

Technical and Bibliographic Notes / Notes techniques et bibliographiques

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

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

Coloured covers/  
Couverture de couleur

Coloured pages/  
Pages de couleur

Covers damaged/  
Couverture endommagée

Pages damaged/  
Pages endommagées

Covers restored and/or laminated/  
Couverture restaurée et/ou pelliculée

Pages restored and/or laminated/  
Pages restaurées et/ou pelliculées

Cover title missing/  
Le titre de couverture manque

Pages discoloured, stained or foxed/  
Pages décolorées, tachetées ou piquées

Coloured maps/  
Cartes géographiques en couleur

Pages detached/  
Pages détachées

Coloured ink (i.e. other than blue or black)/  
Encre de couleur (i.e. autre que bleue ou noire)

Showthrough/  
Transparence

Coloured plates and/or illustrations/  
Planches et/ou illustrations en couleur

Quality of print varies/  
Qualité inégale de l'impression

Bound with other material/  
Relié avec d'autres documents

Continuous pagination/  
Pagination continue

Tight binding may cause shadows or distortion along interior margin/  
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Includes index(es)/  
Comprend un (des) index

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/  
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

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

Title page of issue/  
Page de titre de la livraison

Caption of issue/  
Titre de départ de la livraison

Masthead/  
Générique (périodiques) de la livraison

Additional comments:/  
Commentaires supplémentaires:

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

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X

# THE CANADA FARMER

VOL. III. No. 7.

TORONTO, CANADA, JULY 15, 1871.

NEW SERIES.

## The Field.

### Hay Making.

In this country, owing to the hot weather that usually prevails about the time that hay-making commences, the drying of grass is an easy matter: but to make good, sweet, well-cured hay, is only accomplished by proper care and treatment. To such an extent, indeed, does the proper curing of grass affect its value as fodder, that considerable judgment needs to be expended upon this operation.

There is a time to cut grass, and if that opportunity be not seized, the hay cannot be cured as number one. There is in all grass, and more especially in clover, during their entire growth, a constant secretion of saccharine matter in their stems. As the seeds approach ripeness, this secretion decreases, and when perfectly matured, nature having obtained her object, the whole plant begins to decay. Now, it is this saccharine secretion which forms the chief fattening quality in the grasses, and more especially in clovers, and therefore our object must be to retain in the hay the maximum amount of this sugar.

It has been found by many carefully conducted experiments that grasses, when cut in their full vigour, contain nearly double the amount of nutritive matter that they possess when allowed to attain their growth and make some progress towards decay.

The grasses have attained their full vigour when they are in full flower, and then is the right and proper time to commence cutting. Indeed, with clover, it is better to cut before the flower begins to show any individual signs of decay, and thus save the whole crop when in its most vigorous state, and when most full of sap. Moreover, if some hay be lost by early cutting of the first crop, the increased after-math will give us full compensation. Fortunately, in Canada, we are seldom troubled with very "catchy" seasons at

hay-making time, and yet annually many acres of hay are almost ruined by bad management in curing.

The great advantage of having our meadows well rolled in the spring is perceived when we come to cut, for the mowing-machine should be made to cut as near the ground as possible, as one inch of the bottom of grass weighs more than two at the top. If turning be required, it should follow the cutting as early as possible, as the more rapidly the hay is cured upon both sides the more effectually will the essential juices be retained, and the less browned will be the colour.

The chief points to be ever borne in mind in curing hay, especially clover, are to preserve the hay as much as possible from all rain and dew; therefore to bring it into winrows, and if possible to cock it each night and each wet day; never to open it in the morning until the dew has entirely disappeared, and not to allow it to remain too long in the scorching heat of the sun. Clover hay is better cured when thrown into large cocks and left some time before drawing home.

We are apt to forget in this country that our hot sun apparently dries the outside of the hay long before the juices are fairly fixed in the stems.

The chief points to be considered in storing hay in the barn are: Mowing away in such a manner that it may be easily moved again. When the hay is inclined to be damp, salt sprinkled upon successive layers is very useful to correct any mustiness which might arise from heating. Indeed, it is perhaps always advantageous to sprinkle hay with coarse salt, for it seems to keep it fresh and green, imparting a cool dampness to the bulk, and certainly makes it more palatable to the stock.

In stacking hay, more care should be exercised than is usual in securing the bottom from wet. We believe that a regular stand upon some stone pillars or wooden posts would pay well; for such would not only

keep the stack perfectly dry, but would also allow of a current of fresh air passing constantly below the hay.

When hay is very damp, a ventilator is most useful. This is simply made by keeping a bag filled with chaff, or some light but bulky substance, always standing in the centre, building round this bag, and then drawing it up each time that the layers of hay rise to the mouth of the bag.

This plan of ventilation need not, however, be resorted to unless the hay be very damp, for a moderate sweating of the hay renders it far more palatable to the cattle.

The grand principles of a well built stack are that the centre be all the time kept higher than the sides, and that the whole be kept well trodden down.

### Beet Root and Beet Root Sugar.

NO. XIX.

#### CARBONATION.

When the juice has been boiled with lime, and thus defecated, the scum removed from the surface, and the clear drawn off from the dregs, or, what is better, the whole juice after being scummed is filtered, it is (although clear and bright) very caustic, and tastes very badly from the presence of caustic lime in it. This lime must be rendered harmless, and then removed; and the best way of doing this is by rearing to the lime carbonic acid, which was the element driven off by the fire at the time the stone was made into lime, and the absence of which makes it caustic. As soon as the caustic lime comes again into contact with carbonic acid fumes, it attracts the carbonic acid and unites with it, and again becomes (although in a soft state) limestone, or chalk, or whatever the lime was made from, quite inert and tasteless, and with no more power in it than so much powdered stone. This is the effect which is produced when the fumes of burning charcoal, or from clear burning hard coal, or from any other substance which contains carbonic acid, are blown into it. The plan of

doing this has been before described. The carbonic acid fumes are received into a bellows, and blown into the filtered juice; and the effect, after it has been done long enough, is to throw down a quantity of white sediment into the juice, and to render the juice free from the caustic burning taste of the lime. The first sediment which was taken out by the filter, or by straining or settlement, is also blown into in the same manner, and a quantity of sweet syrup is set free from it, and is then added to the other juice.

Where the sugar is intended to be refined, the clear juice is then boiled and pumped on to a filter of bone black, or rather bone charcoal, which is in pieces about the size of grains of wheat. This filter is about twelve feet deep, so that the juice has to pass through twelve feet of bone charcoal, and by the time it gets through it is rendered colourless and clear, and loses all impurities which can be removed without the usual chemical arts of the refiner. In the case of the farmer it is useless to recommend so difficult a course. If bone charcoal can be had, a filter should be made; but if it cannot be had, ordinary well burned wool charcoal will have an excellent effect in clearing and purifying the syrup; it must, however, be kept from floating in the syrup. After these operations the syrup is boiled down until it is as thick as maple sugar, when it is fit to sugar off. It is then put by in a warm place, and if all has been well done it will crystallize, and the molasses can be strained off from the sugar, or the whole syrup can be kept as it is, and used for family purposes, or sold to the refiner.

The only thing I recommend the farmer to do is to reduce the beet juice by the foregoing means into a clear thick syrup. This will keep any length of time. If it crystallizes, the sugar can be removed from the molasses, and purified by sprinkling with a little strong syrup of good sugar and water. Very little is required, only just enough to moisten the outside of the grains of sugar, and thus set them free themselves from the molasses which will drip off. The grains of sugar do not dissolve when moistened with syrup of sugar.

The syrup of beet juice burns very easily, much more so than maple sap, and therefore every precaution must be taken against its becoming brown and burned; but common sense and a little experience will soon show all this.

Beet root syrup can be made quite palatable by the following means: Take any portion of it that you want to use as it is, without crystallizing into sugar, and add to it some water slightly soured with sulphuric acid; boil it for half an hour; then add powdered limestone or chalk, until the sulphuric acid is quite neutralized. This can be ascertained by trials with strips of "test paper," (paper coloured blue by litmus.) You can get it at the chemist's. Continue to add limestone or

chalk until the liquor no longer turns the paper red. When it remains blue, the acid is killed, and has united with the limestone or chalk, and formed sulphate of lime, or plaster such as is used on land, only in the shape of fine mud. This is strained and filtered out, and the syrup will be found to have lost nearly all of its earthy beety taste. The sulphuric acid becomes quite harmless when killed with the limestone or chalk; or you may use, instead of limestone and chalk, the carbonate of lime which is thrown down by the carbonation process; but it must be well washed, so as to be tasteless before it is used.

The writer has tried all the processes, as he has gone on with these papers, and for the purpose of showing that what he did could be done by any one, he has made use of the most primitive machinery and means. The grater used was a sheet of galvanized iron, punched full of holes about the eighth of an inch in diameter. This was nailed round two wooden circles of board, (with the roughness outside, of course.) This formed a circular grater, which was turned by means of a wooden axle and crank handle; and it is astonishing how much work that thing will do. It may be made large or small, with one handle, or with one at each end, worked by one or two men. The beet roots may be applied to this in any convenient manner. This grates up the roots into fine mash, which is wrapped up in coarse linen canvas, a little at a time, and put under an ordinary screw press. The juice comes away clear through the canvas, and the screw need not be overstrained. The parcels of grated root will of course be made up as to size to suit the press. Catch the resulting juice in a vessel, until you have done all you want for the time; then take the squeezed cake, put it into water enough to cover it, which water must be a little hotter than you can bear your hands in, and let it soak for two hours; then draw off the water, and add to it the juice; put more hot water; let it soak an hour, then draw it off, and add it to the juice, and you have all the goodness out of the root. If you have plenty of roots, don't trouble with the water, but give the pressed cake at once to the cows.

Get the juice as soon as possible into the defecating kettle, and proceed as directed with the lime, skimming and filtering; evaporate down to the thickness of thin molasses; then get the skin bags or parchment paper compartments, and take out the salts by the "osmose process"; then filter through bone charcoal, and boil down into syrup, which is thick enough to crystallize, and either purify it, as before described, with sulphuric acid and chalk, or crystallize.

The writer has succeeded with all this, and made an excellent syrup; and this is as far as he recommends the farmer to go. The refiner should do the rest. Now, there is no difficulty in all this; but very little more

than with maplesugar, and not so much as with cheese and butter when they are made of the best quality. The ordinary sugar kettles will answer, though not so well as flat pans made on scientific principles. The simple grater before described will answer, though not so well as a more elaborate machine. Flannel and linen bags will answer for the filters, though not so well as the more scientific means used by the refiners. Lime any one can get and use. After the manufacture of syrup once becomes an established fact, the producer will not be expected to take out the potash and salts by the "osmose" or any other process; these substances to the manufacturer bring almost as much profit as the sugar itself.

Grow the root; produce the coarse rough syrup in the best manner, and there will be any amount of profitable demand for it.

In closing these papers for the present, the writer cannot in candour refrain from making the following observations, and offering the following advice:

First, with regard to the "suerate of lime" process, the writer has made probably fifty trials of this process, with beets of various varieties, and grown in several parts of the Province. In some of the trials he has succeeded admirably, and in others failed. There seems to be no settled cause for either success or failure. Doubtless the soil in which the beets are grown has much to do with it, as it is known that some soils produce a far larger proportion of the salts in the root, which are inimical to the manufacture, than other soils.

The authorities give so many and such different instructions on the subject, that it is clear to the writer that the process is one of those difficult things which no two people describe alike, and which (the quality of the root being so dependent on the quality of the soil) must be learned entirely by experience for each separate locality.

The fact, however, is absolute that strong syrup and lime, when stirred together under favourable circumstances, will unite. The sugar and lime will become one substance, which, when well made, is insoluble in water of certain temperatures, and which may then be washed and cleansed, and entirely freed from impurities, leaving the absolutely pure sugar in the lime; then the cleansed lime mixture, being carbonated, or when treated with sulphuric acid, gives up a pure colourless syrup, fit at once for the vacuum pan, and the conversion into white sugar by evaporation and crystallization; but the process is a difficult one, and depends in a great measure on local circumstances, which can only be mastered by steady, numerous trials, and continued experiments; it is, in short, fitter for the chemist than the farmer. If it could be done so as to be certain of success, the sugar in a pure state could be taken from the raw beet juice, all the impurities be got rid of, and the manufacture mastered; but

the difficulties are great, too great, it is feared, for any but purely chemical minds. And although the writer contends that there are as many chemical minds amongst farmers as amongst any other class, yet it is certain they are a scarce commodity in any and every class.

The writer's advice to the farmer who goes into the manufacture of syrup from beets is, never mind the crystallized sugar; syrup will keep as well as sugar. Turn your attention to the quality of beet which your own farm produces, and endeavour to get rid of the earthy beety taste of the syrup, and you will have a "sweet" that is wholesome and useful, and as good as the best sugar house molasses, or the old-fashioned black treacle. The old Tunker families around Markham and Whitechurch, and doubtless in other German settlements, make this "sweet," and make it well; but they are very reserved, and will not impart the information to those whom they style "the Gentiles." The fact, however, that such sweets are made and used in Canada, remains, and there is quite enterprise enough amongst our farmers to find out the solution of the problem, as suited to each distinct kind of soil.

When you have plenty of syrup on hand, try every means and kind of filter you can think of, and it is a great chance if you do not find something that will suit your own roots; thus, for instance, well washed powdered bricks (that is, burnt clay), has a most powerful deodorizing effect on many substances. Many kinds of pure clay have a similar effect. If you find unexpected difficulties, don't hesitate to strike out a new path for yourself. Any substance that will cause a curdling in the syrup is always a hopeful experiment. If you curdle the brown substance in the syrup, which is, or looks and smells like burnt sugar and chicory, and the other impurities, you can then filter through any good medium, and thus remove the curdled portion and impurities, whilst the clear syrup passes free. White of egg, albumen of any kind, blood—all have this effect on certain liquors; so does gelatine, such as glue and isinglass.

Do not fear ridicule from those about you. Try everything, likely or unlikely, until you find what will suit your own roots and the peculiarities of your soil, and success will crown your efforts in the end. VECTIS.

**DESTROYING BURDOCK.**—The St. Louis *Journal of Agriculture* thinks that August is the time to attack and destroy burdock. It says the old stems with burrs on them should be cut with a spade or mattock just below the surface, and piled carefully together while green. After a few days of dry weather, set fire to them, and stand by till the last burr goes to ashes. This done, the young plants that have grown from the seed this year should either be pulled up or the rows cut off below the collar, and thrown upon the manure heap.

### High Farming.

In a recent letter, Mr. Mechi maintains that the produce of the cultivated lands of the United Kingdom might, with profit to all parties, be more than doubled; and he has proved this, because, by careful cultivation of the ground farmed by him, though naturally poor and inferior, he has made it produce, not only double, but treble the average of the United Kingdom. This has been done with good profit to himself. In connection with so instructive a result and its causes, you will, perhaps, allow me to read a passage from a letter of mine, which appeared in a London journal early last year: "What is the cause of this triplicate produce upon soil inferior to the average? It is, in considerable measure, to be found in the fact that the *labour employed* costs 50s. an acre, whereas on the average of the United Kingdom it is probably only 15s. According to the Tiptree returns (Mr. Mechi says), our 44,500,000 cultivated acres, throughout the United Kingdom, would produce food of the value of £534,000,000. Our present returns are £170,000,000; increase, £364,000,000. Observe, that Mr. Mechi's was poor land. He describes it as naturally much below the average of the United Kingdom. It once looked very unpromising, very discouraging. We see what it is now! The experience of the gentlemen whom I have named has been confirmed by that of many others, who, much to their credit, have come forward and described what they have effected, not only in relation to the physical practicability of vastly increasing the product of the soil, but at the same time securing good, satisfactory profit from the operation."—*Mr. F. Fuller at the Social Science Association.*

### Soils---Sand and Gravel.

Sandy land is more easily and less expensively cultivated than any other, and although very liable to be infested by running weeds, is readily cleared of them.

The great drawback on the profits of cultivation of sandy lands is their great liability to suffer from drought. Crops are, however, upon such more easily put in and more rapidly grown and ripened, but are usually deficient both in weight of grain and in bulk and strength of straw. There is no class of land, however, which will make a quicker return of capital by suitable improvement. It was shown in the article upon clay that any substance which might have the effect of opening and disinfecting the soil, has a very salutary effect. On the other hand, upon our sandy soils, any substance which may have the contrary effect, that of condensing and giving more compactness, will be found of great benefit. Thus, the incorporation of clay, which on many farms may be done by deep ploughing, or, as an American exchange puts it, by working the lower farm, will in-

crease the consistency of and improve the staple of sand.

