in moderate quantity. A friend used the flesh of some cattle for manure; it caused fungus on his vines, which destroyed them.

Mr. ROSS, of Goderich—For grapes I use a compost of muck and manure. My soil is



gravelly. I apply it to the surface in the fall.

There was a fine display of choice apples and a few pears placed upon the table.

The fruit committee presented their report, which is given below.

It was resolved that the summer meeting be held in Hamilton, and the autumn meeting in Goderich. The time for holding each meeting to be fixed by the directors.

#### REPORT OF FRUIT COMMITTEE.

An apple, said to be a seedling, exhibited by Mr. Demick, of West Flamboro, through Mr. Brook'ng, of good size, fair appearance, smooth skin, yellow splashed with red; form, flattish oblong; quality at present second-rate, but evidently past its prime. The apple somewhat resembles the colvert, but no improvement thereon. We would recommend the exhibitor to send specimens next year, when the apple is at its best, for the opinion of the fruit committee, to the President of this society.

#### Early Corn, Tomatoes, and Cauliflowers.

Some years since, I was talking to an old English gardener, who has acquired great Canadian experience, and remarked to him that I much wished I could contrive to get corn, beans, tomatoes and cauliflowers earlier than these I could grow in my garden as usually planted. He advised me to follow the course he formerly had tested and found to answer well.

It was this: About the last of March, he provided 200 small half-pint flower-pots. (They will cost about 1½ to 2c. each whole sale, and will last ten years or more with care). These he filled with sandy loam. In each pot were sown five, or more if the seed was not perfectly good, corn-seeds, and the pots were then placed on a board in a window facing the south or east, so as to have as much morning sun as possible. Of course water was occasionally used as required. In about three weeks the plants were nearly three inches high. When they reached four or five inches in height, and if they showed signs of running up too much before planting-out time came, they were pulled up and replanted. This effectually checked all tendency to legginess and spindling growth, until about the middle of May, when the pots were turned out, and the contents of each formed a hill of corn, generally containing four or five plants. Indian corn will bear transplanting well, and grows again readily. I have followed this method several years, and always found vacancies advantageously filled up by transplanting from those hills where the number of plants was too great. Sweet or evergreen corn, treated as above described, will afford a fine yield of ears three or four weeks sooner than if sown in the ordinary way. The small Canada white flint I

would never give garden room, and have for many years banished from our premises.

#### TOMATOES.

Tomatoes may be grown to very great advantage by following the same course, but they will do much better if planted as soon as the latter end of February, as the great object in growing tomato plants is to have them as old as possible when planted out in the garden. Young plants, although ever so fine, are always late in fruiting. You can hardly have tomato plants too old, but to prevent their running "to leg," they also must be transplanted when only one or two inches high. This course effectually checks too much upward tendency, and too much growth, and causes the plants to be strong and stocky.

Every one ought to save their own tomato seed; nothing is easier, but to do so to advantage you must select the very earliest and best round, well-formed fruit, and save it for seed; do not wait until the best are all gone. Save from the earliest and the best, and you will surely get good plants and fruit from it the next year; and most likely resembling the parent fruit in all its excellencies. Tomato plants should always be tied up to stakes. The trouble is very little and the benefit gained very great, and plants treated as above described, and tied up to stakes, will yield twice as much perfectly ripe fruit as those that are planted in the usual way, while those planted later and allowed to creep along the ground will be a mass of luxuriant vegetation, with young unripe fruit, just formed, at the time that plants properly grown will be covered with an abundance of the best.

Tomato plants, however, do not necessarily require pots. Any trough will do quite as well to plant the seed in.

The seed must be sown in drills, and the transplanting so arranged that the plants when wanted to be put out in the garden, can be cut apart from each other with a sharp knife. The mass of fibrous roots will effectually retain the mass of earth in its place until planted out. Failure to plants thus managed is nearly impossible.

#### CAULIFLOWERS.

Cauliflower plants are best reared in the same way, and require the same transplanting; and here the pots are much the best. Each pot should contain four plants, so arranged as, when the time serves, to plant out in the garden, a sharp knife can be passed between the four, leaving two plants on each side with plenty of unmoved earth. These may be planted out the first of May, and if both plants should live, one must at some future period be pulled out to fill vacancies elsewhere; whereas, if one falls a victim to the black grub, the other may be saved, and thus vacancies can be avoided. By this means you may get cauliflowers a month or six weeks earlier than any raised from seeds sown in a hotbed, and planted

out in the ordinary way. These plants are always poor stunted things, and seldom do much good.

I prefer a cold frame and open warm soil to the hotbed plan, under any circumstances.

A few hotbed plants out of every hundred may do well, but generally failure is the result. Unless cauliflower plants grow away with great vigour at the first, ten to one the white worm at the root or the black grub at the top will have two-thirds of them. Each head of cauliflower grown early, as above described, is worth at least 12½ cents, and often 15 to 20 cents, if very early and fine; and the cost to any farmer of growing one or two hundred of such early plants, is so small as not to be worth mentioning, whereas he can never think of buying at their cost in the market.

The pots will last for years, if properly taken care of, and any pottery can supply them at an almost nominal cost. For the cure of the white worm at the root, nothing that I am aware of is so good as soot and water well mixed, and the plants plentifully watered in the "cup" that always must be left about each plant. There are some mineral poisons much recommended, and certain in their cure, but they are not very safe to use, as there is little doubt the plant possesses the power of absorption in such cases, at least to a considerable degree.

The best thing I ever found to hasten the growth of cauliflower or cabbage plants is an abundance of cow manure, well dug in and quite fresh; this will force the plant more than all the artificial manures ever used. Try all kinds of manure, and keep a careful record, and see if cow manure will not beat any of them for growing vegetables. It is excellent for everything but potatoes, and horse manure is far the best for them.

#### BEANS

May be grown to great advantage the same way, and I would unhesitatingly condemn *in toto* all kinds hitherto used except asparagus pole beans. For many years I have grown them in the open ground, within two weeks as early as the Early Brown Kidney French Bean; and by following the same course as prescribed for corn splendid asparagus beans, ten inches long, can be had in abundance by the middle of or last week in June, if not by the first week, should the season be early. In this case, again, it is absolutely requisite for the bean plant to be old when planted out, and all tendency to run can be prevented by transplanting in the pot; they bear it well, and you get a strong woody plant, all ready to run up the pole directly when planted—which should be done as soon as all danger from frost is past.

Five plants in each pot will do very well, and when turned out and planted in the garden should be about six inches high; they

will never feel the moving. If the plant show any signs of running up too soon, pinch off the leading runners.

Now, to do all this, what does it cost? Say you want 50 hills of very early corn, 100 cauliflower plants, 50 hills of early asparagus beans, and 10 hills of tomatoes—200 pots altogether; these will cost say \$4, and will last five or ten years, unless broken by carelessness, and the result is plenty of corn in June (not the miserable Canada flint, but the large sweet evergreen), plenty of beans, plenty of cauliflowers, and bushels of tomatoes long before your neighbours.

C.

### The Cultivation of the Grape-vine in Canada, in the Open Air

READ BEFORE THE HAMILTON HORTICULTURAL CLUB BY D. A. MACNABE.

In presenting this paper, I have decided to describe the course I annually pursue, convinced that this course, if followed by others, will produce in their hands the same results that it has in mine, and make Western Canada what it ought to be—a grape-producing country.

#### FIRST SEASON.

Select a piece of ground having a south-east aspect, and some time during summer trench it two feet deep (if not, let it be properly drained), trenching in as much top soil as can be procured from any old pasture, carefully avoiding animal manures of all kinds.

Prepare a lot of stakes 6 feet long, and in number according to the quantity of vines to be planted. Commence four feet from the walks, insert the stakes eighteen inches in the ground, leaving twelve feet between each stake, and fifteen feet between each row of stakes.

In September or the first week in October, having obtained good strong one year old vines, commence planting. (I was going to say cut your vines back to three eyes, but your nurseryman will do that for you if you purchase the best varieties.)

Take off two inches of soil around each stake, in a circle equal to the vine roots to be planted. Tie a vine on the south side of each stake, carefully extending the main roots in straight lines from the stake, arranging the smaller ones in their natural position. With a trowel in hand, commence at the extreme end of the roots, and cover them with the earth taken from the circle and from the alleys. Take sufficient earth to cover the roots with four inches of soil, and press it firmly with the foot, which will finish the planting.

I would here urge the importance of spending some little time even in minutely placing each root and rootlet in its natural position. If such is carefully done, not one vine in one hundred but will take root and establish itself before winter sets in. No-

thing now remains to be done but to protect the vines with evergreen branches, and when such cannot be obtained, cornstalks or any clean dry litter will be suitable.

#### SECOND SEASON.

If the vines have been covered with any kind of litter liable to decay, they should be examined shortly after the first mild weather, taking such decayed litter away, and re-covering the vines with clean, dry straw.

During this season, little requires to be done, other than keeping down the weeds. Where ground is an object, many kinds of vegetables or root crops may be put in; but if done, a circle three feet in diameter around each vine should on no account be dug.

From the first to the middle of June the vines should be examined, and where more than one bud has started, pinch back the second to one leaf, and the one next the ground rub clean off.

During summer, as the vines grow, pinch back the lateral branches to one leaf, tying the vines up to the stakes.

About the middle of July, mulch the ground around each vine with fine stable manure, three inches deep, forming a circle around each vine three feet in diameter. During the first week in October fork over the ground, turning in the mulching and any rich soil from manure, properly decayed. In November, examine and fall prune the vines, and if they have ripened six feet of wood, a small crop of fruit could be taken from them during the third season, in which case the vines should be cut back to three feet; but as such is not desirable, I would advise cutting back the canes to three eyes (or buds), and protecting them during winter as directed in treatment for first season.

#### THIRD SEASON.

The treatment this season will be the same as the second for vines cut back to three buds; and for those allowed to fruit, the course will be pointed out in the treatment of the vine during the fourth season, except that, in fall pruning, the canes should be cut back to five feet six inches.

#### FOURTH SEASON.

The vines having ripened canes five feet six inches long, about the 1st May, or earlier if the buds are pushing out, tie each vine up to its stake, and rub off all buds that appear on the first ten inches of the cane from the ground, thus giving ventilation under the vine. The next two buds should be allowed to run, that is, they should grow without pinching, unless it be to pinch off any blossoms they may show. When the remaining buds show leaves beyond the blossoms, then begin at the top of the vine, rub off all leaves down to the one before you come to the leaf opposite to the first blossom, leave one leaf after the last blossom, and pinch back the fruit-bearing branch.

It may be here stated that pinching is done with the thumb nail and fore finger, and when the summer pruning is done at the

proper time, they are the only scissors required during the season of summer pruning.

The end of May or beginning of June the laterals will begin to push out; these pinch back, leaving one leaf; and at the risk of being considered "moonstruck on the grape question," I would state that each new moon indicates the proper time for pinching in the laterals. At such a period in each month you will find the vines pushing out new laterals, which are easily pinched back to one leaf. About the first of July perform the same operation, and about the 15th mulch the vines with fresh stable manure three inches deep, and in circles four feet in diameter around the vines.

On the first of August, pinch back the laterals, and on the 1st September perform the same operation for the last time during the season. The fruit will now begin to colour, and during that period the vine should not be pruned.

On the 1st of October, your grapes should be ripe. Varieties requiring a longer period to mature are not worthy of cultivation around this locality, and much less north of Hamilton.

The crop should now be gathered, and when done, the ground should be forked, adding rich virgin soils, as proposed in the first part of this essay.

During November the fall pruning should be done, and as there are so many styles of pruning and training the vine, I would refer to any work on the subject, that such style as pleased the fancy might be adopted.

If the upright system is selected, the main cane and the two leaders should have all laterals cut back to the first fruit bud, and the leaders cut back to five feet each from the main stem. Those leaders will give a crop the following season.

#### FIFTH SEASON.

During this and the following years, two side branches should be added annually (say about fourteen inches apart), that the last two branches would be at the top of the main stem, thus giving four branches on each side of the upright or main stem, when the vine is complete.

In after years the side branches may be worked upon the renewal system, (or, as I have found suitable for this climate, when the spur system failed during cold winters) the vines can be fruited upon what is known as "Old Wood," that is, wood of more than one year's growth. When this system is adopted, the vines should be pruned back in fall, leaving only the upright and side branches, or what is known among gardeners as the walking-stick system.

In May following, when the vines are tied up to the trellises, it will be found that half a dozen buds have pushed out at each old joint. Begin at the top branches next the upright. Select two of the largest buds, rub off the remaining ones, and leave twelve inches be-

tween each pair of buds, or as near that distance as can be arranged—thus go over all the branches. In four to five days after this operation the buds will show fruit blossoms—then go over the vines again—rub off the weaker one of each pair of buds, and follow up the treatment for summer pruning as during the fourth season.

I cannot close this essay without urging the necessity of taking every care to protect the surface roots of the vine. Never use a spade nor digging fork of any kind during spring or summer; such a course will in a great measure prevent mildew, as also increase the sources of supplying the vines with nutriment to produce and mature the fruit.