Gravelly soils, which are very similar to the sandy in their general properties, like the latter are formed of various degrees of quality, ranging from the extreme of barrenness to great fertility. These barren soils are usually known as *hungry land*, from their faculty of absorbing and devouring a great amount of manure without giving a corresponding increase of crop. This tendency can, however, be overcome by the admixture of other earth, and indeed generally by a generous ploughing down of clover, and as we improve the closeness and consistency of their staple so do their properties improve.

The richer kinds of this land are very valuable, and I suppose there can be found no better or more profitable farms in Canada than in those parts of Norfolk, Oxford, Brant, and Waterloo, which lie upon the gravelly surface formation.

The wheat upon these lands is peculiarly fine in quality, and as they are also especially suitable to the growth of leguminous plants, such as clover, and of turnips, they are invaluable for a course of general husbandry. They may be ploughed and worked in any season without fear of injury; can be got upon very early in the spring, and are therefore highly prized in Canada, where our seasons are so short that every day from April to November must be taken advantage of.

Let not the reader, however, think that a gravelly soil is necessarily a good one, even when naturally rich. There is no land so unprofitable and yet so deceptive as that in which clay and gravel lie in alternate strata cropping out in the sides of hills and even of hillocks. In these soils we generally find a large number of land springs, keeping the land wet until summer, and then perhaps drying out for a month or two. These springs are moreover frequently strongly impregnated with oxide of iron, which is very prejudicial to the growth of all kinds of cereals. They are very difficult to drain, and generally, owing to the close incorporation of stones and clay, almost impossible to plough after an ordinarily dry spell.

There is yet another class of stony land which is, unlike the alternate strata of clay and gravel, exceedingly fertile. In such the staple is more of clay than of sand, and is intermixed with stone of a calcareous nature. This stone, like lime itself, helps to keep the clay disintegrated, and acts mechanically, at the same time stimulating the clay and neutralizing any natural coldness which may exist, forces the staple to give forth its fertility in the shape of food to the seeking plant. It is the constant combination of this calcareous portion with decaying vegetable matter (as clover) which will keep these soils in a high state of cultivation. We are most of us conversant with the story of the old country farmer who drew all his stones off his field, and found that he had so marred

its fertility that he had to go to the expense of hauling them on again.

There is much of this in Wellington, Grey and Bruce, and these counties are rapidly assuming a most important position in the agricultural world of Canada.

### Soils -Loam.

Soil of this description seems all over the world to be considered the farmer's paradise. Upon these loamy sections Nature appears to have combined all her gifts, for this soil is composed of an intermixture of all the earths, not thrown together without discrimination, but beautifully blended.

We find loams of various colours. Upon the high lands it assumes a dark red, on gradual slopes a yellow, and upon bottoms and in valleys a black hue. The two last formations appear to be a deposit from the great and general flood, while the latter seems to be composed of the constant accumulations of the deposits of partial floods at various times.

In one place we shall find the loam resting upon stone, while in another the subsoil is clay, but it is almost invariably of sufficient depth to serve the purpose of the cultivator.

It is friable, and readily admits of thorough percolation by both air and water, retaining just sufficient of the latter to serve the uses of the growing plant, and allowing of the oozing away of all superfluous water, so that upon such lands stagnant water is almost a thing unknown. Thus it is neither subject to drought in summer nor to coldness in the spring.

We have in every township, sandy, clay and gravelly loams, being so named according as these earths severally preponderate. These lands contain in all cases a proportion of that nameless peculiar quality generally known as virgin soil or maiden, *i. e.*, unexhausted earth.

Such soil is readily worked at all times, and is applicable to each and all styles of agriculture. If allowed to become overman with weeds, they are easily extirpated; if impoverished by bad farming, it is easily and quickly ameliorated. A soil with such a character cannot but be coveted by every farmer.

We should therefore set before us a model a loam, and endeavour, whatever be the nature of our land, to bring it by a systematic course of culture as nearly to the form of loam as capital and circumstances will permit.

And yet of this soil to which we readily apply such encomiums, there is a variety of undoubted fertility and yet practically incapable of producing crops of good quality—the alluvial soils. These soils, black with vegetable and animal matter, seem to partake strongly of the nature of a hotbed. They force the crop so rapidly that it appears lux-

uriant to the eye, but in nutriment they are not equal to crops grown upon drier land.

Paradoxical as the saying may appear, these lands are too rich, and must be run out by quantity of crop at expense of quality.

C. E. W.

### The Growth of Corn.

Who is there amongst our readers that has not observed that in some plants, and even in some considerable patches of corn, there is at times a most unaccountable stoppage of growth; the plant seems suddenly to come to a stand-still, with no apparent cause for it, and then in a week or two grows away as rapidly as ever. This is accounted for by a contributor to one of our Southern exchanges in the following manner, and as he professes to speak from actual experiment, and continued observation and trial, the substance of what he says is deserving of respect and attention; and if the facts are as stated in the rapidly growing South, how much more important is it for us in Canada, which is nearly the extreme northern boundary for the growth of corn. The writer referred to says that when corn is first planted, whether deep or shallow, the primary effort of the growing plant is to throw out the future fibrous roots at the first joint above the acrospire. These are the roots intended to gather plant food for the future blade and stem, and finally the leaves of the plant; and by means of these fibres the blade and the first three leaves of the plant makes its appearance above the soil. At first these roots seem to find what they want in the soil immediately around them; and if the grain has not been sown at more than *one and a half inch* deep, the growth rapidly progresses, and without any check. If, however, the grain is deeper than that distance below the surface, the plant, when it has well shown itself, comes to a halt, and grows no more for a time. During the pause the second joint throws out a series of roots, and the first set ceases to grow; and as soon as the second set attains sufficient size, the plant again grows rapidly. It while this is the case the earth is drawn up round the stem to the depth of another inch or two, the plant ceases to grow, and after another pause a third set of roots is produced, which can be again checked by a further earthing up, until by carrying the earth up to a sufficient extent (say one foot) the plant ceases to grow altogether, and will form neither seed nor blossom; nor when the experiment is carried to the full extent, will the great lateral roots which finally nourish the ears, start forth at all, and the plant languishes and dies.

The experiments seem to have been conducted with great care and judgment. The following are extracts from the article alluded to:—

“In order to prove or test the matter more fully, I last spring instituted the experiment

to which you have alluded. The seed was taken from the same ear, and as nearly as possible from the same portion of the ear, and divided into seven equal portions, which, under the different circumstances hereafter alluded to, were planted so that there should be the least possible difference in soil and situation, and all were treated as nearly alike as the circumstances would permit.

“The different lots were planted at different depths, varying from three-quarters to four and one-half inches deep. The result was as follows: That planted three-quarters of an inch deep came through in six and one-half days; one inch deep in seven days; one and one-half inches deep in nine days; two inches deep in ten and one-half days; three inches deep in fourteen days; and less or greater depths in the same or a like proportion; that planted deepest, was nearly three weeks in coming through, and all died in two to five weeks afterwards, except one stalk, which went through the season without any show of an ear.

“By carefully watching my experiment, I noticed the same effect in the corn which was planted over *one and a half inches deep*, which was alluded to above, viz: for two weeks after it formed its first two leaves, it made no apparent growth; on investigating into the matter, I found the cause under ground. The growth had proceeded as usual until the miniature corn stalk came to form the first joint. In every case where this joint was formed under the surface of the ground, a new lot of roots were thrown out at the joint, and during their formation, which required about two weeks—the plant made no growth above the ground. As soon as these second roots were perfected, the old or original ones decayed, and the growth went on as before.

“By experiment, I found that by watching the growth of the plant, and drawing up fresh earth every time a new joint was being formed, I could check its growth until its energies seem to become exhausted, and death would ensue—leaving the dried leaves on top of a mound, a foot or more in height.”

Now, if the foregoing can be depended on, it clearly shows that what is required for the well doing of the first fibrous, and of course for the future plant, is a proper degree of accessibility to the atmospheric air. The writer does not describe the nature of the soil, and in this doubtless great differences would arise. Most likely the soil on which the foregoing experiments were tried was a fine clay or impervious loam, and in that case the air would not find access to the roots as easily as in a sandy loam or a very pervious soil. My individual observations have been made on a light porous sand, and therefore no doubt I have been able to keep the roots in full action at a greater depth than was done in the foregoing experiments. The course I have been obliged to adopt has been to plant the corn in a depression; let it grow in that

position, and then as it progressed to a height which was likely to be affected by the wind, I have gradually increased the depth of soil about the roots, until the great roots which are thrown out about the time the corn tassels are out were quite under the ground, and sufficient support had been obtained to prevent the corn blowing down or about. In doing this, however, there was no hurry. The first roots had plenty of time to extend beyond the depression, and consequently the effect would be to expose them to the action of the air rather than to bury them too deep.

The same facts reasoned out seem to account for the benefit which always accrues to Indian corn from repeated cultivation; the fibrous roots are more or less broken off and destroyed, but they soon recuperate, and spread out to a greater breadth, many no doubt getting nearer and nearer the surface, supplying the wants of the plant from the air, whilst others seek the manure and other elements of growth in the freshly moved soil. We all know when a fibrous root is broken off it throws out a little bunch of root branches, and as the "spongioles" or mouths are at the end of the roots, the greater the number of those mouths the more nourishment is assimilated, and the quicker the growth goes on. The fact has long been established that cultivation and moving the soil for corn is a necessity, and it is clear that greater benefit is derived from it than harm by the breakage of the fibrous roots. In what other way can the benefit of constant cultivation be accounted for beyond the mere destruction of the weeds?

VECTIS.

### Eradicating Charlock.

For many years I had been fighting charlock before coming to Canada, and was surprised to read some extracts of a writer who said that "fallowing would kill and exterminate charlock." I am satisfied no such measures will ever entirely obliterate the evil unless the fallow is made for a succession of years, without any grain crop being sown. The charlock ripens *before* any grain crop and consequently some seeds are sure to be shed on the ground. The only way is to go over the field each year that a grain crop is sown, and hand pull every yellow flower before any seed ripens. It is not an expensive operation. I have had hundreds of acres at different times so hand pulled, and after one or two grain crops have been so weeded, there will be but a few scattering flowers seen, and they are very easily taken out. A boy who will work can pull pretty effectually three acres a day of such weeding. Of course any man with an ordinary amount of sense will so contrive his crops on the land infested by charlock as to have it hand pulled as rarely as possible; but when of necessity it is sown to wheat or grain crops, hand weeding must be done if the land is to be cleared. The reason why charlock is so difficult to

eradicate it is—that some of the plants will be bearing seed at the roots, and flowers at the very top, and the seed will grow directly it is formed sufficiently to crush between your fingers. Nothing seems to injure it. After it is once dried it will then grow under almost any circumstances. J. C.

### Pasture Land.

To show that the management of pasture land is an important item in farming, any sceptic need only try the following experiment:

Protect a piece of old grass land, say six feet square, from the action of cattle's feet or grazing; divide it into strips (by taking off each alternate strip of turf), into pieces twelve inches wide; then shovel out each intermediate space to the depth of say four inches, removing all surface soil. You will now be in a position to see proved the extraordinary growth of grass sod when not pastured or disturbed. After the lapse of twelve months, examine the strips of grass and the intervening spaces. If the land is good and the sod old, there will be an immense increase of the grass strip, and a proportionate decrease of the interval. The second year it will have completely closed in; but to show the amount of the growth of sod, reduce (by paring the sides away) the grass strips to their old width of one foot, shovelling out the overgrowth as formerly. You will find that you have almost one-half of absolute increased sod, with earth attached, rich, and apparently fertile, and a very large quantity of it. If you are sceptical still, do the same every year, and place the turf parings in a heap close by. You will shortly see a large heap of the richest sod manure, and not at all corresponding with the subsoil from which you feel certain the sod and adhering earth have been taken. Now, if this test is applied to sandy land, and where the subsoil is poor and the surface rich (but the subsoil is of a different colour), the proof will be much more apparent. The parings of the turf edges will be of the same dark rich character and colour that the rest of the turf is, and will in no way resemble the poor light-coloured subsoil.

I have tried this experiment for many years, again and again, until I am quite satisfied of the effect of grass sod being of a most enriching character. But bear in mind that to have the full increasing advantages of the growth and accompanying fertility and restoration, the land must not be pastured and eaten down to the roots of the grass, but must simply be so kept down by mowing or pasture that there is always a tough, heavy rug of sod under your foot when you stamp on it, and not, as is usual in three cases out of four in pasture land, a few grass roots here and there, with intervening patches of bare earth. The sod must have been allowed to form thick and strong, and to entirely cover the earth with a thorough protecting mass of

defence. Under these circumstances, pasture land may be made to recuperate entirely its failing powers. So much and so great are the restoring powers of Nature when allowed rest to replenish man's waste. C.

### Potatoes—New Varieties.

To the Editor.

Sir,—I have just received from D. G. M. Paterson, Dundee, Scotland, one of their cattle potatoes called "Bovina." Mr. Paterson tells me that, with extra culture, 40 tons have been grown to the acre.

The one received weighed 1½ lbs. It will take two years to become acclimated, and until then I shall not attempt to speak of its merits.

I have also received from Ohio a potato said to be "bug proof." It is a seedling grown by W. K. Young, of Wisconsin; is called "White Rose;" in shape it resembles the "Early Rose," though the skin is white, and it is not so large a potato. It is said to be of excellent table quality, and a great cropper, yielding at the rate of 600 bushels to the acre.

J. H. THOMAS.

### Talk with Farmers.

#### MAPLE SUGAR MAKING.

The following little essay on maple sugar may not be of much interest to some of our backwoods friends, but as all are not familiar with the sugar bush, it is given for the benefit of the uninitiated. The farmer here referred to was a Lower Canadian, well versed in all matters that savour of "home production," rather than from the store.

"What sort of sugar season have you had near Penetanguishene?"

"Oh, fine; there has been a great deal of sugar made?"

"Do you work at it yourself?"

"Yes, and that is why I want to get the sugar bush. The land is bad; it is so stony that it cannot be ploughed, and there are good maples on it, and it will suit well for sugar making."

"How do you make the sugar?"

"In the spring, as soon as the sap will run, we collect the sap by tapping the trees with the axe, and setting troughs, which we make out of basswood, to catch the sap, we also make buckets for the same purpose. We then rig our camp and kettles, and having got our wood together, and the shanty fixed, we get the team and go round to the trees and collect the sap, which is brought to the camp, and we then fill all the kettles. The sap is carefully strained through woollen cloths, and soon boils. We keep the fire down as soon as the sap boils, and as it boils away we fill up the kettles until the syrup gets pretty strong. We then put all the contents of the kettles into one, to come

first into sugar, and fill the others with fresh sap. The one with the syrup is kept well off the fire; the others are made to boil as fast as they can, so that they do not boil over."

"How do you prevent the sap from burning and browning in the kettles?"

"We take care to keep them pretty full, and then the fire does not make the sides of the kettles too hot; it does not burn or brown easily."

"Does it not boil over when it gets thick?"

"Oh, yes, it would; but we take care of that. Some hang up a bunch of twigs or brush over the kettle, with the points of the brush cut off square, and which go just inside the kettle. As soon as the sap boils up the twigs break the bubbles, and it stops the boil."

"Is there any other way?"

"Yes; some take a piece of pork, and hang it by a string just so that when the bubbles rise they shall touch the pork; and as soon as they do this they break and go down, owing to the fat. Others put a little bit of butter in the kettles, and that keeps down the bubbles; but both these plans make the sugar taste a little, and for that reason the twigs are best."

"Do you ever use white of eggs, or anything else, to clear the sap?"

"Some do; but if the sap is kept clean and free from dust and other things, there is no need of anything of the kind. Nothing makes the sugar so good as the pure, clean sap."

"How do you know when it is done?"

"We judge it by taking a little between the finger and thumb. When it is fit, you can feel it, and it sticks in a particular manner. It may then be poured out into moulds and it will become solid, and can be stirred into loose sugar."

"What is the best part of the season, and in which you make the best sugar?"

"The beginning and middle of the season are best. Towards the end we make the sap mostly into molasses, as it does not 'sugar' so well."

"What kind of 'sugar work' do you like best?"

"I like the kettles set in an arch best, the sap kettle being the one over the fire, and the sugaring-off kettle farthest off. I always used my potash kettle arch for this purpose, and make excellent sugar in that way."

"How many kettles make a complete work?"

"I like four kettles, and we can then boil down about fifty bushels of sap a day."

"The idea of 'a bushel of sap' was new to me, so I asked for explanation as to how the bushel measure came to be applied to liquids. 'You see' (the answer was) 'we make our pails to hold half a bushel each, and so we keep count.'"

"But your pails," I replied, "only hold two gallons each." (I had the common patent pail in mind, but that did not suit Lower Canadian ideas.)

"No," he said, "we make our pails to hold four gallons each, that is half a bushel."

"How do you collect the sap?"

"We use a sleigh with a barrel, and the horses."

"Don't you use cattle?"

"No; not much. It is dangerous for the cattle to get at the sap, which they will do if they can, and drink till they burst themselves. They will also get at the molasses, too, if they can, and a very little molasses will kill an ox."

"Well, but won't the horses drink the sap?"

"Yes, and they are very fond of it, but won't take enough to hurt them. They will always take a little drink every time they come to a trough, if they can; it does them good, and makes the winter coat all come off at once, and leaves them very sleek, with beautiful coats."

"How much sugar could you make in a season?"

"The last season I worked at it I made a thousand pounds weight; but it was very hard on the horses, as the trees were so wide apart, and I had so far to go, and I will never try them so hard again. They were overdone, and were injured for their spring work."

"Is your sugar always alike?"

"Yes, I always make it good."

The fact is that our Canadian farmers, with their usual improvidence, have so cut down our beautiful groves of maple that a good sugar bush is now a rarity. Maple always grows on the best land, and makes the best firewood; so that what would be both a valuable source of income, and also of domestic economy, is sacrificed for the present need. Maples carefully tapped and properly taken care of will last for generations, and yield sugar richer every year; but they have been ruthlessly slaughtered in every direction, and the consequence is that a good sugar bush is a great rarity. Maples are now being planted in many places, and, as they grow tolerably fast, and afford a beautiful shade, while they neither throw up suckers, nor are in any other way a nuisance, we may yet hope to see these trees regularly planted round our fields and homesteads, and by the roadside. In soil that suits them the result would be shelter for the fields in winter, and the snow kept on the wheat, and thus winter-killing avoided, and in the summer good shade for our cattle, and for ourselves a picturesque beauty added to the landscape, which none begin to appreciate until after they have denuded the land of all trees, and have felt the inevitable effect of exposure in winter, want of shade in summer, and the drought which always attends the removal of forest trees from the soil. Many places in Spain are now uninhabitable

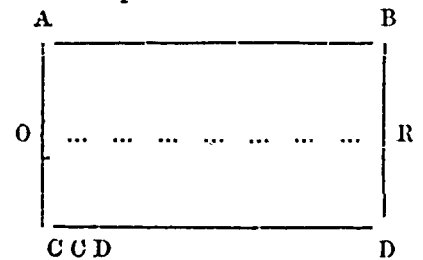
by drought for want of timber, which formerly were well watered tracts.

VECTIS.

### Drilling for Turnips.

The other day we were drilling up land for turnips, and our neighbour was doing likewise in an adjoining field. Now, we drilled twice as much as he in the same time, and made as good work, both using a single mould board plough. Our plan (and although it applies peculiarly to sandy lands, we have used it with success upon well prepared clay lands,) is to make one drill with every passage of the plough. Our neighbour, who is somewhat like the "Deacon" in those excellent papers "Walks and Talks," that appear in the *American Agriculturist*, and who takes a very great deal of persuasion before he will leave the old groove, was drilling in the old fashioned way, *throwing to*, or taking a double stroke of the plough to make every drill.

Now, perhaps some of our readers would like to try the one stroke plan; we will endeavour to explain it.



A. B. C. D. is a piece taken from one side of the ground, two sides being parallel.

Mark out very carefully the line O. R. with marking stakes exactly equi-distant at all points from C. D., the side of the field. Commencing at O., strike out a furrow to R., and then hawing round, come back in the same furrow. These should be a good depth, in fact to the bottom of the mellowed seed bed. Now haw again, keeping the near side horse in the furrow, and cut your next furrow at just the edge of the first half ridge. Continue to haw round each time, cutting a new ridge from close to the former one. By cutting close to the old ridge, we undermine it as it were, and the loose earth falling over, gives us a nicely shaped drill.

The advantages of this plan are that each stroke of the plough makes a drill; that one horse never leaves the furrow, (except coming back in the first furrow, when it is better for the team to straddle); that if we have no better plough, good drills may be set up in this way, even with a short mould board; that the ordinary double tree is used, and that neither the clevis or the plough bridle need be shifted from the time the first furrow of the field is struck.

**BET ROOT FACTORY.**—W. W. P.—The only large Beet Sugar Factory in England is at Lavenham, Suffolk, James Duncan proprietor. The great beet root distillery owned by Robert Campbell is at Buscot Park in Berkshire.

### Planting Sugar Beet.

Much controversy has existed with respect to the best mode of planting sugar beet seed. Some argue that the "gaps" produced in their rows were caused by not putting the seed deep enough; others that they are caused by being placed too deep. My own experiments show undoubtedly that when planted deeper than one inch, or over half an inch, great delay is experienced in the plants getting through the earth, and afterwards they never seem to do as well, but appear weak and injured by the resistance afforded in having to force their way to the surface. Some weeks since I planted some sugar beet seed, and two holes in a carefully tested parcel of land appropriated for the trial were deeper than two inches. In these the seed never came up at all, it being impossible for them to force their way out of the earth. Others that were deeper than one inch came up irregularly, and looked weak. I had about a teaspoonful of seed remaining when all the piece was planted, and to get rid of it I threw it against a board fence, beside which the land had been well prepared for a crop. I was quite pleased to find on examination afterwards that these seeds grew better, and the plants are finer, than those planted deeper in the earth, although the weather has been very hot and dry, there having been only two slight showers of rain in nearly three weeks. I am thus led to believe that if the seeds are put more than half an inch deep, vegetation will be retarded, and if more than two inches deep, the crop will be injured by "gaps" in the rows and weakly grown plants. C.

### Burning Stumps.

Hot, dry weather is the time for burning out hardwood stumps. Do not, however, attempt to fire a stump until it is sufficiently rotten to ensure its catching well, and be sure before putting fire to it that it is dry enough to burn completely out, "root and branch." If the stump is only charred it will last much longer, and almost without further decay.

I have always followed this course, and carefully abstained from firing stumps until the above conditions were certain to be fulfilled. When either were wanting, the stumps were left untouched. So important have I found the attention to these rules to be that I could now burn out the stumps from every field on my farm if it was not that those remaining are altogether in pasture land, and there being therefore no immediate benefit to be derived from burning them out. Every year adds to their decay, and more certain and easy destruction. All those fields that have been burnt out are so entirely free and cleared of stumps that a mowing machine could be run over every foot of them. There are no roots whatever, all having been burnt completely out the first time of firing. Some of my neighbours, who would not listen

to reason, have persistently attempted to fire at odd hours a stump here and there, generally to afford light for their pipes, never attending to its burning entirely out, or "chinking up" any loose roots to feed the fire; and as these attempts were made at any odd interval, it followed that the stumps were sometimes wet, and often not rotten enough to be consumed; and to this day they are tearing up old roots, and projecting pieces of burnt stumps disfigure the field. This course is manifestly bad policy, and causes much annoyance and waste of time, and then the job at last is not well done.

I have tried, as much as possible, to have each field remain in pasture till about the seventh, eighth, or ninth year after chopping. The fifth and sixth years will see a great many of the smaller stumps quite rotten; and when they will come out without cattle jerking them, then I always carry them to some old water elm, sprouting bass, birch, hemlock, or the like, so as to be continually consuming them, experience having taught me that these particular stumps are very difficult to burn at any time, rotten or sound, old or new. They decidedly object to be set fire to, or be quietly and easily consumed like beech and maple stumps.

After land is about eight or nine years cleared, you may make a business of attacking hardwood stumps of any size. About that time, many of about ten and twelve inches in diameter will shake when pushed with the foot or hand. A practised man readily detects those that are loose enough. The first to the fifteenth of April is the best time to stump land. The soil is soft and spongy, and a stump that is immovable in June will readily jerk out in April. Make up your mind beforehand where you are going to summer fallow, and let an active team and man go over the field in April, and jerk out all the stumps that are loose; just upset them, and allow them to lie where they fall, that is, if they can be readily carried; if too large, the cattle must haul them to some old incombustible monarch of the forest, and by piling them up around him, his death and destruction are secured. When the dry time comes, attend thoroughly to the fires; chunk up with bits of outsides of stumps and roots all fires that are languishing; and if well and carefully looked after, two weeks' time of a man and team will burn 25 acres all clear out. C.

**DRAINING WITH CEDAR.**—Mr. N. Hamacher, of Osborne, sends us the following brief notice of his success in draining with wood: "The timber used for the drain is cedar, which is very plenty in this section of the country, and can be bought for \$9 per 1,000 feet. For an ordinary leading drain, lumber 10 inches by 1½ inches is sufficient. Set your lumber in; edge up one piece on each side; cover with cedar slabs; cut them the breadth of the drain; lay them across on side pieces; then you will have a drain next to tile."

### Sanford Corn.

Perhaps some of your numerous readers would like to hear from one who has tried the Sanford Corn, and therefore I will give you my experience, which is as follows:

The seed was ordered from Long Island, N. Y., and cost me, for one bushel shelled corn, including express charges, \$8 70. This I planted on sod ground, without manure. The crop was not hoed, but received only ordinary cultivation, till too large to be worked amongst. From this I harvested from the first acre husked, one hundred and fifty-five bushels of ears of corn, by actual and fair measurement. The next acre, one hundred and forty-one bushels. I had some white Dent, and also some eight-rowed red Blaze, in the same lot. The ground and the cultivation were about equal; but from the best of these latter kinds I got one hundred and ten bushels to the acre.

The Sanford corn, I find, yields two bushels of shelled from three (measured) bushels of ears. So I am confident that I had over one hundred bushels of shelled corn from my best acre.

Where fodder is an object, the Sanford corn must be popular, as it produces nearly double the amount of eatable fodder that the Dent corn does. The stalks are much smaller, besides it suckers somewhat, making the best of feed when properly cured.

If any of your readers can show a better record, cultivation and all considered, I want to get some of their seed.—*Cor. in Western Rural.*

### A Visit to a Well Managed Farm.

#### NO. I.

The hurry of spring work being over, I accepted an invitation to spend a day or two with a friend, who is noted in his neighbourhood for being a successful farmer, very well off, and especially for having a "place for everything, and everything in its place." As his farm was very large, and stock good, though not full blood, and as he is well known to read a great deal, and where practicable, to carry out such new hints as he thus receives, I anticipated some pleasure and profit from my visit. The farm is situated in one of the best grain and grass districts west of Toronto, and from the beginning has always grown heavy crops.

This beginning commenced nearly forty years ago, and affords a signal instance of a Highland Scotch emigrant who had money when he arrived here, and who took care of it afterwards. With characteristic caution, our friend related to me that "he didna know if he should just relish farming in Canada or no, so he wad just lend out his money in the meantime, and buy his land on credit as a poor man." "Ye see," he said, "the folk will na know I have any money if I diuna



tell them;" so he took the precaution to loan out the few thousand dollars he had before he went on the farm, his wife retaining but a moderate sum, and no one but himself and she knew how much she had or where it was placed. He had been told that if the people knew he had money they would all want cash from him for what he purchased; whereas if his credit was not impaired, and he had no money, he could buy all he wanted on long time and without any money down. And this suited our Scotch friend much better than paying away all his ready money.

The land was soon located, as in those days it was not so hard to find a quantity of well timbered wild land as it is now, and the price was reasonable.

#### THE BEGINNING.

These early struggles are sometimes amusing, and often instructive; and as I was on the best of terms with my host, and as he was as fond of talking as I was of listening, I soon had him in full swing.

"When I look around on the homestead," he began, after casting his eyes over his belongings with something of the air of a monarch of all he surveys, "I feel I have much to be thankful for," and raising his bonnet with a devout air, "I trust I am thankful. I left Scotland with a wife and four children—two boys of 10 and 12, and two girls of 9 and 13 years of age. Since that time four more have been born to us, two of each kind. Good children are the girls, and obedient and industrious are the boys, as I could desire. Ye see, I early came to the understanding with them that I was to be 'maister' and their mother mistress, and if our love for the family would na' do better for them than any other body's money, I thought it would be strange. To effect this I was well aware that something substantial was absolutely requisite and necessary for the future. Boys will grow up, and must be provided for if they are to be kept at home on the farm in Canada, so I took 'heart of grace,' and went again to Toronto, and within three months after I was settled on the old farm of 200 acres I had agreed for the purchase of four hundred more at the same price, with the one condition, namely, that as I paid no money down, (you will remember I was a poor man), I should clear ten acres on each lot each year, and pay the taxes and the interest if I could; if not, the interest was to accumulate until I could pay it. The clearing was looked on as abundant security for payment for the land. The land was as you see, so situated that I could clear the ten acres on each lot, and having only the concession road between the lots, I could still have all my clearing in one block, and immediately around the homestead. This restriction also suited me as well as any other would have done, as I felt that after a few years my eldest and second boy would begin fully to realize that he had

a farm in future, and that his farm had to be paid for out of the general fund of labour. I now fully realized the value of my prudence in 'not having any money.' I went all through the country, and by showing my agreement for 600 acres of the best land, I readily bought all I wanted from those who had it to sell, and you may generally trust a Scotchman for not paying more than the things were worth. If one man would not sell another would; a high price, or more than the article was worth, I would not pay; and although I seldom or never paid cash, I never paid more than I ought, for I reasoned thus: Some person has more of the particular article I required than he expressly wants, and he also wants money at some future time, and eighteen months' credit will not therefore hurt him, and will greatly benefit me. After I had thus bought all I wanted, I hired all the men I could get, and set on clearing at a furious rate. Here again I found no difficulty. I agreed to pay as much as they required to get clothes, and very little did for that, and the balance I was to pay when the crop came off. Now, you smile, but I tell you it is so, and no one was the wiser all the while as to the money. If my crops proved a failure, why my money must go to meet all demands; but if my crops proved a success, and I was sanguine they would if well put in, they would pay my dues and demands, and I would just go on the same gate again for another year."

C.

#### Cabbage as a Field Crop.

Farmers in all sections are expecting a shortness of fodder for the ensuing winter. We know of no crop that will yield a greater amount of food to the acre of the best quality than the cabbage. The work of setting out appals many farmers, but it need not. There is time enough before haying or the middle of July. We should take advantage of rainy weather to set out our plants. The land should be rich and thoroughly cultivated. The plants should be set in rows, two-and-a-half feet one way, and two the other. The plants are then dibbled and puddled. It is a good plan to make a mixture of clay and dung, saturated with the drainings from the stable, into which to dip the roots before planting.

Take the dibble in the right hand; let a boy carry the bunch of plants, and separating a single plant, hand to the dibbler, who makes a hole, which is filled with water by another boy carrying a watering can; the plant is placed in the hole, and the dibble again driven into the soil close to the whole, and the soil pressed against the root of the plant.

In placing a cabbage plant the hole should be made deep, and the plant lowered as far as possible, and then slightly drawn up before pressing into position. The sides of the hole catch the small fibres that are at-

tached to the tap root, and thus gives them a slightly downward turn, which is their natural position. A smart man will thus plant from four to five thousand in a day.

In the fall, when pastures begin to fail, cabbages make an excellent feed, and are a good preparation for cattle intended to be put up to stall.

Let the soft heads be then pulled and fed and leave the firm ones for winter keep.

The method of keeping is very simple; place them on a dry spot, head down, and cover with straw and earth, leaving the root and part of the stalk exposed.

In winter they are much relished as a change upon turnips by fattening cattle, are greedily eaten by pigs, and are the very best of green food for milk cows.

C. E. W.

#### Milk Weed.

A. B. Currie, of Aldboro', wishes to know a remedy for the "milk weed," with which he is much annoyed. The "milk weed," though not as generally diffused as some others of our regular enemies, is yet a most troublesome plant when once it has obtained a fair foothold. The best plan for its eradication is that which is also applicable to thistle and to "docks." Cut it with the scythe just before going to seed. Nature has at that time given all the growth and vigour that she intends to the plant, and the weed is then in its weakest state. It is useless to cut these hardy plants when young, for such cutting has only the effect of pruning, and the new growth will be stronger than the old; but when cut just before seeding, not only is the plant very weakly, but the stem being hollow, the rain is enabled to enter, and falling to the crown, will rot the root.

We do not say that this plan is final, but the greater part of a patch will be thus killed; and if persevered in each season, the whole farm may be freed from the weed in a few years.

Where there are but a few to contend with, doubtless the best plan is to pull them up by hand, grasping the weed near the crown, and helping up the root with a knife or garden trowel, thus breaking them off as far down in the soil as possible.