Nothing has been said in favour of making vineyards or vine borders a receptacle for every description of filth. At the same time, when earth formed from decomposed bodies, whether fish, animal or vegetable, can be obtained, no doubt, such are very desirable, and when forking the ground in fall, a reasonable quantity should be forked into the ground, thereby preparing a fund from which to draw a future crop of grapes. If there be an exception to this, the article is bones; those may be added in any quantity.

Nothing has been said regarding vines most suitable for cultivation, perhaps such is hardly within the province of this article. However, the Fruit Growers' Association have recommended the new varieties, and, no doubt, such will be the general favourites until more suitable Canadian seedlings are produced—an event many would be pleased to see, and which may be not far distant, as many besides practical gardeners, are giving this matter their attention. As regards climate, there cannot be a doubt in the minds of those who have given this subject anything like a fair trial, that grapes can be produced, and that, too, in large quantities; nor is the time far distant, when the shores of lake Erie, and the banks of the Detroit river will produce grapes in such quantity and of such quality, as to make it quite unnecessary to import them from Kelly's Island, or any other part of the United States.

### Foot Grafting.

To the Editor.

SIR,—I have at the present time, in a preserved condition, some good specimens for root grafting, but am at a loss respecting the best time for grafting and the proper method of preserving them until time for planting. I should like to receive some reliable information on these points.

A SUBSCRIBER.

REPLY.—The month of February is as good a time for grafting in the shop as any. The grafts can be packed in damp sand, or in damp sawdust, in boxes, and stored in a cool cellar, free from frost, and planted out in May.

### Grape-vines from Single Eyes.

To the Editor.

SIR,—My mode of raising grape-vines from single eyes is this: I select, when pruning, good sound yearling shoots, with full plump eyes, and am careful not to choose soft, pithy wood, but wood that is well ripened, and as hard as shot. I make the cuttings about six or eight inches long, tie each variety in bundles by itself, and label them correctly, pack them in a box or basket of sand or dryish soil, in a cool place, but free from frost, until spring, when most gardeners have a slight hotbed; then I take my cuttings and cut them up into small pieces, one eye to each piece. I cut them in a slanting direction, so as to leave the cutting longest on the side where the eye or bud is. Some cultivators cut them midway between the eyes; others merely cut the eye, out with scarcely any wood, barely enough to hold the eye together. I do not approve of either extreme. Experience teaches me that if the eye is cut about one inch in length it is the best for all purposes. Then I take some rich and well pulverized soil—a nice fibrous loam from an old pasture—mix it with some very rotten dung or leaf mould, and a little sand or old mortar to keep it porous, so that the roots can work freely all through the whole mass. Then I take pots or boxes, and fill them nearly one-third with charcoal, broken bones, or limestone-rubble, brick rubbish, or some other imperishable material to act as drainage. I then fill in with the compost, and press down firm but not hard. Then I take a blunt-pointed stick and make holes for the eyes, and drop them quite overhead, the same as you would a bean; then place at the back of the hotbed where I am raising cucumber or melon plants, and in a month or six weeks they will be looking through the soil, and at the same time filling the soil with their little thread like roots. Then is the time that most cultivators pot them off singly, but I do not advise a new beginner to try that, but rather to get a lot of small pots—say about 3½ inches across the top—and plant the eyes separately at first; then if he has a nice gentle hotbed to start them in, he will have these pots full of roots in two months or even less; then he has no more trouble to re-pot them than he would have to re-pot a geranium or fuchsia. He may then, to save time and trouble, give them a bold shift and put them into seven or eight-inch pots, and keep them close and shaded for a few days; then they will be pretty sure to do well, if water be duly supplied.

There are two reasons why propagating by eyes should be preferred to cuttings. One is, that they make better vines, no matter how you want to train them; and the other is, if you are fortunate enough to get a cutting of a very choice sort, and it has four eyes in it, you have a good chance to make three out of the four grow.

Ottawa.

G. H. COLLOP.

### Over-feeding of Grape Vines.

If there be any one prevailing fallacy in grape culture which we should be always on our guard against, it is, without question, the tendency to afford the vines more nutritive aid than they can appropriate, and we may be sure of this, that many more vines are injured by excess of food than by deficiency. In the vegetable kingdom the same law prevails as in the animal; it is not the quantity of food taken into the system which affords nourishment, but the quantity actually digested. — *The Gardeners' Magazine*.

### Cranberry Culture—Queries

To the Editor.

SIR,—I have two pieces of land differently situated, which I am told are well adapted to the growth of cranberries. As one piece is at present useless, and not being sure of a crop from the other, on account of its lying low, I am desirous of trying to turn them to account in the production of something besides grain, and having read of the profit of the growth of cranberries, on low lands, I thought I would try that. But then a difficulty arose. I did not know anything of the method of cultivating them, so I concluded to give you a description of the land, and ask for information through your journal, which, if given, may be of profit to others, as well as myself.

One piece (¾ acre) lies along the bank of a sluggish stream, and is overflowed every spring to the depth of about six inches. Generally, about the middle of May, the water in the stream has fallen to about eighteen inches below the surface of the land, and remains so during the summer. Again, in autumn, the water rises nearly or quite to its surface, according to the fall of rain. The soil is black muck to the depth of two feet, underlaid by a bed of marl. Such is the land in its natural state. By digging trenches through it from the stream, moisture might at all times be secured, or by throwing up a low embankment along the stream it could easily be overflowed by the water of two never-failing spring brooks which run through it. The other piece (about 1 acre) is at a distance from the stream, and separated from it by a ridge of high land. The soil was originally the same as the other, but in clearing the muck was burned off so much that now in ploughing the marl is somewhat mixed with the muck that remains. A heavy coating of muck might be supplied from land lying near, and from which the muck was not burned, and which has, therefore, much more than is needed. This piece is also overflowed during the spring freshets, but in ordinary seasons dries off soon enough to admit of late sowing being done in it. It also can be overflowed at any season of the year by the water from a spring, or by pumping water from

the stream by horse or other power. As the water in the stream is never more than three feet below the surface, the elevation would not be much, after which it could be easily conducted to the land by a ditch. Now, what I want to know is, are the pieces adapted to the growth of cranberries, and if so, which is the best? At what time of the year should the land be overflowed and for how long, where can the plants be procured and at what price; also any other information or advice you may choose to give with regard to their culture.

ENQUIRER,

Murvale.

Portland Tp., Frontenac Co.,

Jan. 2, 1871.

REPLY.

SITUATION.

In choosing a location, it is highly important to avoid those places where the water is stagnant. Such soil is sodden and cold, and the roots will rot in it. If it cannot be so drained that the water will be at least a foot below the surface of the soil, it is unfit for cranberry culture. If possible, select a site that has a southern exposure, and at all events let it be sheltered from cold, raw winds. Have it so arranged that the water can be let on to a sufficient depth to cover the plants entirely, and afterwards drawn off at pleasure. This may be secured by erecting two dams, one above the cranberry plantation and the other below. By means of the upper dam, a body of water may be kept always at hand, which can be let on to the cranberry plants, so as to cover them, and in this way protect them from late spring frosts that kill the blossoms, and from very early autumn frosts that injure the fruit before it is fully ripe. Gates may be so arranged in the lower dam as to keep the water at any desired level. During winter, the water should be so deep that it will not be frozen through, and so protect the vines from the severity of our climate. The location must be moist all summer, and that moisture is best at about a foot from the surface. Yet the water must not be too cold. The cranberry will not thrive if the water is very cold, hence some locations that are supplied with water from springs in the adjacent bank are unsuitable, because the water is too cold. This may sometimes be remedied by cutting a ditch along the border, and draining off the cold, icy spring water, or gathering it into a reservoir where it will be warmed by the sun and air before it reaches the plantation.

SOIL.

This must not be too rich. In good alluvial soil the vines may grow, and seem to be very promising, but they will not bear fruit. Clay and marl are wholly unsuitable, and heavy soils in general are not adapted to the growth of the cranberry. Air, water, and pure sand form the food of this

plant, and where these can be had in suitable arrangement the cranberry will thrive best. The best soil is *beach sand*. This, naturally or artificially supplied, is the soil of the celebrated Cape Cod cranberry plantations. The reasons given are that the sand is light and porous, admitting the atmosphere freely to the roots of the vine, while weeds and grasses, which would choke the vine, cannot grow in it. Where this cannot be had, any clean sand—the more free from all mixture of vegetable matter the better—may be used. Some have found pure gravel—the cleanest gravel is the best—to be a good substitute for sand.

Next to beach sand comes *peat*. This requires some preparation before it is fitted for cranberry culture. The top turf requires to be taken off to a depth sufficient to remove all roots of grass and weeds, and the bared surface left exposed to the action of the frost and weather during one year. This will make it light and porous, preventing that caking and cracking which is sure death to the cranberry.

Where the soil is not a sand nor peat, but the location seems otherwise well suited to the cultivation of the cranberry, and pure sand or gravel can be had sufficiently convenient, it may be supplied. After taking off the turf to a depth that will remove all the roots of grass and weeds, the bared surface may be covered with sand to the depth of four or five inches, or with gravel to about half that depth.

OVERFLOWING.

About the end of October is the proper time to let on sufficient water to overflow the ground, and that to such a depth that the water will not be frozen through to the ground during the winter. This should remain until such time, usually in May, as the weather becomes mild and vegetation commences; then it should be drawn off just to the tops of the vines. This will give the plants the benefit of the increased warmth of the weather, yet at the same time protect them from frosts. The water can be allowed to remain at this point until the season has become so far advanced that the danger from frosts is past, and then be drawn off entirely. The necessity for this arises from the extreme sensitiveness of the blossoms, and also of the fruit, while unripe, to frosts. If a reservoir of water can be commanded, with which to flood the plantations at will, the water may be drawn off earlier, and a longer season thereby secured than would be otherwise safe; for if a frosty night threatened after the water had been drawn off, the plants could be again covered with water from the reservoir, and thus saved from the frost; and so in autumn the fruit could be protected from injurious frosts until it was fit to gather, by letting on and drawing off the water when occasion required. In this way, also, if the plants are attacked by worms during the growing sea-

son, the watchful cultivator can, by submerging the vines for a few days, drown them out.

CULTIVATION.

For the first three years it will be necessary to keep all grass and weeds from getting a foothold. The best method of doing this is not by hoeing, but by pulling the grass and weeds up with the hand, loosening the ground, when necessary, with a digging fork, so that the roots may be drawn out entire. After the third summer the vines should have so fully covered the ground as to choke out all grass and weeds, and require but little attention.

PLANTING

This can be best performed in the latter part of May or the beginning of June. The roots are placed in the soil and the vine spread out and covered so as to leave only the tips of the runners out. In this way each branch or runner will form a plant. The closer the plants are set together the sooner will they occupy the ground. These will grow from cuttings, and some planters run the vines through a straw-cutter, that will cut them about two inches long, and sow the pieces broadcast over the ground. These are then well harrowed in, when they soon root and spring up, making a speedy covering. Others plant in drills; but the method pursued is of little consequence, if only the ground has been so thoroughly prepared before planting that there will be but few weeds to contend against. If the ground be full of weeds and grasses, it will be necessary to plant the vines in such a way that they may be thoroughly weeded out, for the cranberry is not able during the first years to choke them.

WHERE TO OBTAIN PLANTS.

We do not know of any plantation in Canada where the cultivated plants can be procured. It is claimed that they are better than the plants growing wild in our cranberry marshes, having been in some measure improved by cultivation.

We saw, last spring, an advertisement by F. Trowbridge, Milford, Connecticut, offering cranberry plants for sale, but we know nothing of price or quality. The price ought not to exceed ten dollars per thousand plants. Care must be taken to procure fruitful plants, for there are plants which seem to be very fine and vigorous, but they yield little or no fruit. In selecting plants from our marshes attention must be given to this point, or labour and time will both be lost; and in purchasing plants, see to it that the seller has enough honesty to sell fruitful and not sterile plants.

VARIETIES.

There are three well defined varieties now in cultivation, known as the Bell, the Bugle, and the cherry cranberry—names given to them from the variation in the form of the berry. Beyond this difference in form there

seems to be nothing to characterize the one from the other. Doubtless new varieties will in time be produced, and we may confidently look forward to considerable improvement in the size, at least, of this fruit.

In 1856, Mr. F. Shepherd, one of the Professors in Western Reserve College, wrote a letter, which was published, in which he mentions an upland cranberry which he had seen growing in great quantities in various parts of British America, particularly on the Neebigon coast of Lake Superior. But we have seen nothing further of this upland variety, which, so far as we know, has never been cultivated.

The upland cultivation of the common cranberry has not been a success.

#### YIELD OF FRUIT.

Great variations will be found in the statements given of the yield per acre. Some speak of 300 and 400 bushels per acre, and some, who love to have the pre-eminence, give figures very much higher. More modest cultivators speak of 200 bushels, 175 and 150 bushels per acre. We remember one New Jersey grower who reported twenty acres in bearing, with an average yield of 100 bushels per acre.

The price of the fruit when brought to market varies from two to five dollars per bushel.

#### Arkleton.

CONTRIBUTED BY W. RIDDEL, COBOURG.

We make the following extracts from a late number of the *Journal of Horticulture*. The writer, "Beta," after describing the grounds and gardens of the Duke of Buccleugh, at Langholm Lodge, says:—

"In wide contrast to these were the well planned, neatly arranged gardens and vine-ries of Arkleton, the residence of John Jardine, Esq., situated in one of the most picturesque parts of Ewesdale, about five miles from Langholm, and 450 feet above the level of the Solway. These gardens show at a glance the intelligence of the gardener, and the liberality of the proprietor.

"Arkleton grounds and gardens were planned by my old friend, the late Mr. Little, of the firm of Messrs. Little & Bannatyne, of Carlyle. The plans were executed by the present gardener in the years 1863 and 1864.

"Having heard that the gardener had acquired considerable fame as a grower of grapes, peaches and nectarines, I at once made my way to the vine-ries. I found these to consist of two houses (Shaw's patent), each 30 feet long. I found the vines were Black Hamburgh, Millhill Hamburgh, Golden Hamburgh, Black and White Frontignan, Buckland Sweetwater, Muscat of Alexandria, Tynninghame Muscat, Archersfield Muscat, Mrs. Prince's Black Muscat, Black Alicante Lady Downe's and Syrian. I was

credibly informed that all these vines had been heavily cropped from the second year of planting, some five years ago, and that the average weight of the Black Hamburghs had been 2½ pounds, Lady Downe's 3½ pounds, and Muscat of Alexandria 3½ pounds. I was chiefly anxious to see the Syrian vine, on which had been grown the marvellous bunch, 19 pounds 5 ounces in weight, that created such a sensation at the show of the Royal Caledonian Horticultural Society, held in Edinburgh on the 7th of September last. The vine has carried, since it was planted in 1863, fourteen bunches, the heaviest weighing respectively 6½, 7, 8½, 16½ and 19 pounds 5 ounces. The vine is well trained and vigorous. I measured the wood of this year's growth, and found it was three inches in circumference. The old wood was five inches in circumference, and the leaves nineteen inches by fifteen. It is highly to the credit of Mr. Dickson to be able to show such a plant, and to point to it as the bearer of the heaviest single bunch of grapes ever produced in Great Britain, surpassing by five ounces the famous bunch recorded by Speechey.

"I made a short visit to the peach and nectarine house, and found it 180 feet long, with a drum trellis running along the front, occupied with well-grown, healthy-looking, fruit-laden trees, among which were all the leading sorts in cultivation.

"Altogether, my visit to Arkleton was a very pleasant one, nor less pleasant was my drive to Longtown through the wooded glen leading through the beautiful parish of Canonbie, and past its peaceful hamlets, its trim, well furnished wayside cottage gardens, its elegant schoolroom, and its unobtrusive looking church. I thoroughly endorse the opinion of Kohl, who declared that amid all his wanderings he never journeyed over a more lovely road than that which lies along the windings of the "wooded Esk," from Langholm to Longtown."

#### The Whortleberry or Buckieberry.

Why is it that this small fruit has been wholly neglected? The several species are all perfectly hardy. Of some, the fruit is of good size, handsome appearance and agreeable flavour, and more firm than raspberries or strawberries, and therefore carry better to market. Many grow in their wild state in high, dry soils, some in poor, barren, sandy soil; and even those which grow naturally in moist places, or even marshes, will thrive in upland soil. Soon the supply from our woods will be exhausted. Will not our Fruit Growers' Association take this small fruit under their patronage, and institute such experiments and researches as shall add some fine varieties of this small fruit to the list of our garden collections?

#### Cultivation of Onions.

"Enquirer" asks "Will onions produce well in a sandy loam? Will they do best as a first crop, or to follow potatoes? Do they require much manure? What kind would you recommend for quantity?"

SOIL—The best soil for onions is a light, loamy, deep, mellow soil, and on a dry bottom. If your "sandy loam" is strong enough to raise good crops of corn or potatoes, and well drained at bottom, it will yield you good crops of onions, with proper culture.

CULTURE—Select ground that has been well tilled, and kept clean. If potatoes, turnips, or carrots have been carefully grown on it, it will be likely to be in good condition to prepare for onions. The best crop to prepare ground for onions is onions, but as there must be a first time, let them follow the crop that has had deep ploughing, high manuring, and the cleanest cultivation. Manure the ground heavily with the best thoroughly rotted manure. Put it on at the rate of twenty-five tons to the acre, and if you can add to it the cleanings of the poultry house, the pig pen, and your dry earth closet, and a ton or two of pure finely ground bones, all the better. Onions are gross feeders, and require rich manures, and plenty of them. Old onion growers say that the very best manure in which to grow large prize onions, size to rule, is well rotted onions.

Pulverize the soil thoroughly by ploughing, harrowing and raking, and make the surface as level as possible, to prevent washing by rains, and free from stones. Sow the seed as early in the spring as it is possible to get the ground in good working condition. The earliest sown produce the heaviest crop. In field cultivation the seed is usually sown with a machine used for this purpose only, which sows two rows at once, making the drills and sowing at the same time. In sowing with the machine it will require about four pounds of seed to the acre. If the machine is not used it will be found convenient to run the drills a foot or fifteen inches apart, and sow thinly, say not thicker than an inch apart, if the seed be new and fresh. It is very easy to test the vitality of onion seed. Place a little on some damp cotton or a bit of moss in a warm room, say the kitchen; if it be fresh it will sprout in three or four days. Seed more than one year old is not apt to produce a vigorous plant. Sow shallow, making a mere scratch in which to drop the seed, and cover by rolling a light roller over the ground, lengthwise of the drills. As soon as the plants are an inch or two high they will need hoeing and weeding, and should be thinned out to about two inches apart. Hoe shallow, and do not draw the earth up around the plants, but keep the ground level and clean. Hoe before the weeds start, and much time and labour will

be saved. If there be a market for very young onions, they may be allowed to grow for a while at two inches apart, thinning out to four inches as fast as needed. If there be no use for them, the onions may be thinned to four inches as soon as the plants seem to be well established.

In wet seasons onions sometimes grow thick-necked. To remedy this, growers are in the habit of gently bending down the tops late in July, with the hoe-handle, which checks their growth and makes them form better bulbs. In August or early in September the onions will be ripe, which is indicated by the dying off of the tops. They may now be pulled or raked out, and left spread out to dry in the sun for two or three weeks, by which time they are ready for market, or storing for winter. The same ground will be the best for onions next year, and so for the next five and twenty years, but it will need to be manured every year very heavily, and if a practice is made of saving all the soot from the chimneys, all the soapsuds from the washtub, and all the slops from the chambers, and spreading it upon the onion patch, the crop of onions will amply repay all the labour.

**KEEPING.**—The onion will only endure a certain amount of frost, and it is therefore safer to place them where they will be free from frost. Yet it is necessary that they should be kept cool and dry, and have plenty of ventilation. The writer has frequently kept them in a cold chamber, the floor of which is covered to the depth of a foot or more with perfectly dry soil, the onions spread out to a depth of six or eight inches, and covered about six inches with dry soil. This soil has remained in the chamber for years, and is therefore perfectly dry, and though the frost penetrates the chamber, yet the dry earth seems to be a sufficient protection to the onions. They are never disturbed after being placed in this chamber and covered with dry earth until spring, when they come out fresh and sound.

**VARIETIES.**—Weathersfield Large Red is the staple market variety of onion growers in the Eastern States, chiefly on account of its fine keeping qualities, which make it suitable for shipping to distant parts. The skin is a deep purplish red, medium neck, flesh a purplish white, tolerably fine grain, with a strong flavour. It is very productive and grows to a large size.

**YELLOW ONION.**—This is also a valuable and popular market sort. Much confusion has arisen from its having been called "Silver-skin" by New England growers, thus confounding it with a medium-sized variety having a silvery white skin, much grown in Europe for pickling, but which is a poor keeper. The true Yellow Onion is above medium size, skin yellowish brown, deepening in colour by age or long exposure to the sun, flesh white, fine grained and mild fla-

avour. It is a very prolific variety, and keeps well.

**DANVERS YELLOW, or DANVERS;** seems to be a sort of sub-variety of the old Yellow Onion, more globular in form, the skin yellowish brown, but becoming a greenish brown if long exposed to the sun; the flesh is white and mild-flavoured. It is a very productive variety, but not thought to be as good a keeper as the old Yellow Onion, and that owing to its globular form it is more liable to decay from the heat and dampness inseparable from sea voyages.

**POTATO ONION** is very desirable for family use on account of its very mild, sugary, and

### Tricyrtis Grandiflora.

This new and beautiful flower gives so much promise of being a valuable addition to our autumn blooming plants, that we give our readers an engraving, which will help them to form a very good idea of its appearance. The colour of the flower is a pearly white, beautifully dotted with clear purple. It is a herbaceous plant, the leaves dying down to the ground at the approach of winter, but the tubers are hardy, and send up new leaves and flower-stalks when spring returns. It blooms late in autumn when flowers are very scarce, and is most deliciously sweet scented, with something of the



excellent flavour. The bulbs are of medium size, with a copper yellow skin. This variety does not produce seed, but multiplies underground something like the potato, hence its name. If the small bulbs are planted early in the spring, in rows a foot apart, and five inches apart in the row, they will increase in size and form large bulbs. If the large bulbs are planted, they will subdivide, forming one and frequently two large bulbs, and a number of small bulbs. They do not keep as well as some other sorts, and hence are not suitable for shipping, but if two or three inches of the tops are left adhering to the bulbs when harvested, they keep better. It is, in the opinion of the writer, the best of all the onions for table use.

perfume of a heliotrope. Possibly, to the northward it may be desirable to place the plant in a pot early in the autumn and set it in the window, in order to enjoy the full length of its season of bloom. Those plants which we have treated in this way have bloomed longer than those in the garden. To all who have a small conservatory it is quite indispensable as an accompaniment to the chrysanthemum for autumn decoration.

### Mulching Newly-transplanted Trees

A correspondent of the *Country Gentleman* says that the past spring he set out one hundred apple trees. Part of these he mulched with about four inches of coarse hay and straw; the rest he kept nicely hood. All

these trees are living except one, but those which he kept hood have made the best growth—over a foot, notwithstanding the drought. A near neighbour, who set last year, lost nearly half of his trees this summer, but then he had the pleasure of harvesting a poor crop of oats, so as to close up to the trees.

Keeping the surface of the soil mellow by frequent stirring is doubtless the very best mulch, but it is so apt to be neglected, to be crowded out by the pressure of farm work, that the safer way for our farmers is to put on a liberal mulch before dry weather or haying time sets in, and put their oat crop in another field.

A celebrated agriculturist used to say that the best fertilizer was cultivation; hence those who will attend faithfully to stirring the surface of the soil around their newly-planted trees for a few years will combine the advantages of the best mulch with the best fertilizer.

### Our Best Fruits

#### EARLY HARVEST.

This fine summer apple, in point of usefulness and beauty, is scarcely second to the Red Astrachan, yet such is the variety of climate, even within the limits of Ontario, and the cold in some parts is so severe, that this valuable apple must, on the whole, be placed after its more hardy companion. Yet it is by no means a very tender tree, for it flourishes in almost all parts of this Province west of the county of Leeds, and it is only when we get into the colder and more unfavourable climate of what may be termed the St. Lawrence and Ottawa region that this fruit fails.

It is an American apple of medium size, and roundish form, with a very smooth skin of a bright straw-colour. The flesh is white, tender and juicy, and the flavour is a rich, sprightly sub-acid. In quality it is very near, if not quite "best," and excellent both for the dessert and for cooking. The tree is a moderately vigorous grower, coming early into bearing, and exceedingly productive. It is not so saleable a fruit as the Red Astrachan, not being as showy, hence it is not advisable to plant it for a market. But for home consumption no one who lives within the region of its successful culture can afford to do without it. It usually begins to ripen in July, and continues in use for nearly a month.

**PANSIES IN MASSES.**—A correspondent of the *Gardeners' Chronicle* says that no one who has not seen the effect of pansies in large masses can have an idea of their beauty. He planted a border 400 yards long and 24 feet wide, with pansies and cerasiums, with a single row of pyramidal *Zonale geraniums* in pots at intervals of ten feet, and it was the admiration of all who saw it.