CUTTING CLOVER vs. PASTURING—In considering this question, the *Mark Lane Express* takes the ground that land from which a second crop of clover has been cut and carried away, is in better condition for the growth of wheat than when the same clover is consumed upon the field on which it is grown. Indeed, we may go so far as to say that even when such clover has been allowed to stand for seed, it is not uncommon for the same result to be observable. It thinks that pasturing dwarfs the growth of the clover plant, and it does not, therefore, accumulate so much vegetable matter in the roots, as when allowed to attain full growth as before

cutting. Besides, the advantage of shade to the soil is lost. The manure left by stock in feeding off the clover, does not compensate for the loss of these advantages. If this view is correct, it follows that the best method of using clover for enriching the soil would be to let the entire growth remain on the ground, neither pasturing nor mowing it. And this, we think, is sound practice.

**HARROWING CORN.**—We see many accounts in the Western American agricultural papers of dragging corn, and the plan seems to have been approved of by many of the leading farmers on the other side. W. C. B., of LaSalle, Ill., says:—"About a week after planting, or just before the corn gets out, we go on the field with a forty tooth drag, and give it a thorough dragging; then let it alone until the corn is high enough to cultivate. The farmers here drag their ground after planting, just as much as they drag their wheat ground after sowing." Can any of our Canadian readers give information as to the benefit or safety of such treatment of corn in this latitude?

**PLASTER FOR CORN.**—A correspondent of the *Rural New Yorker* says:—"The past season I used plaster alone on one piece of corn, skipping two rows, which I harvested separate, and also two rows each side of the unplastered. This was a triangular shaped field of one acre and one-fourth. The corn on the two not plastered weighed 182 pounds; shortest rows, plastered, 224 pounds; longest rows, plastered, 274 pounds; or about 100 pounds of corn by using plaster to 73 pounds where not used. There were 150 bushels of corn on this piece.

The hay crop in North and South Norwich is said to be a failure on account of the drought. The *Woodstock Sentinel* says that pasture too is suffering; in many places it is quite brown and dried up. The quantity of milk delivered at factories is consequently falling off; and unless a good deal of rain comes soon the cheese crop in this quarter must suffer. The spring grain is becoming yellow and unhealthy in appearance on the light soil, but does not appear to suffer much yet on clay lands. The only crop that is really good is fall wheat; it looks remarkably well almost everywhere, and there is a great breadth sown."

Prof. Daniels, of the Wisconsin Agricultural College, who has charge of the experimental farm of that institution, raises the question in the *Western Farmer*, "will it pay to sow potatoes, while potato bugs are so numerous?" He says: "The beetles if left to themselves will destroy the crop, for there were never before as many of them at this season of the year. Paris green, the only successful remedy, is costly when it is applied throughout the year, it injures the potato, and on account of the arsenic it contains ought never to be put upon land. Hand picking is expensive, and will soon amount to more than the value of the crop."

## Stock Department.

### Root Pulpers.

These useful implements have not yet received sufficient attention from Canadian farmers. In England they are common, and English farmers find that it pays them well to use root pulpers. They are far closer calculators than we are, and the result of repeated experiments show that the use of a root pulper saves at least one ton of roots to each beast fattened, and the contingent advantages are even greater. The course adopted in England is to pulp the roots, whether Swedes or mangels, cut the straw and hay into chaff, mix the pulped roots and the chaffed hay and straw together, and let it stand from twelve to twenty hours. During this period the fibre of the hay and straw becomes thoroughly imbued with the juice of the roots; it becomes softened and easily masticated; it is slightly fermented; and, if mouldy, the mouldiness passes off, and it is greedily eaten by the cattle, without waste, and to the greatest possible advantage. What answers well for a fattening beast answers equally well for a lean one, and the consequence is a great saving of food and a better appreciation by the cattle of what is eaten.

It is quite possible, however, that many farmers do not know what a pulper of roots is; and although no doubt many do know, and have seen the machine, the information here given is for those who want it most.

The pulper is made in many forms and shapes, but all with one end in view, namely, to disintegrate and divide the roots into the smallest possible portions. Cutting up in pieces is not so desirable as the grating and pulping the roots down into something nearly a liquid. Anything that will answer this end will do. Those who can purchase a good pulper will of course get the best they can from the agricultural machine dealer. Those who cannot afford to purchase a good machine can make one for themselves thus:—

Take two inch well seasoned plank, (oak or hardwood will be the best), enough to cut to three feet square; cross it and fasten the plank well together by pins, nails or screws. If you use pins, they must be well wedged at both ends. If nails are used, they should be driven through and clinched; but as the machine should be turned in a kind of lathe, it would be best to begin with wooden pins well wedged at both ends, and after it is finished, nail it well from both sides. Next cut a square hole through the centre, and be careful to cut it straight. Through this hole put a square piece of wood to answer for an axle; wedge it tight and straight, and put enough substance on what will be the back to keep it so. Cut or turn out two journals, one at each end of the shaft, but at about six inches from the end. Take care and make

the shaft stand truly upright from the face of the crossed planks. Make a frame like a grindstone frame; put the double plank and axle in it, having places for the journals of the axle. First finish the journals so as to make them truly round, so that they will work smoothly in the places prepared for them; then turn round the plank, and mark off a circle at three feet in diameter—that is, one foot six from the centre of the axle. Make a good mark, so that you can saw it round; then saw it round, and cut off the corners, and turn the edge with a chisel until it is smooth; then with a rest and the same chisel turn off the face of the crossed boards until it runs truly; then, for a width of about nine inches from the edge, drive in all over it some short stubbed nails, which project about half an inch. Take care and drive them so that they keep a true face; then fix a box to hold the roots on the frame, and let the lower part be open, with as wide a space as the band of teeth, so that the roots can get to the teeth and bear up against them. Put a winch handle to each end of the shaft; fix legs to the frame until it is the right height from the ground, put in the roots, and turn away; one man at each end of the shaft, and you have as useful a root pulper as can be made; although, as a matter of course, the purchased ones will be more lasting, and run with less labour. But any hedge mechanic can make the one, and the other must be purchased and paid for with cash that cannot well be spared by many.

The principle of the pulper is that the greatest possible amount of surface of the crushed root shall come in contact with the stomach of the animal. The animal's teeth, when well used, do this in the natural way, and are all that is sufficient for the wants of nature; but the farmer wants to make a profit over and above what nature would allow in the ordinary course of affairs, and that profit he can only get with cattle by supplying them with food in such manner and quantities that they can not only support nature, but lay on a good coating of fat besides.

In the old country, "the poor man's pig" is a notable example of what can be done in this way. The poor man cannot afford to give, and seldom does give, his pig the same amount of expensive food that his employer the farmer does. The poor man supplements his grain with potatoes, boiled fresh daily; and not only boiled fresh, but most carefully bruised or crushed and strained, or, in other words, pulped. "Jenny, have you creamed them potatoes?" is the constant enquiry; or, "Jenny, the pig's potatoes have not been half creamed," is the constant observation of "Hodge," as he stands looking into the pig's sty. He sees that some of his pieces of potatoes, although small, have passed through the animal in an undigested state, and he knows that thence a loss arises. The animal stomach, either in men or brutes, does not digest and dissolve vegetable substances as it

does animal food; and consequently if the food is presented in a state other than the finest pulp, the stomach does not extract the whole of the nourishment—it only takes what there is on the surface of the lump, and not from the centre of it.

As with boiled roots, so with raw ones, every particle of the food that passes through the animal in the shape of a lump is lost and wasted.

In ruminants, such as the ox, the loss is not so great as with the horse and pig. The ruminant chews and swallows his food hastily, and when it is softened it is again brought to the mouth, and re-chewed and swallowed; the stomach each time accepting and passing on all such as is sufficiently finely divided to pass its exit orifice easily, and rejecting and returning to the mouth in the shape of "cud" all those portions which are not so finely divided, to be re-crushed by the teeth. But the modern and scientific farmer has ascertained that all this is attended with a loss of muscular power, and the use of muscular power causes a loss of his profit which is derived from the fat of the animal; and hence, with the aid of the pulper, and every other possible mechanical contrivance, he lessens the labour of the animal, presents the food to the stomach in the most finely comminuted state, and he finds his advantage in it.

As against this it may be said in Canada, that labour is so dear as to prevent all such mechanical aid being profitably used. In reply, it should be urged that to those who do their own labour, either solely or within their own families, it cannot make much difference whether the attendant looks on while the animal prepares his food, or himself attends to the preparation of it. Most farmers now have horse powers; and a pulper, whether home made or purchased, can easily be attached to the horse power, and the work is then done without personal labour. At all events, the end of all personal labour is profit, and if more profit can be made with pulpers than without, no doubt the pulpers will find their way into the hands of the farmer.

VECTIS.

### Pig Breeding and Feeding.

The same rule applies to pigs as to other farm animals—choose a good breed, especially in the male parent. Where there is a great natural tendency to fatten, follow the advice of the late Mr. Fisher Hobbs, who said, when selling a breeding sow, "Let her work hard for a living; don't feed her bountifully, or she will get fat and have no pigs, or very few." There was wisdom in this; but remember that the kind of food you give her is a most important consideration. The foetus cannot be properly formed unless the materials are of the right sort, for there must be the elements of bone, muscle, and fat—the latter alone is of little use; therefore,

avoid the fatal mistake of giving to the sow a large quantity of roots before parturition. The same mistake is often made with sheep and cows. If a sow is allowed to range at large, she does well, having access to pasture, because in a good pasture we have a great variety of plants, possessing various and valuable qualities—aromatic, condimental, and others, generally available to the juvenile formation and development, which the natural instinct of the animal teaches her to select. This may be supplemented by pollard, bran, a little meal, boiled potatoes, and a few Swedes or white turnips, but very few mangolds, especially when fresh and succulent. A moderate supply of peas, beans and barley, or soaked Indian corn, may be added; also tares, clover, and green beans with the pods on. Cabbage is very safe food. Nothing comes amiss to a sow. The great point is to take care that the food should consist of a variety, and not, as is too often the case, confined to one sort, especially roots. After parturition roots may be much more liberally given, and especially cabbage, in conjunction with other food; but as the period of parturition approaches, and especially immediately after parturition, to guard against fever, the diet should be sparing and cooling. I know some who invariably give an ounce of Epsom salts in the liquid food to the sow after parturition. After recovering from the excitement, the necessary materials for milk-making must be contained in the food. Cottagers are often successful with their sows, where they have a chance of roaming in lanes and coming home to receive a little meal, boiled potatoes, pot liquor, vegetables, &c. In cold weather, warmth and shelter are essential. Never allow a pig to bury itself in stable manure, or make holes in the floor and lie in them, for cold will strike the heated side and give him heaves or lung complaint. Young pigs, when taken from the mother, should have pollard, a little meal, and a variety of food but especially skimmed milk with fine pollard or middlings; as they grow older, peas, soaked Indian corn, &c. A few roots and green food are always acceptable. For fattening pigs nothing beats one-third pea-meal and two-thirds barley-meal, if mixed with skimmed milk so much the better. Pigs may be fattened very rapidly by steamed roots mixed with meal or boiled potatoes, the food given warm. Although bulky looking, they will not weigh so well, or eat so well, as those fattened on pea and barley meal, with or without milk. I was very successful in fattening pigs or large hogs in hot weather by placing them on sparred floors, with a pit under them. There is a natural tendency in pigs to huddle together; if placed on soft barley-straw, there is no circulation of air under them; therefore stiff reedy wheat-straw is much to be preferred. They get fever in hot weather, unless there is circulation of air around them, and plenty of water. The latticed or sparred floors have

an immense advantage in this respect. The urine all passes through and away, and they lie clean, cool, and dry, with air circulating around them. Pigs naturally deposit their solid excrement in a corner, away from their bed. When barley was 18s 6d per qr. I fattened about 400 pigs, and was always very successful in avoiding disease; they were all placed on sparred floors. In hot weather we showered occasionally upon them from the jet about 80 gallons of water per minute. After the first alarm they enjoyed it. Their skin became as clean as the back of one's hand, and they fed and prospered most satisfactorily. It pays to give a pig when he first comes from market a good scrubbing with soap and water. In winter it is necessary to put some straw upon the sparred floor, or to enclose the place so as to keep it warm, providing sufficient ventilation. Pigs pay (in manure) as well or better than most animals, but the meat market will not carry a heavy supply, for, unlike beef or mutton, it is easily over-supplied. October and the cool months are best for town markets. Fat pigs in the country sell well at, and immediately after harvest, also at hoeing time. Pigs, like other farm animals, should always have access to water, also to a lump of rock salt. Bear in mind that pigs have no wool, and if well bred very little hair, therefore they require warmth, if you desire to economise food and produce fat. As sows are very apt to overlie their young, this is easily prevented by a ledge or board, of about 8 inches wide, projecting from the wall of the pigery, 6 to 7 inches from the floor. The little pigs are safe from pressure under this ledge.

J. J. MECHE.

### Basement Stables.

Formerly it was the custom to place barns but little above the level of the ground, with the stables in one side or end, provided with small slide windows of wood for throwing out the manure, which lay under the eaves exposed to the deteriorating effects of the elements. Farmers who build at present seek to elevate the barn so as to allow of a basement or 'cellar,' as it should often be called, and many old barns are raised so as to provide a basement storey, which is in many cases formed in part by excavations from a hill-side, with cellar walls on one or more sides backed up with earth.

These basements, when properly constructed, are of great value for some purposes, but few of them can be converted into suitable stables for cattle.

When one side is walled up with stone supported with earth on the outside, there is a constant moisture on the walls which communicates dampness to the atmosphere. In winter, when the nights are long, and the power of the sun is feeble, the effect of such walls on the air is extreme, and when more than one side is furnished with stone walls the

difficulty is increased. The circulation of air is unusually defective, so that the poisonous gases generated by the breath of cattle are not carried away. These, with the foul air resulting from the damp walls, combine to produce a condition of the air that is very destructive to the health and thrift of the cattle. The air they breathe is poisoned, and consequently the blood is not oxydized. The effect of this is to paralyse in a measure every function of the body. The flesh of beef cattle in this condition is unhealthful food, and the milk of cows is exceedingly impure and is injurious. The effect of this condition of air on the skin is also very serious. Its pores are chilled and closed; the perspiration is checked, and the waste matter which, in a healthful condition of the skin, is being constantly thrown off through its pores, is retained in the circulation and goes its round to the heart, the lungs, the brain, and all the organs, to give them its poison in the place of nourishing food.

We have had frequent occasion to observe the effect on cattle of the removal from stables entirely above ground to those in basements, and in every instance the result has proved that the theory advanced above is sustained by facts. The growth and improvement in condition are impaired if not stopped. We have seen animals wear their old coat all summer until September, in consequence of being tied in a basement stable for four weeks in spring.

If basement stables are to be used for stock, they should be closed in on all sides so far as possible with boards rather than stone, with frequent windows for the admission of light and air. If the basement is on one or more sides partly below the surface of the earth, that part should be laid up in stone and pointed, and the upper part boarded. With the greatest precaution, such stables are unfit for cattle.

Basement stories which are partly under ground, are very excellent for the storage of roots and manure, and when open on the sunny side answer very well as shelter for stabled cattle while they are out for exercise.

We remember that Mr. Juxian Winn, so celebrated as a skilful feeder of sheep, states that the lot which occupies a certain loft in a shed always thrives the best. — *Vermont Farmer.*

### Quality in Pork.

We all know what a difference there is in pork. Breed has something to do in this matter, but not so much as many suppose. It is the *kind of feed* that makes kind in pork. Use milk or whey largely, and your pork is sure to be soft, flabby, and will fry away at least half. What is left is not relishable. Hence our dairy pork is our poorest pork, varying according to the amount of grain that is fed. So still-fed pork is in bad repute. Miscellaneous feed makes ordinary pork, often quite ordinary. Slop will not do; there seems to be too much water.

The grains are what is wanted to make good, *sweet* pork, pork that is solid and will fry well. Rank pork is unendurable, and yet there is much of it, and some people prefer it, like the pork from large strong hogs.

A dirty, offensive sty, is an element no doubt in producing strong or even fetid pork.

Have clean quarters, a clean animal, good ventilation, and feed grain. For drink give cold, not in any way foul, water. Corn for feed is the best, and old corn at that. Do not house too close, nor feed too sharp; look to the convenience of the hog; and fat him so that he is in good condition, not overfat, with possible diseased parts about him in consequence, the pork affected by it.

Old corn submitted to heat will yield most pork, but it is doubtful whether the quality is as good as when fed raw. So probably with all the grains.