## Natural History.

### Some Reminiscences of the Beaver

Although we Canadians have adopted the beaver as one of our national emblems, there is not one person in ten, in the Province of Ontario, who really knows anything of the habits of the animal, further, at all events, than they may have read in children's spelling-books, and in works on natural history; and in both of these classes of literature the marvellous is largely drawn on to invest the animal with an almost superhuman knowledge and instinct. We have all seen plates of natural history, showing beaver houses, or lodges, which, according to the portraying of the picture, consist of high cylindrical edifices built of vegetable matter, standing in twos or threes in a pond or artificial lake, formed by the animals; and from these plates, and the notices of naturalists, it has been supposed that all the houses or habitations of the beaver are constructed in this manner, and that they never use any other. Those persons, however, who have passed a portion of their lives in the far backwoods, know better; and although all admit the fact that beavers do construct houses or lodges of this kind in and towards the centre of their ponds, yet wherever the situation of the ground will allow, the beaver prefers a more permanent habitation, dug out of the bank, and chosen with great skill and engineering knowledge. Some account of the method of locating such subterranean abodes will be interesting to all, and will afford new information to many. A friend of the writer's, a son of one of the first settlers about Newmarket, in speaking of beavers, gave the following narrative:—

The finest beaver meadow I ever saw was on my father's farm. He settled near Sharon about 1810, at which time a great portion of the township, and all the adjoining country, was an unbroken forest. The beaver dam which originally caused the pond was so strong and solid that it formed a causeway which led across the low land from the road to the home meadow and fields. The middle of the dam had been cut through to allow the free passage of the stream, and this was bridged, and the dam and bridge thus formed, and still form, the approach to the homestead. There was always a legend in the family that originally this was a very extensive beaver settlement, but the animals left soon after the arrival of human settlers, those beavers which were not trapped abandoning their usual haunts, and the whole colony was either removed or disappeared.

For many years, the only thing thought of them was the beautiful and extensive meadow which the site of their dam had formed, and which was fertile beyond belief. The meadow was intersected by a

pretty stream, which our people used every exertion (and with success), to confine to its natural banks. The extent of the meadow was very large, and in addition to the natural valley in which it was formed, there were three depressions in the ground at some distance apart, and at some distance from the stream, and there had evidently been large ponds or small lakes. These pond holes, as we called them, the beavers had taken infinite pains to connect with the main dam by a separate canal to each. These canals all joined the main pond, and were so accurately levelled that, twenty or thirty years after the destruction of the pond, these beaver canals formed drains to the smaller ponds, and it was only necessary to have the canals cleared out once a year, to keep the pond holes thoroughly drained. All these canals went from the pond holes down stream, until they joined the little river.

The boys thought little of the beavers and of their habits, until one day in driving the cows to pasture, just as one of them was passing over the home end of the road leading to the old beaver dam, and on the rise which had formerly been a swelling bank, covered with trees, the cow suddenly fell, from the ground caving in under her. We got her freed, however, and then examined the place. She had broken through into a subterranean passage of considerable size, and which was quite free from other foundations. We were very much astonished, and called our dog, which we put down the breach, and encouraged him to follow up the passage. This he willingly did. There was plenty of room for him, and he ran away snuffing and growling until he was not only out of sight but out of hearing too. After a time he came back, and by reaching down to the full length of my arm, I got hold of his neck and pulled him out. Soon after this another animal broke through in another place; then a horse broke through in another spot; then a team of horses and a waggon made more breaches, and it became so dangerous that some pains were taken to break in all the excavated ground, and thus render it safe from accidents. Then the plan of the beaver town was clear and apparent.

It consisted of a main passage or street, of from fifty to sixty feet in length, leading from the dam into the bank, under what were roots of the original forest, and doubtless, according to the well-known habits of the animals, the entrance was below water, at all events in winter. The entrance, however, had filled in long ago. Off this street or main passage, other streets or passages branched, at the end of each of which was a chamber of from three to four feet in diameter. These must have been of at least an equal height, for the depressions in the ground where they were beaten in were considerable. The side passages branched off from the main street at distances of about

eight feet apart, but were none of them opposite each other. They extended in from the main street from eight to twelve feet; they evidently broke joint, so that the door of one habitation was not opposite the door of the other. Perhaps this was to prevent gossiping, or for the purposes of privacy. At all events, so it was. The passages were all more or less curved.

There were seven or eight of the chambers, all with separate passages from the main street, and doubtless there must have been many of these establishments or families all round the pond, where the banks were suitable; but the others not being found in such favourable ground as that here described, which was prevented from caving in by the roots of the trees, gradually fell in, and all traces were lost without being noticed. The timber growing on the knoll had been principally hemlock, although there were many elms also. The permanency of the hemlock roots accounts for the time which elapsed before the excavations were discovered, and it also accounts for their having remained intact for so many years.

Doubtless the pond-holes formed outlying settlements, and doubtless also there were numerous lodges all over the pond, of a more temporary nature, but of course they decayed as soon as the beavers left them. It must have been a large settlement when the beavers and the red men had the forest to themselves.

A friend of the writer, a lady whose family settled at Guelph soon after that thriving town was first cut out from the forest, told me that there were then many beavers to be found there. They had their principal dwellings in the banks of the streams, although they had their lodges also in the dam for pond. In this case, however, the beaver pond was a natural formation, and did not require damming. Their settlement was in a large flat marsh adjoining the river Speed, which marsh was always sufficiently overflowed for beaver purposes. The drift timber left by freshets in the marsh caused large accumulations of vegetable matter, and the debris of aquatic and other plants, and in this debris the beavers formed their more temporary lodges. Instead, however, of the shapely erections shown by books of natural history, the lodges were like a rough haycock, or any other heap of strawy matter, inartistically heaped together, and of no great height. That these were the beavers' habitations there could be no doubt, for the lady in question had frequently seen the animals come out from the bank where their more permanent location was, and waddle and wade through the mud and shallow water across to and into their temporary lodges. They are a singularly ungraceful animal, and look most grotesque while flapping and floundering through the wet places, sculling most vigorously with their broad,

flat tails in the water, and progressing at considerable speed.

Since beaver fur lost its principal value, the beavers have begun again to increase, and they are now to be found in most large woody swamps in Canada where they have room to carry on their operations undisturbed by man. Even yet, however, the pelts are worth a good deal, and the skins, when denuded of the coarse hairs, make a most lasting fur, which is greatly in demand. The writer was this winter shown some articles made of beaver fur, the animal which afforded the peltry having been caught this season in the great wooded swamp north-west of the town of Stratford, and within hearing of the railroad whistle, so that our Canadian national emblem is by no means retired from amongst us, although somewhat scarce.

The power of a beaver's bite is something enormous. They will cut, at one stroke of the jaw, a chip two inches long, half an inch wide, and one-eighth of an inch thick. They will fell a tree of six or eight inches in diameter by gnawing all round it until it falls, and they will then cut it up into lengths for their damming purposes, or for food as may be required. They generally, however, choose the softer kinds of wood. They cut down many trees for which they have no use, and seem to abandon such when failed, without a second cut.

The skin of the beaver in its natural state is a very rough affair: the fur next the skin is nearly an inch thick, and so close and covered with a natural grease as to be impenetrable to water, while the outer coat is a coarse brown hair, which is attached to the skin, and grows through the fur. This, when the skin is used as a winter fur, is removed by plucking, and leaves the fur proper of a leaden grey or ash colour, but very soft and warm. The skin itself is of a thick and coarse texture.

VECTIS.

## Poetry.

### Beautiful in Old Age

How to be beautiful when old?  
I can tell you, maiden fair—  
Not by lotions, dyes and pigment  
Not by washes for your hair.  
While you're young be pure and gentle.  
Keep your passions well controlled.  
Walk, work, and do your duty—  
You'll be handsome when you're old.

Some white locks are fair as golden,  
Grey as lovely as the brown,  
And the smile of age more pleasant  
Than a youthful beauty's frown.  
'Tis the soul that shapes the features.  
Fires the eye, attunes the voice  
Sweet sixteen, be these your maxims—  
When you're sixty you'll rejoice.

## Household.

### A Few Hints for Housekeepers.

I have used all the following appliances and can commend them to others:—

If the covers of sofas and chairs are dirty they may be cleansed without being removed, by first washing them over with a flannel, then, before they are dry, sponge them over with a strong solution of salt and water, in which a small quantity of gall has been mixed. The windows of the room should be opened so as to secure a perfect drying, and the colours and the freshness of the articles will in this way be restored.

Floor cloths may be cleaned with a mixture of magnesia, only milk warm, followed by warm water, in the same manner that carpets are cleansed. They should be rubbed with dry flannel until nearly dried, then again wet over with a sponge dipped in milk, and immediately dried and rubbed with a flannel till the polish is restored. This is a process much to be preferred to that of rubbing the cloth with wax, which leaves it sticky and liable to retain dust and dirt for a long time. Very hot water should never be used in cleaning floorecloths, as it brings off the paint.

The operation of cleaning mirrors and polished steel articles is an easy matter, when rightly understood. The greatest care should be taken in cleaning a mirror, to use only the softest articles, lest the glass should be scratched. It should first be dusted with a feather brush, then washed over with a sponge dipped in spirits to remove the fly spots; after this it should be dusted with the powder blue in a thin muslin bag, and finely polished with an old silk handkerchief.

Polished steel articles, rubbed every morning with leather, will not become dull or rusty; but if rust has been suffered to gather it must be immediately removed by covering the steel with sweet-oil, and allowing it to remain for two days; then sprinkle it over with finely-powdered unslacked lime, and rub it with polishing leather. In these dear times we farmers' wives should do everything within ourselves of this kind and many others that are expedient, as we all value the economy.—*Germantown Telegraph.*

### How Mother did it.

"I found fault some time ago, with Maria Ann's custard pie, and tried to tell her how my mother made custard pie. Maria made the pie after my recipe. It lasted longer than any other pie we ever had. Maria set it on the table every day for dinner; and you see I could not eat it, because I forgot to tell her to put in any eggs or shortening. It was economical; but in a fit of generosity I stole it from the pantry and gave it to a poor little boy in the neighbourhood. The



boy's funeral was largely attended by his former playmates. I did not go myself. Then there were the buckwheat cakes. I told Maria any fool could beat her making those cakes; and she said I had better try it. So I did. I emptied the batter all out of the pitcher one evening, and set the cakes myself. I got the flour and the salt water; and, warned by the past, put in a liberal quantity of eggs and shortening. I shortened with tallow from roast beef, because I could not find any lard. The batter did not look right, and I lit my pipe and pondered Yeast, yeast, to be sure. I had forgotten the yeast. I went and woke up the baker, and got six cents' worth of yeast. I set the pitcher behind the sitting-room stove, and went to bed.

"In the morning I got up early, and prepared to enjoy my triumph; but I didn't. That yeast was strong enough to raise the dead, and the batter was running all over the carpet. I scraped it up and put it into another dish. Then I got a fire in the kitchen and put on the griddle. The first lot of cakes stuck to the griddle. The second did not, only more. Maria came down and asked me what was burning. She advised me to grease the griddle. I did it. One end of the griddle got too hot, and I dropped the thing on my tenderest corn while trying to turn it around. Finally the cakes were ready for breakfast, and Maria got the other things ready. We sat down. My cakes did not have exactly the right flavour. I took one mouthful, and it satisfied me. I lost my appetite at once. Maria would not let me put one on her plate. I think those cakes may be reckoned a dead loss. The cat would not eat them. The dog ran off and stayed away three days after one was offered to him. The hens wouldn't go within ten feet of them. I threw them in the back yard, and there has not been a pig on the premises since. I eat what is put before me now, and do not allude to my mother's system of cooking."—*Ex.*

**CATCHING RATS.**—In order to trap rats successfully, they must not have their suspicions aroused. If unmolested for a time, they become very much at home, and may then be caught with ease. Mr. Willis P. Storrs, Painesville, O., catches rats as follows: He uses a barrel upon which are two boards large enough to cover it. One board is nailed fast, and the other one is hinged to it so as to form a movable half cover. A string is attached to the movable part of the cover, and reaches to an adjoining apartment or place of concealment. The barrel is nearly filled with old wheat-screenings, and set where the rats will readily run to it to feed; the half of the cover being open, and all other food kept out of their reach. The rats will soon become unsuspecting, and when a goodly number have gathered within the barrel, the cover is closed upon them by pulling the string.—*American Agriculturist.*

## Agricultural Intelligence.

### Amcaster Farmers' Club

#### ROOT CULTURE.

At the meeting of the above club, held on the evening of Monday, the 13th February, Mr. John Weir, of West Flamborough, read an instructive and very practical paper upon turnip culture, for which a vote of thanks was cordially given by the members, a large number of whom were present.

Mr. George Taylor advocated thick sowing upon the heavier soils, stating that the multiplicity of plants coming through the soil at once had the effect of breaking and pulverizing any hardness which might exist in the land.

In reference to freely knocking about the young plant at thinning time, Mr. John Weir would not advocate such practice, but would be careful, when turnips were sowed in drills, to remove the earth from around the young plant.

Mr. W. stated, in answer to a question by Mr Craddock, that he had sown alternate rows of turnips with superphosphate, and had found the effect in the rapidity of growth of plants thus treated to be very marked. He would also use manure, ploughed under in the fall, as well as superphosphate, but would see that the manure was not too long. He had ploughed manure in the drills in spring, but did not approve of the custom. In some special seasons this plan might be beneficial, but as a rule he found there was danger of having to leave the drills open to the sun so long as to dry out the manure, and it also gave much extra trouble.

Mr. Bain was always particular not to use long manure, because it was not so soluble to the crop, and Mr. Craddock found that the presence of strawy manures was apt to cause the cultivator to pull up the plants.

All the speakers laid down as a rule that the great secret of success in turnip culture was thorough pulverization and preparation of the land. They also agreed that the best time to drill up was as soon after rain as the horses could be put upon the land.

In answer to Mr. Craddock, Mr. Weir said he had tried turnips on old sod, and found that, owing to the presence of a great mass of grass roots, the crop was very hard properly to take care of. He would advocate leaving the plants 15 inches apart, and drills 30 inches apart, thus securing plenty of room to use the horse-hoe, and ensuring a crop of large turnips, which were so much more easily handled.

Mr. Bain said, if you sow upon old sod, manure heavily, and then break up in the spring as soon as spring work would allow, there was one good point in this plan, for a turnip crop should be looked upon as a means for clearing foul land.

As to the different modes of harvesting, Mr. Bain thought that the plan of ploughing up the roots was very expeditious; that and harrowing up might be adopted in a dry season upon the lighter lands.

In answer to Mr. Frank Gabel, several were of opinion that any stubble land was suitable for turnips, as long as such was properly manured.

#### KINDS OF TURNIPS.

Mr. Weir recommended Old Purple Top, Sharpe's Improved and Carter's Improved; for late sowing, Grey Stone (white). The latter should not, he said, be sown too early, as they had a tendency to become hollow and stringy.

Mr. Postans, sen., thought very highly the Nimble Dick (white), being very quick growers, small but very sound.

#### PITTING.

Being asked how he usually pitted, Mr. Weir described his plan thus:—

He first covers the whole heap with six inches of loose straw, then commencing at one end, he covers six feet in length with six inches of earth. He then leaves four feet covered by a narrow single board, and earthed up on each side to the board. He then completely covers with earth the next six feet, then another board four feet, and so on alternately to the end of the heap. He prefers this system of ventilation to the straw chimneys. He finds in the spring a few turnips, just under the board, where the steam escapes, frozen, but considers that the loss of these is fully counterbalanced by the absence of rotteness in the remainder.

#### POTATOES.

Mr. Weir thought that many potatoes rotted last year from being left too long before digging; he always allowed his potatoes to sweat, in pits, before drawing to the cellar.

The opinion of the meeting was that last year the Goodrich yielded the best crop; next to these came the Buck-eye, next the Garnet Chili; and that Kidneys were a failure.

Mr. Taylor drilled up his land as for turnips, planted potatoes, and turning his harrows upside down, covered by a cross-harrowing.

Mr. Taylor had grown potatoes in his fence corners by simply covering the seed with straw. He would not, however, recommend the plan for a general crop. (Laughter).

Mr. Postans, Sen., added much to the amusement of the evening by a description of the Irish three-shovel system, generally known as the Lazybed plan.

Mr. Taylor would cut his potatoes for seed, and leave them to dry, first sprinkling them with plaster upon the barn floor.

Mr. Gable would plant whole seed.

Mr. Craddock would plant immediately after cutting.

The sense of the meeting seemed to favour the first plan.

Mr. Cooley had tried several experiments upon this point, and thought that it was immaterial which plan was adopted, as he considered that the rapidity of germination depended upon the different degree of vitality in various kinds.

Mr. Weir had seen a crop of one thousand bushels from two and a half acres. The preparation was clover sod, manured and dressed with swamp muck, planted in hills, 30 inches apart one way and 36 inches the other. Part was manured with dung alone, part with muck alone, and part with both kinds. The crop on that which was dressed with muck alone was very superior to that which was manured with dung alone.

The meeting adjourned at a late hour until the following Monday.

### Wheat in California

The statement that the wheat crop of California in 1871 will fall short of what it was in 1870, is answered by the San Francisco *Bulletin* as follows:—

We learn that 300,000 acres of land not heretofore sown in wheat is in wheat this year, on the west bank of the San Joaquin. With an average crop of twenty sacks to the acre, which is not an extravagant estimate for new lands in that valley, if the season is moist enough, the yield of this virgin soil will be 6,000,000 sacks. At \$3 per sack—the present price—this would realize twelve millions of dollars—more than the whole value of the exported crop of last year.

This is counting the chickens before they are hatched, but it is pretty clear that there will be more wheat produced in California this year than ever before, provided the season is favourable.

### Abortion Among Cows in the West

The dairy regions of New York, and some other Eastern localities, have been troubled for some years with abortion among the dairy cows. Much time and money have been spent in endeavouring to account for the disease, but thus far without definite results. We learn with regret that the same disease has appeared in one locality in the West. The *Prairie Farmer* says that in the vicinity of Lockport, Will County, Ill., where two hundred and fifty cows are kept by ten farmers, the milk being sent to Chicago, there were thirty-five cases of abortion in 1869, and fifteen in 1870 up to about the last of April. No facts have been adduced upon which a satisfactory theory for any special cause for the disease can be based. The cows were raised in the neighbourhood, are apparently well cared for, have fine pasture, excellent water, good barns, and good feed in winter; they seem to be in good health. The bulls used were generally three years old. The cows are allowed to go dry from six to eight weeks. Cotton-seed meal is not the cause. So those who would blame, find that there are causes not yet discovered.

### Cattle Diseases in Britain.

The *Veterinarian* of February gives the following account of the principal epizootic diseases prevailing in Great Britain and the European continent:

**THE CATTLE PLAGUE.**—At the close of the year Belgian Luxembourg was believed to be free from the cattle plague, the disease having been reported as effectually stamped out within a few weeks of its introduction from France. The risk, however, of its entrance into the province of Hainault in consequence of the progress of the German army in the Nord department of France, led the Belgian Government to dispatch troops to the frontier to assist the customs officers in preventing the fraudulent attempts which were being made to bring cattle over it. For this purpose Chimay, Beaumont, Erquelinnes, Dour, Peruwelz, and Tournai, were occupied by military, and the Government also ordered a census of the cattle to be taken in several communes of the arrondissement of Tuin. On January 3rd a fresh case of the disease was reported at Corbion, near to Bouillon, and great fear was entertained that the plague might show itself at Virton and in the commune of Villiers devant-Orval in consequence of its existence in the contiguous French villages of Lafosse and Maigny. The latest intelligence from Belgium shows the plague to be on the increase in the province of Luxembourg and among other villages at Halanzy near to Longwy. Besides this reintroduction of the cattle plague into Belgium, and the further spread of the disease in the northern parts of France, the malady is reported to have shown itself at Limours, about twenty miles south of Versailles. Recent reports from eastern Europe also show that fresh outbreaks of the disease have taken place in Poland and Galicia, and that Transylvania still suffers from a continuance of the plague in the comitat of Hunyad.

**PLEURO-PNEUMONIA.**—We have nothing very different to report respecting pleuro-pneumonia this month from last. The disease exists in thirty-five counties of Great Britain, and the centres of the infection number eighty-seven. One rather serious outbreak in Dorsetshire was traced to the purchase of some Irish beasts at Bristol market. The malady still prevails in London dairies and in the environs of the metropolis.

**MOUTH AND FOOT DISEASE.**—The fluctuations in this disease continue in a somewhat remarkable manner, fresh outbreaks taking place in districts which were thought to have been effectually cleared of the malady, and a great increase of attacks occurring in some localities which have long suffered from the affection. Diseased pigs have been sent here from the Continent, and chiefly from Belgium. In each instance the animals have been killed at the landing-place. We observe from the local papers that more energy is being displayed on the part of the authorities in the proper carrying out of the regulations for the suppression of the disease.

### Agricultural and Arts Association.

#### ELECTION OF OFFICERS, &c.

The members of the Council of the Agricultural and Arts Association met on Tuesday Feb. 28 in the room at the Agricultural Hall. The following gentlemen were present:—The Hon David Christie, Rev R. Burnet, Messrs. L. Shapley, J. J. Farley, Geo Graham, J. C. Rykert, M.P.P., Geo. Murton, Andrew Wilson, Stephen White, Robert Gibbon, Hon. J. Skead Mr. Nathan Choate.

The Secretary, Mr. H. C. Thomson, occupied the chair pending the election of the new President

#### COMMUNICATION.

A letter from Prof. Buckland was read, giving the results of the nominations of Electoral Division Agricultural Societies in the following districts for members of the Council of the Agricultural and Arts Association of Ontario for the coming year, viz:—

No. 5 District—Nathan Choate, Esq., Port Hope.  
No. 6 District—George Graham, Esq., Brampton.  
No. 7 District—George Murton, Esq., Guelph.  
No. 8 District—J. C. Rykert, Esq., M.P.P., St. Catharines.

The election of officers was next proceeded with.

#### ELECTION OF OFFICERS.

The Hon. D. CHRISTIE proposed that the Hon. Jas. Skead be elected President for the ensuing year.

Mr. AND. WILSON seconded the motion, which was carried unanimously.

The Hon. J. SKEAD then assumed the chair, and thanked the Council for the honour they had conferred upon him.

Mr. Stephen White was unanimously elected Vice-President.

On motion of Hon. D. Christie, seconded by Mr. White, Mr. Graham, of Brampton, was elected treasurer.

The Secretary then read the minutes of the last meeting, which were confirmed.

#### THE MARITIME DELEGATES BALL

Mr THOS WILSON (of the firm of Frank Smith & Co) presented a letter having reference to a ball given to the delegates from the Maritime provinces at the time of the Confederation. It seems that London at that time was empowered to give the ball, and to expend \$1,000 upon it, and that Mr. Glass, the then Mayor of London, in making up the accounts of the affair, had not included an item of \$410. The committee who had the management of the ball had since been sued by Mr. Fish, who supplied the refreshments on the occasion, and judgment had been given against them. As the whole of the \$1,000 was not expended the committee asked that the unappropriated amount in Mr. Denison's (the late treasurer's) hands be given over to them in liquidation of the judgment.

The PRESIDENT said the Council would discuss the matter and inform Mr. Wilson of the conclusion they arrived at.

After some conversation upon the matter, Mr. RYKERT moved the following resolution:—

"That the sum of \$300, reported by the auditors to have been left in the hands of Mr. Denison, the late treasurer, from the money appropriated by the Government for the entertainment of the guests from the Maritime provinces, and for which judgment has been obtained against Mr. Denison, be paid upon the judgment obtained by Mr. Fish against Wilson and other as soon as the amount shall be realized from Mr. Denison, together with the interest to be paid thereon, the sanction of the Treasurer of Ontario being first obtained."

Mr. FARLEY seconded the motion, which was carried unanimously.

#### ANNUAL REPORT.

The SECRETARY read the annual report of the Board to the Bureau of Agriculture for the past year, which was received and adopted, and the manuscript ordered to be forwarded to the Minister of Agriculture for Ontario.

## IMPORTATION OF BREEDING STOCK.

Hon. D. CHRISTIE moved seconded by Mr. RYKERT:—That in the opinion of this Council, that part of the United States tariff which provides that animals specially imported for breeding purposes, from "beyond the seas," only shall be admitted duty free, places Canadian breeders in an invaluable and disadvantageous position as compared with those in other countries, while the Canadian tariff makes no such discrimination.

Resolved, That a copy of this resolution be transmitted to the Hon. Sir J. A. Macdonald, now in Washington.

The resolution was carried unanimously.

## AUDITOR'S REPORT

The auditor's report on the accounts of the past year was submitted and adopted.

## PROVINCIAL EXHIBITION.

On the motion of Mr. G. MURTON, seconded by Mr. WILSON, it was resolved that the next Provincial Exhibition be held on Monday, the 26th September, and the following day.

## ALTERATION OF RULE 40.

The Hon. D. CHRISTIE moved that the words, "In the absence of competition in any section, not more than one prize shall be awarded," in rule No 40, be held not to apply to animals.

Mr. MURTON seconded the resolution, which was carried.

## INCREASE OF PRIZE LIST

It was moved by Mr. WHITE, seconded by Mr. RYKERT, and carried, "That the Committee be authorized to add three thousand dollars to the prize list."

## ADJOURNMENT

The Council then adjourned until 8 o'clock.

## THE PRESIDENT'S DINNER.

At the conclusion of the afternoon proceedings, the Hon. James Sheard entertained the members of the Council at dinner at the Queen's Hotel, the proprietor of which provided a very handsome repast about twenty gentlemen sat down, and a very pleasant social hour was spent.

## ADJOURNED MEETING.

Shortly after 8 o'clock the Council again assembled.

## EXECUTIVE COMMITTEE AND COUNCIL.

On the motion of Mr. STEPHEN WHITE seconded by Mr. MURTON, it was resolved that the Executive Committee meet on the first Tuesday in May, and the Council on the Wednesday following. Carried.

## LOST CHEQUES.

It was moved by Mr. L. E. SHIPLEY and seconded by Mr. S. WHITE, that the Treasurer be and is here by authorized to give cheques for \$50 and \$34 respectively, to A. West and George Mitchell, which were sent, and which it is said have not reached their destination, on their giving satisfactory security to the Board that the former cheques, Nos. 16,623 and 16,836, will not be forthcoming against the Association. Carried.