We have had chances to note clear distinctions in the quality of pork. Where the dairy is excluded and the grains are fed, there is good solid pork; and, unless the hog is old and large, we find it to be sweet. We find it difficult to get good pork among the dairy-men, that is, pork that will not fry away too much, and is of a No. 1 keeping quality. This among all breeds, for all are kept here. We are fattening a pig for our own use, of mixed breed of Chester White and Berkshire, and we feed him old corn, ground, and give him water for drink. We expect the first quality of pork, and we shall not be disappointed. We have practised this for years, and seen it practised, and with unvarying success. The pork is always solid; cooks well in all forms; is sweet and toothsome, and more wholesome than the rank bacon. We have no difficulty in keeping our pork. — *Ex.*

### The Alderney at Home.

The following description of the mode of pasturing and milking cows in the islands from which the celebrated Alderney cattle are exported will prove interesting:—

The care of the cows and dairy devolves entirely on the female members of the family, while the farmer attends to the growing crops, or busies himself in the other duties of his little farm.

The cows are tethered with a rope passing around the base of the horns, with a chain and swivel attached, and are fastened to pegs driven in the ground; they are moved to fresh grass two or three times daily. Should they be pastured in the orchards, an additional rope passes from the halter to each fore leg, and thus tied down, they are prevented from regaling themselves with the tempting apples that load the low hanging boughs, under which they graze.

The method of milking the cows is somewhat peculiar, the milking and straining the milk being done at one operation; the milkmaid with her tin pail, linen strainer, and

sea-shell, proceeds to the pasture; seating herself beside her cow, she soon completes her arrangements; the linen strainer is securely tied over the narrow mouthed tin bucket, and placing the long shallow shell on the strainer, with vigorous hands she directs the milky streams into the shell; quickly overflowing the shallow brim, the milk passes through the strainer into the receptacle beneath. This primitive method has been in vogue for more than a century; they claim for it the merit of perfect cleanliness.

While overlooking the operation, I could understand the use of the strainer clearly enough, but the employment of the shell rather puzzled me, until the milkmaid informed me that it was to prevent the streams of milk wearing a hole in the strainer; this solved the mystery.

### Colour as an Indication of the Qualities of the Horse.

A correspondent of the *Country Gentleman*, signing himself "Veterinarian," relates the following as the result of his observation in connection with the above subject:—

In the first place, I must apparently contradict myself, for colour really has nothing to do with either good or bad qualities; instead of which, temperament has all to do with colour, or nearly so.

Now, first, as to the dark chestnut and the dark brown: so far as my observation goes, they and the blood bay are more exempt from disease than any other colour, if we except the dun, or, as it is erroneously called, the cream, which is much objected to.

Dapple or dark grays are subject to fungus excrescences, commonly called warts.

Black horses are, according to my experience, more subject to affection of the eyes than those of any other colour. They are also, as a rule, faulty in the feet; and, although pretty, are not of a vigorous, rugged constitution.

What horseman does not, of his own experience, know what the different shades of the sorrel are subject to? They are, as a rule, the most skittish of the equine family. Who, among experienced, good horsemen, does not know that of all the baulky horses he has ever had to do with, more than half, at least, were light sorrels, or sorrels of some shade? The most vicious of all horses are to be found among the sorrels.

For intelligence or general usefulness, for beauty, and indeed for all purposes for which the horse may be required, the above three colours will fill the bill. Let no person for a moment understand me to affirm that there are no good, yea, very good, horses of all and every shade of colour; but I do wish to be understood to mean this—in breeding, breed always from the best, for it costs no more in any sense.

The white horse is usually of good constitution, and docile. The spotted horse is

very hardy, though much objected to by most persons on account of its colour.

With reference to size, except our American Black Hawk, black horses are perhaps the largest in all parts of the world. Chestnuts, browns and bays are among the largest. Some grays are large, but not as a rule.

During my twenty years' professional experience, I have had several idiots (termed among the jockey fraternity dummies); of these, six were black and one a roan. I keep two thoroughbred dark chestnuts; and I allow no one to go farther in a day than I can; neither do I know of any one who can go a longer journey, in less time, than I can, and do so on all roads and in all weathers.

### How Calves are Reared at Hohenheim.

The London *Milk Journal* tells how stock is raised at Hohenheim, as follows:—

The rules laid down at this great agricultural college are, that it is best to rear calves entirely by hand, so as to have much less trouble with both the cow and the offspring; and the quality and amount of feed must be regulated daily, as follows:—

	lbs. milk.	lbs. oatmeal.	lbs. fine hay.
1st week.....	12	0	0
2nd week.....	16	0	0
3rd week.....	20	0	0
4th week.....	22	0	0
5th to 7th week.....	22	½	½
8th week.....	21	½	½
9th week.....	20	1	1
10th week.....	16	2	2
11th week.....	12	2	6
12th week.....	8	2	10
13th week.....	4	3	10

In the ninth week, the milk is first mixed with water, and a little fine oatmeal. The meal is afterward mixed with the dry fodder. After three months the milk is withheld, and then the young animals receive daily, till two and a half years old, from 20 to 22 lbs. of hay, or its equivalent. But the calves never after receive, even in summer, any dry food till they are nine months old. The average feeding is so divided that the younger portion receive less, the older more, till two and a half years, when they begin to receive the regular rations of the older cattle, including the grain fodder, as indicated above. The growth with this treatment is so remarkable, that it is only a little surpassed by the rapidly maturing short-horns.

	Heifers.	Bulls
Average weight of calves at 3 months.....	233 lbs.	333 lbs.
Average weight of calves at 6 months.....	351	472
Average weight of calves at 1 year.....	619	759
Average weight of calves at 2 years.....	1,184	1,560
Daily increase of calves.....	1.5	1.5
Daily increase in second year....	1.4	1.5

The college whose management of young stock is given above by the *Milk Journal*, was established in 1818, by King William, on the Reville estate in Hohenheim, Wurtemberg.

Like all the other similar institutions in the country, it is distinguished for its excellent management and practical results. All the agricultural schools in Germany are sustained and directed by the Government. At Hohenheim, forty courses are given during the term, comprising agricultural matters, forest matters, and kindred sciences. It has from 125 to 150 students at a time, and its graduates must now number some 2,000 or more. Prof. Hitchcock says that nowhere in Europe can there be found a better model agricultural and scientific school. It comprises a farm of 825 acres, a forest of 5,000 acres, a botanic garden; a library; geological, mineralogical and botanical collections; also collections of woods, seeds and resins from the forest, collections of comparative anatomy, wool, agricultural products, models of instruments of tillage, instruments for surveying and physical science, and a well appointed chemical laboratory. It may be called the model agricultural college of the world, and, as such, its mode of rearing young stock can not fail to be of interest to our farmers.—*Utica Herald*.

### Hair and Colour in Relation to Vigour and Fertility.

Between different portions of the animal body there are many striking relations and adaptations. The machine is hence maintained in symmetrical, harmonious working. A few bones or teeth or the stomach, examined by a competent anatomist, enables him by the laws of proportion and correlation to tell with precision the size, shape, nature, and habits of the animal to which these parts have belonged. Stags having large spreading horns, boars boasting of large, powerful tusks, have large heads and jaws, whilst the bones and muscles of the neck also gradually attain increased development. By climate, food, surroundings, in what has been aptly called by Mr. Darwin "the struggle for existence," changes of structure, of size, and even of habit, occur amongst all animals, and in these changes curious examples of correlation are noticeable.

The skin, hair, and horns have long been known to resemble each other structurally and physiologically. It is singular how constantly peculiarities, abundance or deficiency of one of these structures is accompanied by peculiarities, abundance or deficiency of others. Thus amongst sheep there are various tropical breeds which have hair like goats, and such have horns like goats. The Paraguay horses have abundance of curly hair over their bodies, and the analogues, hoof structures, are particularly strong and well developed. Well-bred horses, with fine silky hair, have small hooves. Cattle with abundance of hair have also usually plenty of horn. Between the hair and teeth there are also many marked resemblances.

In young animals the hair and teeth are developed contemporaneously. As the hair gets sparse from age, the teeth also begin to drop out. Boars with abundant bristles have big tusks. Hairless dogs, on the other hand, have small weak teeth, also often deficient likewise in number. Even in the colour of different parts of the body there are relations interesting to the breeder and to the naturalist. Markings about the heads of animals are often repeated about the tail, feet and limbs. In horses and cattle, for example, how constantly do we observe a white star or blaze on the face, accompanied by white legs and feet. Amongst Short-horns of the Duchess strain of blood, the white impressed on the forehead is very generally also reproduced on the styfles and hind fetlocks, and often amongst the hairs of the tail. A full development of good hair or wool, with its analogues of horn and hoof, are in the domestic animals indications of vigour and constitution. Horses with very fine coats are apt to be somewhat delicate. Sheep short of wool, especially about their head and belly, are notoriously weakly. Light-coloured hair is also indicative of want of vigour. Dogs of light fady colour suffer most from distemper. White chickens are said to be most liable to the gapes. Horses of dirty roan, yellow, bay, or bright chesnut colour are bad subjects for strangles or influenza, are soft, washy, and usually bad doers. Horsemen commonly remark that horses with one white foot or leg are most apt to suffer lameness or injury of the white limb. White sheep are not liked in some parts of Sicily, as they are greatly more liable than their black fellows to suffer from eating some poisonous plants which abound particularly in the Tarentino. Mr. Darwin makes analogous observations regarding the pigs in Virginia, where the roots of the *Lackmanthes tinctoria*, eaten by the white pigs, speedily cause febrile symptoms, with mortification and drooping away of the hooves; but the hardier black pigs seem with impunity to enjoy the roots which poison their white fellows. Such observations are most curious, but like so many others, such questions are not easy of explanation.

The appearance of the hair, horns, and plumage often afford some clue to the reproductive vigour of animals. Boars without hair are apt to be indifferent stock breeders; amongst the horned varieties of cattle, small, poorly-developed horns are accompanied by want of hair and mane, and by defective virile power. In poultry, the absence in the male of hackles and sickle-shaped tail feathers, as often occurs in the bright bantams, is an evidence of infertility.—*North British Agriculturist*

Mr. John R. Craig, Edmonton, has sold to John Little, Ontario, the Short-horn yearling bull Bismarck, by Ontario Duke; to A. Wanless, Toronto, Short-horn bull calf Master

Frank, by Marksman; to A. Speers, Norval, Ontario, one Berkshire pig; to Mr. McCarty, Montreal, two Berkshire sows and one Berkshire pig; to W. W. Craig, one Berkshire sow.

### Selecting, Breeding, and Care of Cattle.

A writer for the *Boston Cultivator* gives the following convictions derived from observations:—

1. Stock to be profitable must be adapted to the locality, and the particular branch of business to be pursued. Many farms in New England can not keep with profit the large shorthorn stock, however excellent they may be. For the production of milk the Jersey stock is not desirable; for the manufacture of butter the Ayrshire stock is not the best; and, for the production of either, no kind of stock is profitable if not well fed and well cared for.

2nd. It is important that in every neighbourhood there should be kept a good stock of thoroughbred cattle, such as will be adapted to the feeding capacities of that neighbourhood, and the particular branch of the business pursued, whether of milk, butter or cheese.

3rd. In every case the base (I don't know as this is the best term,) of all herds for profit should be the best of our native stock, taking into consideration endurance and adaptation to climate, &c.

4th. All stock must be kept in good condition, well housed and well and regularly fed, care being taken to give as much Indian meal as will keep the cows in good order. No cow will last long that is only fed with reference to a great flow of milk to the entire neglect of fat producing food.

5th. Variety is essential to a healthy appetite, and this is to be determined by circumstances, as to time of year, the use made of the milk, &c.

6th. It should be known that considering the economy of feed, the cow fed on oil meal, whether from cotton seed or linseed, will eat about the same quantity of hay, as though this were not fed with it; but the cows fed on corn meal eat less hay; some say pound for pound—that is, one ton of meal will save one ton of hay.

The Galt cattle fair on the 14th June, was poorly attended. The *Reporter* says there were not over 50 head of cattle on the grounds at any one time. Some good animals were offered for sale, and were readily picked up. In one case the price paid was \$5 per 100, live weight; but in general those sold were parted with at so much per head. The following are some of the sales effected:—R. Common, cow, \$40; R. Goodall, 2 cows, \$65; R. McMillan, Puslinch, cow, \$40; Jeremiah Lucan, cow, \$33; Wm. Smith, cow, at 5 cents per lb., live weight. Mr. Heron, drover, from Guelph, secured 7 cows, for which he paid \$40 each; other drovers secured small lots at about the same rate. Altogether, business at the fair was anything but brisk, neither the supply nor the demand being anything to brag about.

### Danger of Whipping Horses.

In his work on the "Education of Horses," Prof. Wagner says:—

I would caution those who train or use horses against exciting the ill will of the animal. Many think they are doing finely, and are proud of their success in horse training, by means of severe whipping, or otherwise rousing and stimulating the passions, and then, from necessity crushing the will, through which the resistance is prompted. No mistake can be greater than this; and there is nothing that so fully exhibits the ability, judgment, and skill of the real horseman, as the care and tact displayed in winning instead of repelling the action of the mind. Although it may be necessary to use the whip sometimes, it should always be applied judiciously, and great care should be taken not to rouse the passions, or excite the will to obstinacy.

The legitimate and proper use of the whip is calculated to operate upon the sense of fear almost entirely. The affections and better nature must be appealed to in training a horse, as well as in training a child. A reproof given may be intended for the good of the child, but, if only the passions are excited, the effect is depraving and injurious. This is a vital principle, and can be disregarded in the management of sensitive, courageous horses, only at the imminent risk of spoiling them. I have known many horses of naturally gentle character to be spoiled by being whipped once, and one horse that was made vicious by being struck with a whip once, while standing in his stall.

I have referred to these instances to show the danger of rough treatment, and the effect that may easily be produced by ill usage, especially with fine blood horses and those of a highly nervous temperament. Many other cases might be cited, as such are by no means uncommon. Sensitive horses should never be left after they have been excited by the whip or other means, until calmed down by rubbing or patting the head and neck, and giving apples, sugar, or something of which the animal is fond. Remember the whip must be used with great care, or it is liable to do mischief, and may cause irreparable injury.

THE LONDON HORSE SHOW.—The annual horse show, now an established institution in England, was held at the Agricultural Hall, Islington, on Saturday, May 27th, and as far as the number of entries and attendance of visitors can make a success, was by all accounts pre-eminently successful. English papers, however, at least the more discriminating among them, such as the *Mark Lane Express* and *Bell's Weekly Messenger*, find fault with the too large admixture of ordinary or inferior horses, which detracted from the quality of the display. The first prize in the class of weight carrying hunters was

awarded to J. A. Thomson, of Atherstone, for Iris; Loxley, the property of G. Van Wart, of Birmingham, obtained the second prize; and The Yankee, belonging to T. P. Neal, of Wansford, the third. The first prize and medal for thorough-bred stallions went to Lord Stamford, for Cambuscan.

BATH AND WEST OF ENGLAND SHOW.—This attractive exhibition of stock and agricultural implements was this year held at Guildford, and was well filled in all the classes. J. Davy, of North Molton, carried off the first prizes for four year old Devon bulls, and also for the best cow in calf of the same breed. In short-horns, the famous bull Lord Morpeth, the property of R. F. Soffe Harris, took the first prize. Lady Pigot took first prizes for the heifers Dame Swift and Victoria. The best Hereford bull was shown by W. Evans, of Llandlowias. There was an excellent display of sheep, and also of swine. R. G. Duckering & Son, of Northbrooke, winners last year, again took all the honours in this class. There was an unusually extensive show of agricultural implements, and an interesting trial of steam and horse-power farm implements, at work in fields adjoining the show grounds. A very large number of visitors were present, and among them the Prince of Wales.

The short-horn herd of the late Earl of Aylesford was sold by auction on the 9th of May last. There were in all 34 head, consisting of 30 cows and 4 bulls. The former brought an average of £76 7s. 7d. each, and the bulls were sold at the average price of £121 14s.—the sale of "Lord Collingham" for 300 guineas giving this high figure to the average, as the other three bulls did not realize any extra price.

It was estimated that there were 18,000 lbs of wool sold in Paris in 1870, while this year 32,000 lbs have been disposed of in that town already. The increase is owing to this year's heavy clip and the higher prices paid for wool in Paris than are given in neighbouring markets. As high as 37½ cents per lb was paid in one instance, but usual prices are about 35½ cents.

GUELPH CATTLE FAIR.—The June Cattle Fair, held on Wednesday, the 7th June, was but poorly attended. The cattle on the ground were mostly cows and working oxen. A very few fat oxen were sold at \$5 50 per 100 lbs. The cows fetched from \$25 to \$50; working oxen from \$95 to \$130 the yoke.

Mr. M. H. Cochrane reports several recent sales, among which were Compton Lord Wild Eyes, to J. B. Wilder, Esq., of Kentucky; the bull Breastplate, out of Star of the Realm, to J. W. Prewett, Winchester, Ky.; and to Edward Hes, of Springfield, Ill., the heifer Star Flower, by 11th Duke of Thorndale 5611, out of imp. Star of Braithwaite, by Baron Booth (21212).

## Veterinary Department.

### Digestive Organs of the Ox.

In the ox and most other ruminants whose food consists principally of leaves and plants, the stomachs are very complicated, and consist of a true digestive stomach, preceded by three dilatations, all the four distinct receptacles being regarded as stomachs. The first is called the rumen or paunch, and is a very large compartment, situated towards the left side, and, when full, this organ occupies about three-fourths of the whole abdominal cavity. It is the receptacle for the un-masticated food, which is returned to the mouth and re-masticated. The interior of the rumen is divided by fleshy pillars into numerous sacs, and presents a number of eminences that are termed papillae. When this organ becomes distended with gas or gorged with food, it is plainly seen rising above the level of the spine.

The second stomach is the smallest of the four, and is called the reticulum, so named from the peculiar net-like character of its lining membrane, which is drawn into numerous folds, arranged so as to form hexagonal cells. The outer or muscular coat is very powerful, and its fibres are so formed as to allow of very energetic contraction. There are two openings into this compartment, one from a canal called the oesophagean canal, and the other is in communication with the rumen.

The third compartment is situated towards the right side, is somewhat ovoid in form, and is called the omasum. It also receives the name of manifold, from the peculiar arrangement of its inner coat. The interior shows a number of folds which resemble the leaves of a book. These folds are of three sizes, and in number about one hundred. The free edges are turned downwards, and they show a number of hooked papillae, which appear of great use in acting upon the coarser portions of food, which is moistened by the secretion from these leaves.

The organ in which the true process of digestion takes place, and where the gastric juice is secreted, is called the abomasum. In it the food, after being prepared in its course through the other compartments, is changed into the elements of nutrition. In the calf, this fourth stomach is very capacious, and, when dried, forms what is familiarly known as the rennet, which is used largely by dairy-men to coagulate milk in the manufacture of cheese. The food is conveyed into the true digestive stomach by means of a canal commencing at the termination of the oesophagus, and it has been termed the oesophagean canal. From the peculiar arrangements of the various organs, the process of rumination is exceedingly complicated.

When the food is first taken into the mouth it is masticated slightly and swal-

lowed, and passes directly into the rumen; pellet after pellet is swallowed until repletion of the paunch is produced, where it remains for some time, and is being continually thrown about by the action of the muscular bands, and becomes thoroughly macerated. After rumination commences, the food is forced up the gullet into the mouth, where it is re-masticated and well mixed with the saliva. When re-swallowed, the greater portion passes through the second and third into the fourth compartment, where it is acted upon by the gastric juice and converted into chyme.

### Injuries and Diseases of the Digestive Organs of the Ox.

The tongue and mucous membrane lining the mouth occasionally become inflamed either from direct injury to the part, or from the eating of poisonous herbs or grasses common to some lands. The symptoms of this affection are a loss of power in the process of prehension, and a continual flow of saliva from the mouth; the food is quitted and thrown out; the tongue is swollen and very tender, and the animal soon loses flesh.

The above symptoms are best relieved by gently scarifying the surface of the tongue and gargling the mouth with a mild astringent, as alum water; and in some cases a mild dose of laxative medicine has a beneficial effect. Plenty of liquids should be given, and the diet confined to food that requires but little mastication. Sometimes foreign substances become lodged in the angle of the jaw, and give rise to symptoms similar to the above. Therefore, in all cases, a careful examination of the mouth is necessary.

The mouth occasionally presents a sore and ulcerated state, arising from the formation of small vesicles, the result of a deranged condition of the digestive organs proceeding from various causes. This disease is called aphtha, or thrush, and although bearing some resemblance to epizootic aphtha (or "foot and mouth disease") it is entirely different in its nature, and not of a contagious character.

The prominent symptoms are a great discharge of saliva from the mouth, the tongue and lining membrane are reddened and increased in temperature; small pustules appear on the inside of the lips and cheeks. These eruptions soon break and discharge matter, giving the mouth an ulcerated appearance. In some cases there is considerable swelling, causing the lips to be everted.

In the treatment of aphtha a gentle aperient should be given, such as four ounces of Epsom salts dissolved in a quart of water; the mouth should be gargled with alum water or some other mild astringent. In severe cases it is necessary to touch the ulcers with a mild caustic. To correct the disordered digestion, the bicarbonate of potash may be given daily in doses of one drachm.

Obstruction of the gullet, or choking, is very common in cattle, and may occur in

first effort of swallowing, or from the regurgitation of the food during rumination. The offending agent is very often a piece of turnip or potato, or even hay or straw, and the obstruction is oftener situated in the cervical than the thoracic portion of the oesophagus. The symptoms are coughing more or less, and the head and neck are protruded; there is spasmodic action of the muscles of the larynx and pharynx, and dribbling of saliva from the mouth. Accompanying the above symptoms, in many cases there is swelling of the left flank, arising from the tympanitic condition of the rumen, and causing great difficulty in breathing.

In cases of choking, a careful examination should be made by the hand of the whole extent of the gullet from the throat to the chest; and when the situation of the obstructing body can be detected from the outside, gentle manipulation with the hand may remove it. A small dose of oil also tends to lubricate the parts, and the patient in his effort to swallow will sometimes dislodge the obstruction.

When these measures fail recourse must be had to the probang, which must be cautiously introduced into the mouth and passed down the gullet until it reaches the obstructing substance, when equal and gently increasing pressure should be made, which in most cases will give instant relief. When the rumen is greatly distended, it is sometimes found advisable to puncture that organ with the trochar and canula before passing the probang.

### Infertility Amongst Cows.

Domestication, according to some authorities, is said to impair fertility, but this is a mistake. Cultivated plants are many times more prolific than their corresponding wild varieties. The hen of the wild "Gallus Bankiva," from which our many and diverse breeds of poultry spring, lays but from six to ten eggs. So small a layer is unknown amongst any of the domestic sorts. The tame goose lays from thirteen to eighteen eggs, or double the number of the wild goose, and besides, often lays a second time. Wild rabbits and sows neither breed so early, nor have so many young at a birth, as the tame varieties. In a natural state sheep have seldom more than one lamb at a birth. Amongst the wild American herds the heifers seldom have calves before they are three years old. In the West Highlands and Islands the little starved wild cattle scarcely ever calve until they are four years old. Shorthorn heifers in this country, on the other hand, often enough drop their first calf when they are little over two years old, and occasionally go on breeding a calf every year until they are fifteen or sixteen. I have had a vigorous Shorthorn matron present me with a live calf when in her nineteenth year. Domestication, of course, acts injuriously in reproduction when

animals are kept in an unnatural or artificial manner, and when they are pampered or overfed. An excessive amount of fat deposited in early life around the ovaries is a very common cause of infertility amongst the most valuable of our improved breeds of cattle and also of pigs. Want of exercise also operates injuriously somewhat in the same way as excess of nutritive food, and is especially prejudicial amongst male animals. Cooped up in small places, or secured in a narrow standing, hundreds of young cows and bulls lose muscular vigour and procreative power. Very commendable was the old plan of working bulls and cows that were doubtful breeders in the plough or at other such labour. A liberal allowance of cake and corn, and even a continuous full supply of vetches, are apt to interfere with the bull's capabilities. Many young bulls are damaged by being used before they are fit. Even a well-grown Shorthorn should not be used for service until he has reached fifteen months old; and if he can be spared for three or four months longer, his calves will be more vigorous and he will be more likely longer to retain his usefulness, and will certainly be less liable to get strained and spoilt in the symmetry of his shoulders.

Between the structure and appearance of an animal and its adaptation for breeding, there are usually marked relations. Thus a bull with a cow's head, weak loins, lack of muscular appearance, and want of mane, crest, and male development, will seldom prove a certainstock-getter. Conversely, a cow with a bull's head, coarse horns, thick, heavy neck and forehead, of little profit for the dairy, and especially if she bellows hoarsely like a bull, will certainly prove a capricious and doubtful breeder. Amongst other creatures like results are observable. It may be assumed as a tolerably general rule that when an animal acquires the characters usually peculiar to the opposite sex it will seldom breed. Thus old hens, when they cease to lay, crow and fight, and often have the tail hackle feathers which are the peculiar adornment of the male; old ducks assume the drake's plumage; on the other hand, capons or even cocks which have been long confined in a dark place, or have lost their virility, do not crow, but will sit on eggs and tend chickens almost like a hen. There is a very close relation in all the higher animals between the processes of reproduction and lactation; the secretion of milk is, of course, the natural provision for the young animal during the earlier stages of growth. In all breeds of cattle, and in all individuals where there is a well-developed milk gland, and where after calving a bountiful supply of milk is obtained, there is in the majority of cases abundant fertility. Conversely, cows with little undeveloped bags and teats like a ewe's, that even if once they have a calf are unable to rear it, are generally shy breeders. Perhaps it is well that it should be so, for there can be little profit

or advantage in propagating milk-cows that belie their name.

Like so many other good and bad qualities, fertility and infertility are notably hereditary. For this cause mainly, certain families of Shorthorns, for example, have rapidly increased and multiplied, whilst some have entirely, and others pretty nearly died out. From frequently recurring abortion, the generative organs of cows are apt to get into an abnormal condition, and it becomes difficult, often impossible, to get live calves. More frequently than is suspected, cows fail to breed owing to their retaining in the uterus the remains of an embryo that has died from accident, injury, or other such cause. In such case a bad cold, inflammation of the udder, an attack of hoven, violent over-exertion, or the like, will cause the death of the calf "in utero." Instead of being expelled it is retained, usually becomes mummified, the cow thrives well enough, but does not exhibit any periods of œstrum, and of course does not breed. Even by injections, introduction of the hand, or such means, it is difficult to get away such impediments to further breeding.

Cows that are somewhat capricious breeders are often rendered worse by their being put to the bull too soon after calving. It is always well to allow one period of œstrum to pass before attempting to have the cow again in calf. When from irritability, very hot weather, or other causes, cows come to œstrum at irregular intervals, they should not have access to the bull. For at least one day after service it is desirable to keep the cows tied up or in a yard by themselves, so that they shall not annoy themselves or their fellows. Pregnant cows jumping, as they often do upon another in œstrum, left with them in the fields, are very apt to slip calf, to have deformed calves, or to be inflicted with false presentations. Cows that have turned repeatedly from their service should be allowed to miss one or two periods of œstrum, put to the bull as œstrum of going off, and paired if possible with a young vigorous male. Cows, like mares, will sometimes breed with one bull rather than with another. They appear to take their likes and dislikes; and it is accordingly always wise if the cow appears uncertain with one bull to send her to another. Almost hopeless subjects have sometimes been got to breed when served during the same œstrum by two or more bulls. It is generally considered that cows are more certain to hold when served as late as possible in the period of œstrum.—*North British Agriculturist.*

**DISEASE AMONG HORSES IN NEW YORK.**—A disease, which has excited some alarm, has for some time prevailed among the horses in New York, affecting chiefly those employed in the street cars. By some it is considered contagious; but others attribute the disease to improper feeding.

## The Dairy.

### Talk With Farmers.

#### DAIRY FARMING.

I met a very intelligent person a few days ago, from the cradle of the cheese factory system in Canada. He was looking for meadow land; and after we had talked "land" of all kinds, and discussed the peculiarities of drainage in his county, I said:

"Are you one of the dairy farmers? or do you depend on grain?"

"Well, I run thirty cows of my own, and have a cheese factory besides. I work the milk of one hundred and forty cows besides my own."

"How do you manage for labour?"

"I have four sons who can milk, and we keep one hired man, and so get along pretty well. I attend altogether to the cheese factory myself."

"Do you find it pay?"

"Yes, it pays well, and is a good business."

"How much cheese do you get to the gallon of milk?" I asked this question thinking to get somewhere about the usual answer; but I was rather deceived, for my friend at once rushed into statistics, and gave me such a list of figures and decimal parts that without the aid of stenography I could not commit them to paper. It was quite clear to me, however, that he thoroughly understood his business, and I rather backed out from decimal quotations, and referred to prices. Here, however, he was equally diffuse and particular. He had obtained all the top prices of the season, finally winding up with thirteen cents and some decimals, per lb., for his last lot marketed.

"What kind of cows do you prefer?"

"The common Canada cow, crossed with the Devon or Ayrshire. I prefer the Devon, as they are hardier."

"Do you sell off every year, or do you keep your cows through the winter?"

"I find it best to keep the cows; for when I bought a new stock every spring I used to get kickers and all the refuse which every one else wished to get rid of. So now I keep on the best all the time, and only part with those which do not please me."

"What do you do with the calves?"

"I breed up all I can, and all the heifer calves. I give them milk for a month, and then they do very well with plenty of fresh whey; but of course the whey is given them fresh, and fresh at every meal. It pays well to raise the calves, as I am sure of good ones to keep up my stock."

"What presses do you use?"

"Screw presses. I find they answer best,



and I am very careful about keeping a good smooth surface on the cheese. If there are any cracks whatever, you cannot keep the skippers out. I always take the cheese out of the hoops with my own hands, and can manage without cracks. If there are any round the edge, or indeed anywhere else, the cheese is ruined."

"Do you make whey butter?"

"No; only just enough to grease the cheese. I clothe them well, and grease them well, and so keep them well faced. I don't lose much butter in my whey; but there always will be some pass off."

"Do you make different qualities through the season, or can you manage a pretty good average flavour?"

"I keep a good average. The worst cheese is the spring cheese, for you cannot keep the cows from eating strong tasted weeds and leeks, and that affects the flavour. I don't have any trouble in this way after the spring"

"Do you like clover and timothy pasture, or do you prefer the natural grasses?"

"The natural grasses give the best cheese, but clover helps the quantity. I prefer the natural meadow, if I could only get enough of it. The tall marsh grass is, however, bad."—This was thrown in as a depreciation of the land he wanted, and in hopes of lowering the price; but like every one else, he of course wanted the moist land, to be sure of pasture in dry weather.

"How do you ensure flavour in the ripening of the cheese when the colder weather comes in towards the fall?"

"We manage with stove heat always to keep the cheese room steady at the best temperature; if we did not, our cheese would never be alike."

"What kind of cheese hoops do you use?"

"The usual straight wooden hoop; but they are very difficult to get the cheese out of without cracking. There is a new metal hoop made which opens in the middle, and lets the cheese out easily; and if I did not attend to them myself I would get these, but I can manage very well with the old kind."

Thus ended our conversation. It was both amusing and instructive. Of course a great deal more passed than is set down here, but everything convinced me that my friend was an excellent dairyman, and a good farmer.

This person was not singular in his preference for the natural grasses over the artificial grasses and other kinds of food. Whether right or wrong, there seems to be a general opinion amongst all American and Canadian cow keepers, that the natural grasses excel every other kind of food, both for cheese and butter. They do not give so much milk; but the result in both cheese and butter is larger in quantity and better in quality. The Americans go farther, and insist that the rougher the pasture for early spring use the better, as the grasses spring

more quickly round and near logs and stumps, than where the land is plain and even. This may or may not be; but no farmer with decent notions of order would ever leave such a mass of rubbish about, for the purpose of getting a small supply of early herbage.

VECTIS.

### Colouring Cheese.

We are glad to find that the agricultural editor of the *Utica Herald* is beginning to denounce, or rather discourage, the practice of colouring cheese, a practice to which, as our readers know, we have always been strongly opposed. In a recent article on the subject, he says:—

In no market in the world but the English is artificial colour in cheese demanded, and even in that market the demand is perceptibly weakening. The time has therefore come for our dairymen to begin to haul down their colours. If not a pound of coloured cheese were made this year, we do not believe it would materially affect the demand or price for American cheese, and next year would see all thought of colour banished forever. Coloured butter does not bring as good a price this spring as white butter of the same quality. Colouring butter and cheese is fast becoming not only a useless expense and trouble, but a positive injury. We say, therefore, keep all artificial colour out of your butter, and reduce it in your cheese, if you can not make up your mind to drop it altogether. A few buyers for the London market will insist on colour, but it is not essential in any other market, and is objectionable at home.