## THE ASSOCIATION v. DENISON.

The Treasurer reported to the council that the suit against Mr. Denison had been decided by the Court in favour of the Board, and that the amount due to the Association was \$14,897 61. Mr. RYKERT moved, seconded by Mr. MURTON, that the solicitors, Messrs. Osler, Moss and Foster be instructed to extend the term for payment of the unsecured balance found to be due by Mr. Denison to the Board, to the 17th August, upon Mr. Denison executing a mortgage to the Board securing the said balance and interest thereon. Carried.

## ADVERTISING ACCOUNTS.

The various printing and advertising accounts for the past year were passed and ordered to be paid.

## TENDERS FOR PRINTING

The Committee appointed to consider the tenders for the printing of the transactions of the Association for the past year, recommend that the tender made by THE GLOBE be accepted. The recommendation was unanimously adopted.

## THE MARITIME DELEGATES' BALL.

The Council decided that a copy of the resolution passed at the afternoon meeting respecting the judgment given against Mr. Wilson and others, in re the Maritime Delegates' Ball, at London, be forwarded to Mr. Wilson.

## RESIGNATION OF THE SUPERINTENDENT

Mr. W. A. Cooley, the Superintendent of the Association, placed his resignation in the hands of the Board, other business engagements not permitting of his holding the office long.

Mr. RYKERT said that if Mr. Cooley persisted in his intention of resigning the office of superintendent, he would suggest that Mr. Thos. Keys be elected to the office in his stead.

The Rev. Dr. BURNETT, and other members of the Board spoke in high terms of commendation of Mr. Keys; and on motion of Mr. RYKERT, seconded by Mr. S. White, Mr. Keys was appointed to fill the vacancy caused by the resignation of Mr. Cooley.

On the motion of Mr. RYKERT, seconded by Rev. Dr. Burnett, the thanks of the Board were tendered to W. A. Cooley, Esq., for his long and valuable services as Superintendent.

Mr. COOLEY, in appropriate terms, returned his thanks to the Board for the compliment passed to him, and said that at all times he should be ready and willing to render his successor all the assistance and give him all the information that lay in his (Mr. Cooley's) power.

The Council then adjourned until the first Wednesday in May next.

A cheese factory is to be established in the Township of Drummond this season.

Quebec is moving actively in its Central Exhibition project. The necessary ground has been secured, and plans for the buildings have been asked for. The buildings will cost about \$5,000.

The "Grafton Dairy Company," of the township of Haldimand, with a nominal capital of \$3,500, and the "Ivanhoe Cheese Factory Company," have become incorporated.

During the past year the exportation of grain from Chicago, Milwaukee, and Toledo, increased 11,000,000 of bushels over the preceding year. This shows the rapid agricultural growth of the West in a single product.

The Fergus February cattle fair was fully attended and business was brisk. Every thing in the shape of beef was sold at good prices. The best beef on the ground went as high as \$6 50 per cwt., and second-class for \$4, live weight.

The Mount Forest cattle fair of February was well attended. Milch cows were scarce, and in great demand. One prime yoke of oxen went for \$145, and five steers for \$310. Average prices were: For oxen, \$100 to \$112, steers \$30 to \$40; heifers, \$25 to \$32; cows, \$25 to \$35.

The *Colonist*, published at Victoria, Vancouver's Island, says that a few years ago a gentleman residing near that place turned loose several pairs of California quails, and now the whole country is alive with them. Apprehensions were entertained that they would prove a serious injury to the grain crops next year.

A writer in the *Country Gentleman* says that the capacity of the largest sugar factory in Europe is 66,000 tons per annum; one of the smallest is of 1,900 tons. The consumption of sugar in the Zollverein has increased from 4.67 pounds per capita in 1810, to 10 pounds in 1866. In Austria it increased from 1.68 pounds per head in 1840, to 5.1 pounds in 1862. This will look like an exceedingly small amount to the American people, where it is used in a thousand different ways and is scarcely limited other than by the wants of the appetite.

It is stated that the 10th volume of the American Short-horn Herd Book is in the press, and will probably be out during the month of February or early in March. Mr. Allen says, "Nothing shows the rapid increase of good Short-horns in the United States better than the continuous publication of the Short-horn Herd Book. Vol. 10, only a year later than Vol. 9 (which had over 5,000 pedigrees in it), has about 1,560 bulls and upwards of 3,000 cows recorded in it; running the entire bulls embraced in the 10 vols. up to 11,252, and about 20,000 cows in all."

The Elora cattle fair last week was interfered with by bad weather, but nevertheless, says the *Observer*, the attendance of buyers on the ground was much greater than usual, and 'y nias o'clock there was a large quantity of stock offering, and more people around than could reasonably have been expected under the circumstances. By reports from the Toronto and Buffalo markets the farmers were prepared for lower prices, and evidently came to do business—and a large business was done. Prices ranged from 3½ to 5½ cents per pound, but few exceeding 4½ cents. Whilst few beasts presented anything extraordinary in fatness, never did we notice cattle so uniformly good, and anything superior was quickly purchased at rates satisfactory to the seller.

SALE OF THOROUGHbred STOCK.—John Ashworth, of Belmont, Ottawa, has made the following sale of Short-horns to the Hon. Christopher Dunkin, Minister of Agriculture:—Cows and heifers—Lesbia, by Barrington, 1229, dam Daphne, by Harold (10299); The Pride of Belmont, by Sweetmeat (20924), dam Souvenir of Thorndale, by 2nd Grand Duke (12961); Christmas Morn of Belmont, by Sweetmeat (20924), dam Lesbia, by Barrington, 1229; The Sweetheart of Belmont, by Sweetmeat (20924), dam Lesbia, by Barrington, 1229. Bull—The Monk of Belmont, by Sweetmeat (20924), dam Lilla Languish, by Sirius (13737); Lydia Languish was by Duke of Gloster (11382).

The New York State Agricultural Society intends to ask the Legislature to grant it sufficient money to provide a suitable place near some large city where agricultural fairs may be held every fourth year.

## Miscellaneous.

### Bear Fight with Hogs.

About thirty years since, and during my protracted tour of valuation throughout the township of King, I was witness to a singular fight between a bear and fourteen hogs. It was Saturday evening, in the month of September. My horse was pretty well done out, and was slowly walking along the road that trends north from Lloydtown, and my mind was bent on the chances of meeting at the next, and last farm house on my list for that week, with a suitable place to spend the night and Sunday following. I was about three miles north-west of Lloydtown, and was debating the propriety of returning, instead of going on, with the chance of a resting-place before me. All at once I heard a most unearthly jargon of cries, grunts, squeals, and afterwards human halloos. A dense piece of hemlock brush intervened between me and the cause of the uproar. I set spurs to my horse and galloped forward, and as the clearing opened, I discovered the cause.

It was nothing more or less than an onslaught, by a very large, half-starved bear, on a litter of three-quarter grown pigs, and their father and mother—all of the true old razor-back, long-bristled kind to be found in abundance in Canada at that time. The bear persistently attacked first one and then another of the young shoats, seizing and severely wounding them, and causing them to squeal tremendously. The old boar and sow charged furiously each time, compelling Bruin to relinquish his hold. As I sat on my horse, within about thirty yards of the fight, rather enjoying it than otherwise, my attention was drawn to an active young man, the author of the hallooming, who was running towards the combatants with a large club upraised, to "save his bacon."

I was fearful of the result to him, as I by no means was so sure of the old boar and sow fighting so well in defence of their master as of their young. These half-wild hogs are well known to be very fierce in defence of their progeny or companions, even if of mature age. All the pig tribe will fight wild animals, if there are enough in number to encourage them to resistance, and the little peccaries of Mexico and the South are well known to be most dangerous if one of their number is injured or squeals for help. I leaped from my horse over the fence, and ran towards the drove, armed with a heavy, lead-loaded riding-whip. The bear fought for a few moments longer, notwithstanding our shouting, and seemed determined to have more or less pork for supper; but finally we succeeded, in combination with the hogs, in putting him to flight.

He did not, however, escape altogether, he was killed next day, and found dreadfully

emaciated and mangy, most of his hair having come off from this cause. He was very old and large, but of no value, except for the bounty of ten dollars, at that time given by Government in this township. His claws were as blunt and round as the end of your middle finger, and he being also blind of one eye, and seemingly incapable of getting a living as usual amongst bears, he had become timorous and reckless from hunger.

We gathered the herd together and drove them towards home, and the hospitable owner insisted on my stopping over night and next day also with him. He had, he said, a quilting bee that evening at his house, and would have some dancing afterwards.

I was easily induced to stay, and we had a most merry evening until bed-time came, when all who could went home, and those who lived too far off stayed all night, and did the best they could as to beds.

Next morning we devoted a couple of hours to dressing the wounded, and a very noisy operation it was. The two old ones were almost unhurt, but the younger were suffering from some very severe bites and scratches. You would wonder how such ugly wounds could have been inflicted by such blunt claws and old teeth. These deep scratches I attributed principally to the upper or dew claw, on the fore leg of the bear, which was quite sharp. The deep cuts inflicted I believe were done by forcing the lower jaw teeth into the flesh of the young hogs. These gashes were principally given about the hams, and were no doubt inflicted when the pigs were trying to escape, each onslaught. We sewed up some of the deepest, and dressed the others with tar.

It is very probable that the other party engaged along with myself in this fight will see this little true history. He is now a thriving and wealthy merchant, and much respected, and lives on one of the new lines of railways lately projected and completed. No doubt he will smile at the recital, but cannot well be offended, as certainly his prowess far exceeded mine, and fully equalled that of the other defenders of the juvenile grunters.

### Advantages of Steam in Heating, Cooking, &c.

The various uses for which steam can be adapted seems to be but little understood by the masses. Fear from explosions, scalding, &c., as well as want of knowledge of its great advantages, has thus far prevented its general introduction. The want of a perfectly safe and easily managed low pressure apparatus, with which to accomplish all the requirements of domestic use, has also been a great drawback.

The great advantages of cooking, heating, boiling, &c., by steam, are obvious, when it is remembered that it can be done with

much less water and fuel, requiring but little care of the operator, and using wooden vessels, if desired, of any kind, size, or shape—a great desideratum. By its use there is no refilling of kettles (the ordinary mode) to get a desired quantity, no constant watching or stirring, or removal of the substance while hot, to prevent burning; no cleaning of kettles for every separate job, which can be done by steam. By the use of this powerful agent, large quantities may be boiled or steamed; or several vessels, if need be, treated at the same time; and when desirable, the steam can be conveyed in pipes or logs to some little distance, using proper care in preventing the same from condensation; thus avoiding, many times, danger from fire, and accommodating itself to all the various purposes of domestic economy, as well as in the manufacturing of many articles or compounds, when danger from burning or explosion is so common. By steam the clothes may be boiled at any point in the barrel or tub: the bath tub may be warmed in an adjoining room; the farm and stock-feeder could easily cook in quantities at a time, or scald his hogs, steam his barrels, etc.

We believe that when a cheap, simple, and perfectly safe apparatus is once introduced, the subject will receive much more attention than now.

P.

### A Plea for Little Toes.

We devoutly believe that there is not a shoemaker in the universe who by any means pleasanter than the pillory could be brought to allow space in a boot to hold the helpless little toe. We speak with the unction of experience. We have planted a toe on a piece of paper as wide as it would spread, and while the shoemaker followed the outline, have conjured him to leave room for *that toe*. He never did it. Numerous untarnished boots, hanging against a wall, bear expressive witness to the inhumanity and utter lack of anatomical knowledge in shoemaking men. No wonder a young girl out west had her little toes chopped off. And no wonder the young lady in Hartford had such sore toes on her wedding day that she could not stand up to be married. The only wonder is that our women stand up at all, much more that they walk, which, by the way, they do more badly than any women under the sun, except the Chinese. We used to pity the poor Chinese women, but have transferred our compassion to our country women. Look at them as they pass by your window some bright day! The wretched fiction of a "Grecian bend," the more wretched fact of laced-up lungs, cannot account wholly for that feeble, teetering, gasping walk, a walk utterly devoid of vitality, elasticity, or grace; but looking down at the wretched little boot with its French heel, bringing the whole weight of the body on the toes, explains it all.

The ungarnished fact is that American women are fast becoming a nation of cripples. Nothing can prevent their growing to be such, unless there is an entire and radical change in the shape of their shoes. Girls, respect the rights of your little toes. If you don't, they will turn and rend you.—*Western Rural*.

**Where the Birds Go.**

It is sometimes asked where all the birds go. The subjoined table from the Boston Cultivator indicates clearly what becomes of them. There is little wonder that insects multiply immensely, and that many of the noxious kinds have rendered so precarious the raising of various fruits and grains. If a single house consumes so many birds in five months, what a vast number must be destroyed for a similar purpose throughout the country. At a single hotel at Point Shirley, of game birds alone 27 species were feasted on from May 1 to September 25, aggregating the enormous total of 49,879 birds, all furnished from Taft's larder during that time. The following are the species and numbers of several kinds:

Species.	Name of Birds.	No of each
1.	Brant.	764
1.	Eric black ducks	2,216
2.	Eric teal.	3,143
1.	Summer ducks.	725
1.	Prairie chicken.	205
1.	Woodcock.	6,241
1.	Chicken partridge.	512
1.	Upland plover.	405
1.	Dough birds.	285
4.	Curlews.	751
1.	Goodwits.	353
1.	Willet.	918
1.	Golden plover.	2,110
1.	Beetle head plover.	1,816
1.	Red breast plover.	2,305
1.	Chicken plover.	1,781
1.	Jack snipe.	756
2.	Yellow legs.	4,650
1.	Grass birds.	3,252
1.	Rail.	950
1.	Reed birds.	4,105
1.	Pears.	13,150

27 49,879

Let no one wonder what becomes of the birds, when one hotel in Massachusetts has furnished its table with nearly 50,000 of these winged migratory visitors; and herein one reason is furnished for the vast increase of insects.—N. Y. Sun.