In a former article we gave the opinion of a large cheese buyer that in three years from now no coloured cheese would be made in this country. He informed us that coloured cheese did not winter as well as that without colour.

Testimony is accumulating against artificial colour, and the judgment of intelligent men and the taste of the public is against it in this country. The *National Live Stock Journal*, published at Chicago, copies from Prof. Welch's address before the Northwestern Dairymen's Association, and says:—

In a former number of the *Journal* the hope was expressed that western dairymen, at least, would cease to pander to a vitiated or perverted taste by the use of deleterious drugs in the manufacture of this widely consumed food. We can not suffer this opportunity to pass without still more strongly condemning the pernicious practice, and asking every reader of the *Journal*, old or young, male or female, to ponder well the facts so guardedly presented, and to resolve never again to place on their tables for family consumption, artificially coloured cheese. Let its sale be banished to the drug store, and its use restricted to poisoning rats, mice, and

other vermin—for which a little additional "colouring" would fit it admirably. It is proper, and gives us much pleasure to add that the association, after discussion, at the close of the address, passed the following resolution almost unanimously:—

"Resolved, That the use of all colouring matter in the manufacture of cheese and butter is expensive, useless, and perhaps injurious, and should therefore be wholly discontinued."

Let the resolution be vigorously and conscientiously followed up by action during the coming season, and as suggested, the newspapers will advertise the reform as fully and as cheerfully as they would a reform in the swill-milk dairies which now supply the cities of the country with a nauseous substitute for cow's milk.

### Establishing a Small Dairy.

My farm is so situated—from having been recently all seeded down—that I have been led to believe a dairy of twenty or thirty cows would pay better than if I continued to till it as arable land. The stumps are all rotten, and in very dry weather almost all would probably burn out. But unless we are quite sure of long protracted drought, there would be some danger of only partially burning out the roots. It certainly is perfect misery to plough and work amongst stumps; and to avoid this we have determined to establish a dairy of cows. I am a stranger to the practical working of a cheese factory, except as far as I read about it, and therefore fear all at once unable to establish one on my own account. In my opinion, the most prudent way is to procure as many cows as can readily be contended with on private account and with our own means, and let the concern grow up. We have all started new enterprises at one time or another, and most of us have succeeded in causing the concern to "grow up," especially where it was commenced on a small enough scale. In this way few failures occur. I propose to buy young cows about 4 or 5 years old; they will be increasing in value at least three or four years; and meantime, by the judicious introduction of pure blood into the herd, I believe I shall by that time have a first-class dairy of grade cows. As to what bull to use, all my experience goes to show that Devons or Ayrshires cross much better with good native cows than will shorthorns—that is, where dairy stock is particularly wanted. This will be my course for a few years. We have all often seen the effects of overdoing things in many disastrous failures; and these, of course, I wish to avoid. I shall then gradually get into the business, and, if all goes well, and when I have succeeded in obtaining a good stock of cows, I can decide from practical facts as to the advisability of going deeper into it. My impression is strongly in favour of this course as the safest. I reckon thus: Each cow ought to make on an

average for seven months at least 4 lbs. of butter a week. Many will go over this if fed well; some, of course, will fall below it; but I believe this quantity will be about the average from twenty-five good cows, if well and abundantly fed. In addition, each cow will rear and fatten one hog; that is, she will (provided the hogs have plenty of clover pasture and good care), keep in good order more than two, perhaps almost three, hogs, and in the fall one will sell for more than enough to fatten the rest, and I always find that each cow will thus furnish one hog worth at least \$10 to \$12. The hogs will almost or quite pay for all labour, leaving the butter product clear to the credit; this, if of the best quality, will certainly be worth 20 cents to 22 cents per pound—say \$24 each cow. The calf will almost winter the cow if well reared, and you have plenty of pasture. The gross return of 25 cows will thus yield in butter nearly \$600. The great advantage of this course seems to be the absence of expensive labour. Of course, horse-power churns must be constructed, and labour of attendance reduced to its minimum. If twice this number of cows were kept, the attendance would be the same; but at milking time there would of course be required nearly twice as much assistance. I am told by men who have gone into this branch of farming that the above prices are too low for the produce of a good cow; but if an inferior cow is kept, and inferior butter made, probably the price may be too high. We have two cows now on the farm that have done one-half better for many years, but they are exceptions to any general rule.

C.

The Little Falls Dairy Shipments.

We have now the official returns from the freight agents at Little Falls, showing the quantity of dairy products shipped from this market during the year 1870. We give the figures below, showing the quantity shipped by rail for each month during the year:—

	BUTTER.		CHEESE	
	Boxes	Pounds.	Boxes	Pounds.
January	42	2,021	1,829	122,343
February	28	8,049	421	28,179
March	24	16,849	4,420	29,452
April	481	28,813	3,545	23,942
May	142	8,612	9,187	880,850
June	76	954	14,791	944,252
July	6	329	15,978	1,021,285
August	30	1,971	25,020	1,557,988
September	108	7,130	18,976	997,536
October	261	16,306	11,693	735,910
November	258	18,593	6,911	464,618
December	221	14,229	3,193	206,186
Total	1,958	121,349	113,170	7,178,039

In addition, there were shipped by canal during the year 23,240 boxes of cheese, amounting to 1,546,219 pounds, which, added to the shipments by rail, make a total of 136,410 boxes of cheese, weighing 8,724,858 pounds.

From the above table of railroad shipments, we see that the largest deliveries were in the month of August, by about 10,000 boxes. The shipments for June, July and September, are very nearly the same for each month.

Correspondence.

Editorial Correspondence.

No. 1.

THE U. S. DEPARTMENT OF AGRICULTURE.

WASHINGTON, May 29th.

SIR,—I have been examining the buildings, gardens and grounds connected with the Agricultural Department of the United States, and have seen much that has been very interesting and instructive. With an enlarged apprehension of the value of agricultural products, and the position these occupy in the grand aggregate of national wealth, this department has been created and is now conducted with a view to the increased development of the science and practice of agriculture. It is not designed to take the place of an agricultural college, or in any manner to give elementary instruction in the cultivation of fruits, grasses or cereals, but to furnish information based upon actual experiment upon particular subjects, and to place within the reach of those who desire to make experiments the facilities for so doing. To this end an Agricultural Museum has been established, in which are collected samples of all varieties of grains, and models of fruits and root crops, from every State in the Union; so that one, by comparing the quality of the samples of any grain from Maine with the samples of the same grain from Georgia, or from any other State, may learn the respective capabilities of these States for the production of any particular grain. The same may be done in fruits, for by the untiring industry and great skill of Mr. Glover, who in more senses than one is a model man, very accurate models of the leading kinds of the different fruits are so arranged that one may see at least the external appearance of say the Baldwin Apple, as it grows in Massachusetts, in New York, and in Illinois, and from the size, form, and colouring, obtain a very accurate opinion of the character of the apple as grown in the several sections there represented. It was interesting to notice the changes that difference of location makes in our well known fruits, and though it is not possible to indicate precisely what changes have been made in the flavour of the fruit by these causes, yet to one measurably acquainted with fruit, the external appearance of any specimen is not a bad exponent of the flavour. And in this way, by comparing specimens from different States, one is able to form some opinion of the adaptation of any State to the cultivation of any particular variety of the apple, or of any other of the leading fruits.

So also in root crops, taking the potato as an example, there are models, exact in form and colouring, of all the leading kinds grown in each State; and one may, in a short time, by a careful study of these samples, ascertain

what are the leading varieties grown in any particular State, and how they compare in appearance with the same varieties when grown in any other State.

Besides, there is a collection of the substances which are made from particular product, showing at a glance its economic uses. Taking petroleum as a sample, it is shown there in its crude state; then as refined, with all the varieties of dyes which are obtained from it. Or a fibre-producing plant is shown in the raw state, with all the products into which it can be profitably wrought. There are also gathered specimens of insects useful in the arts or manufactures, so arranged that their entire natural history may be learned at a glance. Take for instance the silk-producing insects; these are all brought together in a group, and of each will be found the male and female moth, then the egg, the worm in different stages of growth, the cocoon, the raw silk, and the manufactured silk.

Here, too, one may learn all that is known of injurious insects. Under the head of the subject you wish to investigate, for instance the apple, will be found a list of insects that destroy or injure the leaves, another of those injuring the bark and wood, another of those that prey upon the fruit; and of each of these insects, as far as possible, are well preserved specimens, in addition to accurate drawings, showing the insect in all its stages of development, through its various metamorphoses, and how, when and where it commits its ravages, and the best known methods of prevention and cure.

Thus it will be seen there is here laid the foundation of such a collection of specimens and models and books, as will enable any student of agriculture, or horticulture or pomology, or any one interested in the manufacture of any of the products of these branches of industry, to learn by actual inspection all that is at present known in relation to these subjects, and so be able, with a clear and comprehensive understanding of the whole matter, to direct his exertions in such a way as to secure the most expeditious and most profitable results.

The same purpose pervades the operations out of doors. These are under the direction of Mr. Saunders, as able and energetic in his department as is Mr. Glover in his. And just here I may say that any one visiting this department with the desire of obtaining information, will find both of these gentlemen ready to give them every facility in their power, and politely attentive to all their inquiries. Many thanks are due to them for the kind attention which I received, and the generous devotion of their valuable time in showing and explaining the various items which were continually attracting my attention and inducing inquiry.

But I must reserve an account of the out-of-doors department of this Agricultural Bureau for another letter.

## NO. II.

WASHINGTON, June, 1871.

In the cultivation of trees and plants, at the Agricultural Department, two objects are kept in view—the one a specimen ground, in which may be found all the more prominent and valuable varieties of the different fruits, trees and shrubs, so that a visitor may see specimens of these, as far as it is possible to have them all in this locality; the other an experimental ground, where plants, trees, fruits and shrubs are grown, not merely with the view of testing their adaptation to the climate of Washington, but also for the purpose of distribution into such of the States as may be supposed to possess the climate and soil suited to their culture. Here, just now, a large number of *Cinchona* plants are being raised, to be sent out under proper restrictions to those who are willing to undertake their culture and test their adaptation to the soil and climate where they may reside, in the hope and expectation that their successful and profitable culture may yet be established in some part of the country. In the same way a large number of tea plants have been sent out by this department, and attention directed to the culture of this plant in the United States. A new fibre-producing plant, known as the New Zealand Flax, is being introduced in the same way. The fibre from this plant is equal to the best manilla, and its introduction and successful culture in the United States would be a great national benefit. Attention has also been given to finding varieties of apples suited to the trying climate of the north-west, and in the hope of supplying this much felt want a quantity of hardy varieties were last fall imported from Russia, and the scions freely distributed through the north-west for trial. The trees have been planted in the grounds of the department, and are all living, and in due time will yield scions which will be scattered through all the colder parts of the country, where it is to be hoped they will be found to be valuable in extending the list of hardy apples, beyond those ripening in the summer and autumn months.

Some experiments are being made in the raising of new varieties of fruit from seed. Just now Mr. Saunders is turning his attention to the strawberry, and conducting a series of experiments in the raising of new varieties, some of which give promise of being valuable sorts. In the *Hautbois* family especially there is a most marked improvement in productiveness, so that the lovers of the peculiar flavour of this family may hope to be able to gratify their utmost longings.

The grape has naturally commanded a large share of attention, and the collection of varieties is very extensive. The diseases and remedies are carefully studied, and the results of all these experiments are made known every year in the report of the able superintendent.

Nor is the beautiful overlooked. Possessed of a comprehensive view of utility, the Honourable Commissioner of Agriculture sees in the increase of knowledge of the culture of trees and shrubs an increase of taste in the adornment of rural homes, with a consequent greater attachment to home, a more widespread love of nature, more refined and elevated tastes, a more contented and virtuous people, and has caused to be planted, under the direction of the superintendent, collections of trees and shrubs, so arranged as to show the families and genera to which they severally belong, intending to have thus grouped together every species that can be grown in the climate of Washington. Here then one may have an opportunity of seeing every variety of tree, native and foreign, deciduous or evergreen, with which he may think to plant his lawn or ornament his grounds. If he wishes to select from the oaks, or elms, or ashes, those trees which to his eyes are most pleasing, he has but to step across the lawn to the group of oaks, &c., and there he will find every species likely to thrive with him, and the trees planted so near to each other that a comparison of their forms, foliage, habits of growth, can be easily made; and having made a selection of those he wishes to plant, he has but to transcribe from the label attached to each tree the correct name of the variety.

The same system is carried out with the shrubs, all so grouped that the comparison of different forms in the same genus is readily made. The value of such a collection of trees and shrubs, open to examination and study by every one who may choose to look at them, in imparting correct information, enlarging and refining the taste, and stimulating the enterprise of a people, cannot be overestimated.

In closing this letter, I can but express the wish that something of the same nature may be done for our own Province of Ontario. The Fruit Growers' Association, with a zeal worthy of all praise, is doing what it can with its limited means to disseminate information on the culture of fruit, and to send out through the country new and promising varieties for trial. But it should be provided with an experimental ground, where every variety that will endure the climate should be grown, and then open, under proper regulations to prevent abuse, to the examination of every one who wishes to study the collection. Yet not only should we have such a collection of fruits, but there should also be added, in the same vicinity, a complete Arboretum, where the Canadian may find grouped together for study and comparison every useful and ornamental tree that can be grown in our climate.

These important objects might with great advantage be incorporated in the proposed scheme of establishing an agricultural college and experimental farm for the Province of Ontario.

## NO. III.

PHILADELPHIA, June, 1871.

I have been enjoying the hospitality and delightful conversation of that most thorough student and botanist, so well known to us as the able editor of the *Gardener's Monthly*. In his grounds are some fine specimens of different ornamental trees; and while the climate here enables him to enjoy a somewhat greater variety of trees, shrubs and plants than we can ever hope to carry safely through our Canadian winters, yet one will return from a visit to Mr. Meehan with new courage and a keener zest to the culture of the many beautiful things with which the Canadian may increase the comforts and attractions of his more northern home. In the first place, I am more than ever persuaded that we have not given sufficient attention to the wealth of beautiful and hardy things that are to be found growing within our own borders and native to our own soil. We have many very handsome native evergreens and deciduous flowering trees and shrubs well worthy our attention, which one needs to see gathered together and grown from home, really to appreciate their worth. Our *Cornus Florida* makes a very ornamental spring flowering tree of moderate size, and in the autumn is gay with its scarlet coloured fruit. The *Malus coronarius*, abundant in some localities, but scarce in others, vies in beauty with the flowering thorns of our gardens. But it is not so much of these that I wish to speak as of one or two very hardy, and, as grown here, very beautiful evergreens, not native, but foreign, which should have long ago have found their way into every collection in the land. Why it is that Nordman's fir has not been planted side by side with the Norway spruce, seems unaccountable when one sees its exceeding beauty of form, and learns that the bright green colour of the foliage is retained through all extremes of weather. In growth it is vigorous, in verdure beautiful, graceful in outline and regular in form, adapting itself to any soil, and, so far as tested, as hardy as the Norway. The other evergreen is known as the Eastern spruce, *Abies orientalis*, and is certainly the perfection of compact growth, and this is combined with such a graceful elegance of outline as to make it a most charming object. This also seems to be as hardy as the Norway, and is well deserving of attention from every lover of the beautiful. These two charming varieties will make a most noble addition to our list of evergreen trees.

The Japanese maples are also a very interesting collection from the peculiar form and colouring of the leaves, which give the trees a very attractive appearance. These will probably be sufficiently hardy to endure the climate of a large part of Ontario, and if so, will be a very attractive addition to our collections of maples.

Mr. Meehan has also growing upon his grounds a variety of the peach with dark blood-red leaves, which he told me was found, since the war, growing on the battle-grounds near Fort Donaldson, and its foliage is indeed an apt reminder of fields of blood.

But it would only weary the reader were I to attempt to tell of all the beautiful and interesting plants I saw. One valuable hint, drawn from Mr. Meehan's experience concerning the care of newly planted evergreens, shall close my letter. He says that evergreens often perish in the winter, while young, because their roots have not yet penetrated to a depth sufficiently great to enable them to draw from the earth a supply of moisture to replace that which is given off through the leaves. When the tree has acquired sufficient age to send its roots down below the frost, it can then draw moisture from the unfrozen ground, and so replace that which is lost; but until the roots have penetrated to such a depth, the surface of the ground above them may be mulched sufficiently to keep out the frost, and thus many a valuable and desirable evergreen be carried safely through without injury. Many have experienced something of the difficulty which is here intended to be obviated, and may be glad to try the effect of such a protection to the roots of their trees. It is easily applied, and if by this means gentlemen may preserve their trees from injury until they have attained sufficient age to take care of themselves, they will be grateful for this simple suggestion.