**THE CHELTENHAM SEWAGE FARM.**—The Cheltenham (England) Commissioners have recently completed works, and purchased a farm for the disposal of the town sewage by irrigation. The first yearly letting of the irrigated land was effected by auction recently. The land is all ordinary grass land, to which, as yet, the sewage is but imperfectly applied, and comprises 119 acres. It was divided into six lots, which let at prices varying from £5 18s. to £8 13s. per acre, and realized a total of nearly £900. The yearly cost to the town for interest and repayment of loan in thirty years is £1,100; so that, if the rent of the land should remain stationary, the town would only be put to a cost of £200 a-year, and own the farm free at the end of thirty years, as against an expense of nearly £1,000 a-year before incurred, with very unsatisfactory results for deodorizing. But, in addition to the rent of the land, the Commissioners apply the sewage to adjacent farms, at a certain charge per acre, and have reserved for experiment several acres of their own land, which have been broken up for ryegrass, and are expected to realize a profit of at least £20 an acre; so that the farm will probably be conducted without loss, even during the first year.

**CHEAP HYDROGEN.**—An inexpensive process of generating hydrogen gas has recently been devised by some French chemists, which consists of the decomposition of hydrates, such as slaked lime, in contact with charcoal or substances rich in carbon. The material after having parted with the hydrogen of its water, can again be slaked and used repeatedly for the purpose of evolving hydrogen. The Boston Journal of Chemistry commenting on the merits of the discovery, says: "If the process fulfills the expectations of its distinguished inventors, the gas before long will be manufactured in every city and town, and distributed in the same way as illuminating gas now is. It will be used for heating houses, cooking, generating steam, etc., instead of coal or wood."

A good harness blacking is made of 4 ounces of hog's lard, 16 ounces of neat's foot oil, 4 ounces of yellow wax, 20 ounces of ivory black, 16 ounces of brown sugar, and 16 ounces of water. Heat the whole to boiling, and stir it until it becomes cool enough to handle, then roll it into balls about two inches in diameter.

**Advertisements.**

**FRUIT & ORNAMENTAL TREES,**  
FLOWERING SHRUBS & ROSES,  
HARDY & HOT-HOUSE GRAPE VINES,  
And Greenhouse Plants.

AT THE  
**St. CATHARINES NURSERIES.**

Call and examine our stock. Catalogue for 1871 mailed on receipt of three cent stamp.  
(v3-3-20) **BEADLE & BUCHANAN.**

**JAMES FLEMING & CO.,**  
TORONTO.

Offer for sale all kinds of  
GARDEN, FIELD AND FLOWER

**SEEDS!**

And sundry garden and farm requisites.  
DESCRIPTIVE CATALOGUE FOR 1871,  
now ready and forwarded by mail on application.  
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**AN UNPARALLELED OFFER TILL THE FIRST OF APRIL!**

Country rights for  
**Thomas' Celebrated Bee-Hive,**  
For \$50 cash which is not more than one third their value  
**J. H. THOMAS.**  
(v3-3-14) BROOKLIN, ONTARIO.

**NEW AND BEAUTIFUL PLANTS**  
For 1871.

WE offer a very large stock, comprising all the finest novelties in **Green House, Hot House and Bedding Plants.**  
New Descriptive and Illustrated Catalogue, with fine colored plate, now ready. To our customers free, to others, 10 cents.  
**ELLWANGER & BARRY.**  
[ESTABLISHED 1840.] [v3-3-14] ROCHESTER, N.Y.

**TREES,**  
**FRUIT AND ORNAMENTAL,**  
For Spring of 1871.

THE largest and most complete stock in the United States. Catalogues mailed pre-paid, as follows:  
No. 1. Descriptive Catalogue of Fruits, 10c.  
No. 2. " " Ornamental trees, &c., 10c.  
No. 3. " " Greenhouse plants, &c., 10c.  
No. 4. Wholesale 2c.  
No. 5. Catalogue of Bulbs, (Published Aug. 1st.) 2c.  
**ELLWANGER & BARRY,**  
Mount Hope Nurseries,  
[ESTABLISHED 1810] [v3-3-11] ROCHESTER, N.Y.

**FREE SEEDS.**

SAMPLE Packages of Norway Oats, Chester County Mammoth Corn, and Alsike Clover sent free to all farmers willing to test them also copy of the American Horticultural Journal, by enclosing stamps to pay postage.  
Address  
**N. P. HOPER & CO.,** Pikesburg, Chester Co., Pa.  
v3-3-11

**Fruit and Ornamental TREES,**  
**Greenhouse and Bedding PLANTS,**  
**Hardy and Tender GRAPE VINES,**  
&c., &c.

THE subscriber begs to announce to the public that he has a very large and select stock of the above articles to offer this season. A *Prized Descriptive Catalogue* sent free to any address on PREPAID application.  
**DAVID MURRAY,**  
Successor to the Nursery Business of  
ROSEDALE NURSERIES, } JOHN A. BRUCE & CO.  
Hamilton, March, 1871. } [v3-3-11]

**WINDSOR NURSERIES.**

A FINE STOCK OF  
**Fruit Trees, &c.**  
On hand for Spring planting, consisting in part of  
**Standard and Dwarf Apples and Grabs,**  
**Standard and Dwarf Pears,**  
**Plums, Cherries, Grape Vines, Quinces, Currants, &c.**

Particular attention is called to the stock of Pears, Standard and Dwarf, which are finer than can be produced 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.  
Catalogues for Spring are now ready, and will be sent free to all applicants.  
CANADIAN FRUIT CULTURIST sent free by mail for 25c.  
Reliable Local Agents wanted in a few central localities.  
Windsor, 7th Feb., 1871. [2-21.] **JAMES DOUGALL.**

**GREGORY'S**  
**Illustrated Catalogue**  
OF  
**GARDEN AND FLOWER SEEDS.**

Having in former years introduced to the public the Hubbard Squash, American Turban Squash, Marblehead Mammoth Cabbage, Mexican Sweet Corn, Phinney's Water-Melon, Brown's New Dwarf Marrowfat Pea, Boston Curled Lettuce, and other  
**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 three 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.  
**JAMES J. H. GREGORY, MARLBOROUGH, MASS.**  
v3-1-31

### Hay and Cotton Press Works, Established 1854.



#### DEDERICK'S HAY AND COTTON PRESSES.

P. K. DEDERICK & CO.,

PATENTEES AND SOLE MANUFACTURERS

Dederick's Patent Progressive Lever Presses are baling at least two-thirds of the hay, straw, &c., baled in the country, and are familiarly known everywhere as the best Presses. 34 different sizes of Horse, Hand and Power Presses, for baling hay, straw, cotton, hemp, hops, cloth, hides, moss, husks, broom corn, &c. Send for Illustrated Catalogue, giving Sizes, Prices, and much other information useful to the farmer, planter, packer and shipper. Do not wait until Machines are wanted, then order in haste—but post yourself in season. We charge nothing for information. State your transportation facilities, market, &c. ADDRESS,

P. K. DEDERICK & CO., Albany, N. Y

v3-11

### The Burlington and Mo. River R. R. Co.

Offer about 2,000,000 Acres

### IOWA AND NEBRASKA LANDS FOR SALE

On 10 Years' Credit, at 6 pr. ct. interest,  
No part of Principal due for two years from purchase,  
and afterwards only one-ninth yearly.

Products will Pay for Land and Improvements.

The Liberal Credits given; Free Passes allowed; small annual payments required; the current market value of money, and profits on stock raising, prove these terms cheaper, easier and better than to buy U. S. land within railroad-land-limits at \$2.50 per acre, while our prices range generally from \$1 to \$5, \$6, \$8 and \$10 Dollars per acre. Quality and local advantages rule the price.

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. interest 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.

Apply to **GEO. S. HARRIS,**

Land Commissioner, Burlington and Mo. River R. R. Co.  
For Iowa Lands, at BURLINGTON, IOWA.

For Nebraska Lands, at LINCOLN, NEBRASKA.

v3-1-31.

### TO BEE-KEEPERS.

HAVING taken the First Prize on my Bee Hives at every Provincial Fair for the last seven years, they have gained a reputation unsurpassed by any hive in America. Such being the case, I now give notice that I shall not enter my hives for a prize at any coming Provincial Fair, believing their reputation as the best hive in the market is sufficiently established.

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 Extractors, Italian Bees and Queens and everything belonging to the Apilary. CANADIAN BEE-KEEPERS' GUIDE, post-paid, 28 cents.

Bee-keepers residing in the Townships of Thorold and Sydney will hereafter 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.

v3-1-11.

J. H. THOMAS, Brooklin, Ont.

### PREMIUM CHESTER WHITE PIGS.

PURE Blood, Short Horn (Durham) Devon, Alderney, and Ayrshire Calves, Merino, Southdown and Cotswold Sheep, Cashmere Goats, Improved Suffolk, Essex, Berkshire and Boston Pigs, and all Choice Breeds of Poultry and Eggs for sale

Send for Circulars and Prices. Address,  
N. P. BOYER & Co., Parksburg, Chester Co., Pa.  
v3-3-11.

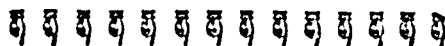
### EPILEPSY OR FITS.

... such cases for this distressing complaint is now made known in a Treatise of 48 octavo pages, on Foreign and Native Herbal Preparations, published by Dr. O. PARLOR Brown. The prescription was discovered by him in such a providential manner that he cannot conscientiously refuse to make it known, as it has cured every body who has used it for Fits, never having failed in a single case. The ingredients may be obtained from any drug list. Persons desiring a copy may address Dr. O. PARLOR Brown, No. 31 Grand Street, Jersey City, N. J., and it will be sent by return mail.

v3-3-11.

### \$5 TO \$10 PER DAY. MEN, WOMEN

who engage in our new business make from \$5 to \$10 per day in their own localities. Full particulars and instructions sent free by mail. Those in need of permanent, profitable work, should address at once. GEORGE STIMSON & Co., Portland, Maine.



TO THE WORKING CLASS.—We are now prepared to furnish all classes with constant employment at home, the whole of the time or for the spare moments. Business new, light and profitable. Persons of either sex easily earn from \$2. to \$5 per evening, and a proportional sum by devoting their whole time to the business. Boys and girls earn nearly as much as men. That all who see this notice may send their address, and test the business, we make this unparalleled offer. To such as are not well satisfied, we will send \$1 to pay for the trouble of writing. Full particulars, a valuable sample which will do to commence with, and a copy of The People's Literary Companion—one of the largest and best family newspapers published—all sent free by mail. Reader, if you want permanent, profitable work, address E. C. ALLEN & CO., AUGUSTA, MAINE.

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### MILLER'S INFAILLIBLE

### TICK DESTROYER



### FOR SHEEP

DE-TRYS the TICKS; cleanses the skin, strengthens and promotes the growth of the wool, and improves the condition of the animal.

It is put up in boxes at 35c., 70c., and \$1, with full directions on each package. A 35c. box will clean twenty sheep. HUGH MILLER & CO.,  
167 King Street East. (v3-3-31) Medical Hall, Toronto

5,000 AGENTS WANTED. Male and Female, to sell two new articles as valuable as Flour and needed in every family. Samples sent free by mail, with terms to clear \$5 to \$10 per day. This is no gift enterprise or humbug, but they are new articles of real merit. Reader, if you want profitable and honorable employment, send on your name and Post-office address and receive full particulars with sample, free by return mail. Address  
N. H. WHITE, Newark, New Jersey.

v3-3-31

### TO CHEESEMEN.

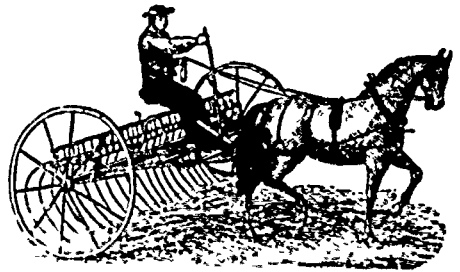
HATCH & COMPANY having purchased the business (including Patents) lately carried on by Messrs. Pelow & Walton, are now manufacturing the celebrated Patent Improved Circulating Heater and Cheese Vats, also, Carrying and Weighing Cans, Milk Pails, Cheese Hoops, Lever and Ratchet Screws. Also supply Cheese Factory Utensils of every description. Send for circulars. We annex a few references—

- Hon. David Reesor, Markham, Ont.
- Messrs. Hoover, Reesor & Co., Whitewater, Ont.
- George Morton, Esq., Morton, Ont.
- John A. McDonald, Esq., Williamston, Ont.
- George Striker, Esq., Picton, Ont.
- Henry Wade, Esq., Port Hope, Ont.
- John N. Raynor, Esq., Box Grove, Ont.
- George Bruce, Esq., Gormley, Ont.
- T. H. Wilmot, Esq., Milton, Ont.
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All orders, to be sent to the firm, will receive prompt attention.

HATCH & COMPANY,

Sole Manufacturers for the Dominion, Importers of English, German and American Hardware,  
v3-3-11. Oshawa, Ontario.



### Steel Tooth Sulky Horse Rake

1st Prize, Provincial Fair, London, 1869!

1st Prize, Provincial Fair, Toronto, 1870!!

Will do more work, easier, cleaner, and better than the common rakes. It does not gather dust in the hay. Will rake over rougher ground. Is light and strong, well-made and nicely finished. The teeth are fine spring steel, independent of each other, and will yield to pass obstructions without bending or breaking. The best in use. Furnished with or without Plaster Sower attachment or Hay Tedder. For references, &c., send for circulars.

Active Local Agents Wanted in every County.

JAMES SOUTAR & CO.,

Agricultural Foundry and Warehouse,

v3-1-11.

Chatham, Ont.

### CHEESE APPARATUS.

#### PEDLAR'S SMALL CHEESE VATS

ARE noted for being the cheapest, simplest, and most complete Vat and Heater yet introduced. Vat and Heater, all in complete running order, suitable for a Dairy of from ten to 30 cows, \$30.00—delivered to any station in Ontario free from freight charges. Factories supplied throughout with everything of the latest improvement, at a very cheap rate. The best Press Screws at \$2.50 each, delivered.

Before buying, write to

GEO. H. PEDLAR, Drawer 5,

Agents Wanted.

Oshawa, Ont.

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### BREAKFAST.

#### EPPS'S COCOA.

#### GRATEFUL AND COMFORTING.

THE very agreeable character of this preparation has rendered it a general favourite. The Civil Service Gazette remarks.—'By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills.' Made simply with boiling water or milk. Sold only in tin-lined packets, labelled—

JAMES EPPS & Co.,

Homeopathic Chemists, London.

v2-11-12

### JAMES VICK'S FLOWER SEEDS & BULBS.

All Seeds at Catalogue prices sent, postage paid, on receipt of cash.

CATALOGUES FURNISHED.—Price 15 cents here; 20 cents by mail.

W. QUAY, Port Hope, Ont.

#### CROWN PEAS,

The most prolific Pea known.

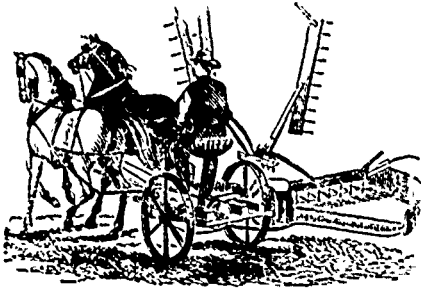
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W. QUAY.

VINEGAR, HOW MADE FROM CIDER, Wine, Molasses or Sorghum, in 10 hours, without using drugs. For circular address F. I. SAGE, Vinegar Maker, Cromwell, Ct. v2-9-12

### WE WILL PAY

AGENTS a salary of \$35 per week, or allow a large commission, to sell our new inventions. Address J. W. Frink & Co., Marshall, Mich. 2-31.



THE JOSEPH HALL  
MACHINE WORKS

OSHAWA, Ont.

ESTABLISHED 1851.

THE JOSEPH HALL

MANUFACTURING CO.'Y,

PROPRIETORS.

WE DESIRE TO CALL ATTENTION TO OUR

No. One and Two Buckeye Combined  
Reaper and Mower, with John-  
son's Self-Rake Improved  
for 1871.

We believe this machine, as we now build it, to be the most perfect Reaper and Mower ever yet offered to the public of Canada.

Among its many advantages, we call attention to the following.

It has no gears on the Driving Wheels,

Enabling it to pass over marshy or sandy ground without clogging up the gearing, thereby rendering it less liable to breakage. It is furnished with four knives two for mowing and two for reaping, one of which has a sickle edge for cutting ripe, clean grain, the other a smooth edge for cutting grain in which there is grass or seed clover.

It has malleable guards both on the Mower bar and Reaper Table, with best cast steel Ledger Plates. It is also furnished with our new Patent Tilting Table for picking up lodged grain. This is the only really valuable Tilting Table offered on any combined Reaper and Mower. The Table can be very easily raised or lowered by the Driver in his seat without stopping his team. This is one of the most important improvements effected in any Machine during the past two years.

Any one or all of the arms of the Reel can be made to act as Rakes at the option of the Driver, by a Lever readily operated by his foot. The cutting apparatus is in front of the Machine, and therefore whether Reaping or Mowing the entire work of the Machine is under the eye of the Driver while guiding his team. The Table is so constructed as to gather the grain into a Bundle before it leaves the Table, and deposits it in a more compact form than any other Reel Rake.

The Table is attached to the Machine both in front and rear of the Driving Wheel, which enables it to pass over rough ground with much greater ease and less injury to the Table. The Grain Wheel Axle is on a line with the axle of the drive wheel, which enables it to turn the corners readily.

The Rakes are driven by Gearing instead of Chains, and therefore, have a steady uniform motion, making them much less liable to breakage on uneven ground, and more regular in removing the Grain. The Gearing is very simple, strong and durable. The Boxes are all lined with

## BABBIT METAL.

The parts are all numbered, so that the repairs can be ordered by telegraph or otherwise, by simply giving the number of the part wanted. There is no side Draught in either reaping or mowing, and the Machine is so perfectly balanced that there is no pressure on the Horses' necks either when reaping or mowing. All our malleable castings, where they are subject to much strain, have been twice annealed, thereby rendering them both tough and strong. Our Johnson Rake is so constructed as to raise the Cam so far above the Grain Table that the Grain does not interfere with the machinery of the Rakes or Reels. We make the above Machines in two sizes—No. One, large size for Farmers who have a large amount to reap—No. Two, medium size for Farmers having more use for a Mower than a Reaper. With the exception of difference in size, these Machines are similar in every respect. Our No. 2 Machine supplies a want heretofore unfilled, viz.: A medium between the Jun. Mower and large combined machine, both in size and price. We shall distribute our sample machines in March among our Agents, that intending Purchasers may have an early opportunity of examining their merits, and we guarantee that all Machines shipped this season shall be equal in quality and finish to the samples exhibited by our Agents. We invite the public to withhold giving their orders until they have had an opportunity of inspecting our Machines, as we believe that they are unsurpassed by any

other machines ever yet offered on this continent. We also offer among other Machines,

Johnson's Self-Raking Reaper, improved for 1871, with two knives, smooth and sickle edge, and malleable guards.

Wood's Patent Self-Raking Reaper.

Buckeye Reaper No. 1, with Johnson's Self-Rake.

Buckeye Reaper No. 2, with Johnson's Self-Rake.

Ohio combined Hand Raking Reaper and Mower.

Cayuga Chief Jr., Mower.

Buckeye Mower No. 1.

Buckeye Mower No. 2.

Ball's Ohio Mower No. 1.

Ohio, Jr., Mower.

Taylor's Sulky Horse Rake.

Farmers' Favourite Grain Drill.

Champion Hay Tedder.

AND OUR CELEBRATED

HALL

## Thresher and Separator,

Greatly improved for 1871, with either Pitt's, Pelton, Planet, Woodbury, or Hall's 8 or 10 horse-power.

We shall also offer for the Fall trade a new Clover Thresher and Huller, very much superior to any other heretofore introduced.

A NEW AND COMPLETE

## ILLUSTRATED CATALOGUE

OF ALL OUR MACHINES

Is being Published, and will be ready for early distribution, free to all applicants.

All our Machines are warranted to give satisfaction, and purchasers will have an opportunity of testing them both in Mowing and Reaping before they will be required to finally conclude the purchase.

For further information, address

F. W. GLEN,  
PRESIDENT,  
OSHAWA, ONT.

# THE NEW YORK TRIBUNE.

1871.

Through struggle and suffering, at the cost of multi-form 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 right to 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 defence 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 laid deep 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 battlements 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 nerved 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 slavery 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, Enfranchisement; 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 Man.

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 valour 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 greatest foe to human progress, the bane of human happiness, we seek to win our countrymen in masses from the ensnaring lures of Speculation, of Traffic, and of always over-crowded Professions, to the tranquil paths of Productive Industry. We would gladly deplete our over-crowded cities, where thousands vainly jostle 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 civilized Man. Holding the Protection of Home Industry by discriminating duties on imported Wares and Fabrics essential to the rapid, beneficent diffusion of Production in all its phases and departments, and so to the instruction of our people in all the gainful 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 pre-eminently a News-paper. 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 paid for one day's momentous advices from Europe by Cable far more than our entire receipts for the issue in which those advices reached 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 of our rivals. 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 in 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, of which he cannot remain ignorant without positive and serious loss. We send THE WEEKLY TO Clubs for less than its value in dwellings 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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## Markets.

### Toronto Markets.

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

The produce market generally, in consequence of the season and political excitement of the elections, is dull, and but little is doing. The following are wholesale prices.

#### LOUR AND MEAL.

Flour—Superfine, \$5 75 to \$5 85; Spring Wheat, extra, \$6, Fancy, \$5 90 to \$6 00, Extra, \$6 40 to \$6 50; Superior Extra, \$7.

Oatmeal—\$5.75 to \$5 80.  
Cornmeal, in small lots—\$3.75 to \$4.25.  
Bran, in ton lots—\$17 to \$18.

#### GRAIN AND SEED.

Wheat—Softies, \$1 35 to \$1 40; Spring, \$1 35 to \$1 40; Spring Midge Proof, \$1 30 to \$1 35; Treadwell, \$1 30 to \$1 35.

Barley—No 1, 65c; No 2, 60c to 61c.  
Oats—53c to 54c.  
Peas—85c to 90c.  
Rye—72c. to 74c.

#### WEDS

Clover—\$5 to \$5 20.  
Timothy—\$4 50 to \$4 75.  
Alsike—\$6 to \$7.  
Flax—\$1 75 to \$2.  
Hungarian—75c.  
Millet—75c.  
Tares—\$1 25.

#### HAY AND STRAW.

Hay in good supply, at \$8 to \$13.  
Straw, scarce, at \$7 to \$9 50.

#### PROVISIONS.

Poultry—Geese, 75c to \$1 00; Turkeys, 85c to \$1 50. Chickens, per pair, 50c to 75c; Ducks, per pair, 75c to \$1; Pork—Mess, \$20 50 to \$21; Extra Prime, \$16.  
Bacon—Cumberland cut, 10c; Canada, 00c  
Hams—Salted, 10c to 11c; Smoked, 11½c to 12c.  
Lard—In tins, 12c to 12½c, in tierces, 11½c to 12c.  
Butter—18c to 19c.  
Cheese—Keweenaw's Stilton, 15c; Royal Arms, 17c  
Hops—Superior, 16c to 17c.  
Salt—Goderich, \$1 35.  
Dressed Hogs—\$7 00 to \$7 50  
Live Hogs—\$5 25 to \$5 50

#### THE CATTLE MARKET.

Beeves (live weight) \$3 50 to \$6.  
Sheep from \$3 to \$7.  
Calves from \$4 to \$10  
Lambs from \$3.50 to \$5.

#### HIDES AND SKINS.

Hides—From 7c to 8½c.  
Sheepskins—Green, \$1 to \$1 50, Dry, 30c to \$1 50  
Calfskins—10c to 12c.  
Wool—30c to 31c.

Montreal.—Flour—Extra, \$6 80 to \$6 90; Fancy, \$6.60 to \$6.70; Welland Canal Superfine, \$6.15 to \$6 20; Superfine No. 1 Canada Wheat, \$6 30 to \$6.60; No 1 Western Wheat, \$6.45 to \$6.50; No. 2 Western Wheat, \$5.00 to \$6.00; Bag Flour, \$3 to \$3.20. Wheat—Spring, \$1.40 to \$1.45. Oats—Per 32 lbs., 45c to 46c. Barley—Per 48 lbs., 60c to 70c. Butter—Dairy, \$19c to 22c, store-packed, 15c to 18c. Ashes—Pots, \$5.90 to \$5.95. Pearls, \$6.65 to \$6.75. Pork—Mess \$22 to \$27 50, Prime Mess, \$17; prime, \$16. Dressed Hogs—\$7.10 to \$8. Peas—95c to \$1.

London, Mar. 7.—Spring Wheat, \$1.35 to \$1.45. Red Fall Do. \$1 25 to \$1.35, White Do., \$1.20 to \$1 50. Barley, 55c to 68c. Peas, 80c to 85c. Oats, 48c to 49c. Corn, 75c to 80c. Rye, 65c. Clover Seed, \$4.75 to \$5. Dressed Hogs, \$7 to \$7.75.

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