Yours truly,

D. W. BEADLE.

### Experiments with the Potato Beetle.

To the Editor.

SIR,—The Colorado beetle has made its appearance at Buxton during the last three weeks, and the early crop of potatoes in some gardens is literally covered with the eggs and larvæ. The full grown beetles are found on the same potato vine with the larvæ, specimens of which I send you with this letter. Permit me also to give an account of some experiments that I have made with this pest of the potato crop.

The first experiment was made with kerosene oil. This simply destroyed the stalk of the potato, but did no injury to the bug.

The next was dry ashes and powdered lime. These were sprinkled on the leaves where the full grown bug and larvæ were. They appeared to be a little stupefied at first, but in a short time they changed their position from the upper to the under side of the leaf, and continued their depredations as before. Neither the oil, lime or ashes appeared to have any effect on the insect.

The third experiment was with chickens and turkeys, and this was completely successful. On visiting one of my neighbour's gardens I observed a small patch of potatoes near to the house, quite healthy and free from

the pest; while at a short distance from the house there was about a rood of potatoes literally covered with larvæ and full grown bugs. On examination, I found that the patch near the house was visited daily by two broods of young turkeys and chickens; they had completely cleared the vines of the pest.

I suggested to my friend to take the little army of turkeys and chickens to the other patch. He did so. The young turkeys and chickens commenced a war of extermination, and soon thinned their number. They went from vine to vine, and cleared each from the pest before they left it. I would suggest that in each patch of potatoes there be placed simultaneously with the appearance of the crop two or three broods of turkeys and chickens; they will get the greater part of their food from the potato vine, and the farmer will have the pleasure of raising potatoes, turkeys and chickens at the same time.

W. KING.

Buxton, June 14.

### Farm Accounts.

To the Editor.

SIR,—In the article which I wrote on Farm Book-keeping, lengthy as it was, I found it was too short to make all the necessary explanations with regard to the calculations on the different tables. In the table of cost and worth of grain, the fall wheat shows an average loss of 19 cents per bushel. In this locality, the last ten years have included the whole of the period during which we have been under the scourge of the wheat midge. During that period I have been often amused at the different conjectures that have been advanced, not only in agricultural papers, but in commercial newspapers also, with regard to the prevalence of that insect and the cause of its spread. The broad shoulder of the farmer had to bear all the blame. My attention was especially directed to one article which took for its ground that it was because land was so poorly farmed that it became infested with the wheat midge. Never, in my opinion, was a statement farther astray than that; for observation showed that land in a high state of fertility suffered as much as land in the very lowest state of fertility. I see in one of our agricultural periodicals an enquiry under the head "What is to be done with the midge?" The writer proposes to starve it out by not growing any wheat for three years. Now, I am no professor, only a practical working farmer, yet I am not afraid to give my opinion of the true cause of this scourge; and I believe we must look beyond these secondary operations, and ascribe more than we do to the providence of the Almighty. A nation's sin's are often the prime cause of its suffering—and a nation's repentance is the fitting and effectual remedy.

But to return to my accounts: The spring wheat shows an average profit of 10 cents per

bushel; that grain I have generally sown after a root crop which had been thoroughly cultivated and well manured the year previous to growing roots, and do not think that spring wheat sown after another grain crop would show such good results. Then with regard to peas, the table showed in an average of seven years a loss of 88 cents per bushel. In this neighbourhood the pea has suffered greatly from a scourge called the pea bug. To avoid most of its ravages I have sowed my peas as soon as I could after the 20th of May; but that mode shows no good results, for, in sowing peas as late as that, it is only once in a number of years that you get an average crop. In the year 1868, in which my peas cost me \$5 95 per bushel, I sowed 24 bushels on 10 acres on the 20th of May. Previous to that time there was a great deal of rain, and after that the severest drought set in I ever witnessed. The apples on the trees dried and wilted. I put out 80 loads of manure on that field. Including manure, rent, ploughing, &c., the cost of putting that crop in was \$135 86. After harvesting and thrashing, we had a yield of 21 bushels of peas, and 4 loads of pea straw, which I put at \$1 per load. Now, I have often seen in agricultural papers accounts of crops where there was great profit; but my memory cannot bring to my mind a statement of the crops raised at a loss. It is a query in my mind which farmer benefits his friends the most—the one who writes of his failures, or the other who writes of his successes. It is not so pleasant to human nature to talk of one's own losses, yet I believe all farmers sustain losses to some extent. The captain whose aim is to bring his noble ship in safety to port, consults the chart often to watch for the rocks, &c., &c., where other vessels have been shipwrecked, and, when he is near them, keeps a man aloft to look for sea marks. Now, who has given these sea marks to posterity but the surviving crew of wrecked vessels? So if farmers would write more of their failures, and the cause of them as near as they could ascertain, they would furnish land marks to their brother farmers who aim at success.

ROBERT EADIE, JUNR., &  
Oakland.

POTATO BEETLES.—The cuts and descriptions of the Colorado Potato Beetle, published in the DAILY and WEEKLY GLOBE and CANADA FARMER, are quite sufficient to enable any one who will read them to identify the insect. But we still continue to receive enquiries, with specimens. In some cases the specimens have not reached us with the letter, or have become "mixed" before reaching us—so that it is not always possible to answer the question of identity. We again refer our correspondents to the DAILY GLOBE of June 3rd, the WEEKLY GLOBE of June 9th, and the CANADA FARMER of the present month, for a full account and illustration of this insect. In addition, we give the following individual replies, which will be understood by the several writers:—G. W., Oakville—The specimens in the tin box were Co-

lorado Beetles. J. W., Collins, Whitechurch—Three-lined Potato Beetle. B. Thompson, Newmarket—Three-lined. W. Perrin, Mt Vernon, near Paris—Three-lined. Experimentia, Newmarket—Three-lined. W. T. Shaver, Summerville—Colorado. J. Holloway, Cross Hill—Three-lined. J. H. Molson, Whalen—Colorado. W. Ogilvie, Richwood—Colorado. C. S. Racey, Milton West—Three-lined. S. C. Williams, Pickering—Three-lined. A Farmer, Elora—Colorado and Three-lined. A Subscriber, Orillia—Colorado. Van Tassel, Angus—Colorado. A. Fisher, Drumbo, Colorado.

### Comparing Notes.

To the Editor.

Sir, - It is sometimes amusing to hear the variously expressed opinions on the use of the roller. Some people state that the best way to treat spring or winter wheat in the spring is to roll it, "as wheat loves a stiff hard soil," and as by so doing the ground is pressed more closely round the roots, and thereby many plants that would have died from exposure or heaving of the land, would by this application be replanted and saved. There seems certainly some reason in this idea. Others again advocate strongly the use of light harrows to be passed over the hard settled earth, to loosen, as they say, the baked soil, and allow the action of the air on the roots, and thereby greatly facilitate the growth. Here again there seems some reason for this observation. In England the horse hoe is continually used, and as Mr. Mechi, of Tiptree Hall, says, almost universally with immediate benefit. With all these suggestions combined with practical exemplification of the theory from home, very few of our Canadian farmers try experiments of either kind; and this shows the inefficient result of the precept system so largely administered occasionally in Canada and elsewhere. This is mainly attributable to farmers as a body not writing more than they do. They hear what men, not absolutely practical in their knowledge, say and write, and very often there is a great deal of scientific truth and valuable information derived from such writings; but the practical farmer at once sees some drawback by which the precept is rendered to a great extent useless; whereas if farmers thought and wrote more, and each one studied to enlighten the other by their strong practical application of known principles, very great benefit must inevitably be the result. Within five miles of my farm there lives an old English farmer, as pig-headed a specimen of an Englishman as could well be found among my countrymen, but withal a very clever money-making man. He will always do well, and always has done so, ever since he came to Canada, but he would no more think of writing his experience on any subject connected with his farm than he would of walking into his barn with a coal of fire, just after harvest, and burning up the whole produce of his farm. A year or two ago, about the last of May, I saw the old gentleman busily at work

in his "pet field." I say his pet field, as he had cleared it entirely of stumps and pond holes, and all unsightly objects, fenced it all with new board fences, and he intends his whole farm to be treated like this field. He was rolling some winter wheat, and subsequently the spring wheat in its turn received the same treatment; and some barley, also, was treated in like manner. Portions of each piece were, however, left unrolled, so as to test any difference or improvement there might be during the summer or at harvest.

Now, we outsiders, although living near, know nothing about the benefits or otherwise this very carefully conducted experiment resulted in, and that is an exemplification of what I mean by farmers keeping their individual experience to themselves. Mercantile men publish prices and sales of all kinds; grain dealers carefully state on 'Change, by official reports, the result of sales or purchases; importers, when opening a new line of communication, give it a worldwide ventilation; but the agriculturists, as a rule, think it quite useless and unnecessary to do anything of the sort, and yet all allow that without crops and prosperity in the country, the towns and cities must become bankrupt.

If all would join in this most useful dissemination of farm knowledge and practical trials, stating facts as they occur, also not forgetting full particulars, and peculiarities of any sort that may bear on the experiment, the value of such communications would be very great.

OBSERVER.

## The Canada Farmer.

TORONTO, CANADA, JULY 15, 1871.

### On Drought as Affecting Soils and Vegetation.

In the volume of *Transactions of the Highland and Agricultural Society of Scotland* for 1870, appears a very interesting article, to which was awarded the Silver Medal, "On the effects of the dry season of 1868 on trees and shrubs," by C. Y. Michie, Forester, Cullen House, Cullen. That season was one of the hottest ever experienced in Britain; great damage was done by accidental fires in woods, live fences, grass and corn fields, along the numerous lines of railways in various parts of the United Kingdom, and also on the continent of Europe. Harvest was consequently unusually early, wheat having been cut in the more forward parts of England by the middle of June, and even in the northern and more elevated districts of Scotland barley and oats were harvested in the beginning of August. Wheat yielded most abundantly, and of the finest quality; 50 or 60 bushels an acre on well farmed land being nothing uncommon; but all kinds of spring crops were very inferior,

many being absolute failures. In England it is astonishing how winter wheat will pass harmlessly through an ordeal of drought, provided it is sufficiently thick and advanced to cover and shade the ground before the dry weather commences. This is also the case with our spring crops in Canada, which are at the present time (June 9th) suffering for want of sufficient moisture to enable the plants to protect the surface by their foliage from the parching effects of sun and wind.

From Mr. Michie's observations it appears that different kinds of trees and shrubs were variously affected by the drought both as to growth and richness of foliage, according to soil, exposure, and other conditions. Some species of forest trees were denuded of their leaves, partially or wholly, before, in ordinary seasons, the colour begins to change; while others were but little affected either as to decay of their leaves or the amount of growth. The author, while professing inability to speak with certainty from one year's experience as to the species or varieties of plants best or least able to withstand the drought, expresses himself with some confidence in regard to soils,—how they affected plants under the severe drought and heat.

1st. Gravelly soils were found to suffer the most severely, especially where the crop was put in late.

2nd. Sands came next, and where oxide of iron prevailed, vegetation was as much affected as on gravel, though, perhaps, not quite so rapidly.

3rd. In stiff clays, young trees especially suffered severely, their foliage fading and dropping early; while older ones that had matured more fully their growth, seemed to escape with less injury. Several trees and shrubs were found dead at the opening of the following season.

4th. Upon certain descriptions of moss the foliage of plants drooped early; the roots became dried up; and consequently the stems and leaves lost their vitality.

5th. What is known as clay loam was much less injuriously affected for the growth of plants than the preceding kinds of soil, and but few trees of advanced growth suffered much from the drought.

6th. Sandy loams, rich in vegetable matter, and resting on heavy but not impervious sub-strata, went through the ordeal with the least injury to vegetation. Trees and shrubs were but slightly affected, except in the loss of top growth, and that was much less than on other descriptions of soil.

In dry weather, artificial watering is usually had recourse to in gardens and shrubberies, at least in cases of newly planted trees. Mr. Michie's experience is important and instructive; he seems to have come to the conclusion that in watering, as in knowledge, "a little is bad." Plants slightly watered every day often perished, and always became dwarfed; whereas a good soaking given

twice a week almost invariably proved very beneficial. "The sum of our experience in watering amounts to this—that thorough soaking of the ground two or three times a week is much better than the same amount of water applied in driblets daily, only sufficient to wet the upper surface, but not the under strata of earth contiguous to the roots. Cold spring water should, before applying it to a heated soil, be allowed to stand exposed to the sun and air for a few hours. The colder the water is, and the warmer the soil, so is the necessity of applying it in abundance; for it is evident, though we cannot explain it, that the result produced upon plants by applying cold water to the soil, when at a high temperature, unless so copiously applied as to saturate the soil completely, is fatal to tender or weakly plants, and often less or more injurious to strong or healthy ones."

Next to watering as a means of preserving vitality in plants during severe drought, is another but different one, namely, pulverizing the soil by means of raking it around the plants as far on every side as the extremities of the roots extend, and as deep as can be done without damaging them. When dry weather prevails, hoeing and raking should be performed instead of watering, as is usually practised. This mode of preserving plants is, however, from the nature of the operation, more applicable to plants in nurseries and shrubberies, where the surface of the ground is broken, than to trees situated upon grass with the sward around them. The late Mr. Cameron, a well known nurseryman at Uckfield, Sussex, whose soil belongs to the stiffest English clays, remarks on this subject: "When neighbouring nurserymen and others begin watering, my invariable practice is to begin hoeing and raking, so as to produce a finely pulverized surface, which effectually keeps out the drought. This I have done during a period of forty years, and my losses by this practice are less by fifty per cent. than by any other means I am acquainted with; and I am disposed to believe that single specimens of trees and shrubs permanently planted out would be better preserved by it than by means of watering."

These remarks are in accordance with our own observation and experience both in England and Canada. The occasional stirring of the soil during periods of drought tends very much to increase its moisture, and opens it more freely to the expansion of the roots of plants. It is during the hottest weather that the atmosphere contains the largest amount of moisture in the condition of invisible vapour, which, by coming into contact with the cooler surface of the ground during the night, is deposited in the form of water, exactly on the principle of the formation of dew.

A somewhat remarkable instance of the injurious effects of a bare and hardened surface on the health of shrubs and trees is afforded

by the decay that has been going on for several years among those forming the College Avenue in this city. This beautiful and extensive promenade bids fair to become, in a few years, a thing of the past. The horse-chestnuts especially, which are the principal trees, are all, more or less, in a state of decay, several of them having died already. The hardening of the surface by the constant walking of hundreds of people daily during a large portion of the year, prevents the moisture and permeability of the ground necessary to the healthy growth of plants generally. Hence we learn a necessary practical lesson, of special value in seasons of drought, the keeping of the soil moist and friable by the occasional stirring of the soil. For this purpose crops in rows afford peculiar facilities, as also for the keeping of land free from weeds.

### The Weather and the Crops.

The past month was for the most part characterized by the prevalence of unusually cold and dry weather. It is seldom that in this country we experience so cold a June. The early and protracted drought, which has been so general over the northern portion of this continent, has at length been broken up, and copious showers have wonderfully refreshed vegetation all over the country. Though this welcome change in the weather has come too late for some crops, such as hay, yet on the whole it has greatly improved the appearance and prospects of grain fields and roots.

Fall wheat, where it has escaped winter-killing, looks well for the most part—better upon the clays than the light lands—and even some portions badly damaged in winter have drawn well up. In some places, owing to the drought, it is short in the straw, but generally it is well headed, except where Hessian fly, of which we hear complaints, has done damage.

Spring wheat has suffered most from the dry weather, and will be short in the straw, but has mostly a good colour, and will probably bear out an average crop. The same may be said of barley. Peas in many parts have done very well; and oats, usually the latest sown grain crop, will to all appearance yield well. Since the accession of rain, all root crops have taken a start, and are coming forward rapidly. We have heard less complaint than usual of the fly.

The monthly report from the Toronto Observatory is as follows:—

The mean temperature of the month of June differed little from the average, being 61°.4 against 61°.6, but was about 6° colder than June, 1870. The warmest day was the 3rd, with a temperature of 72°.4, and the coldest day, the 29th, with a temperature of 53°.0—a strange transfer of extremes, which, to say the least, is unseasonable. The highest temperature was 83° on the 2nd, and the lowest

42°.2 on the 16th. Hoar frost, well marked by its effect upon tender plants, occurred on the mornings of the 16th and 17th.

Rain fell on 13 days, amounting to 3.34, about 0.4 greater than the average rain-fall for June, and was pretty generally distributed over the month after the 6th; the heaviest fall occurred on the 27th, when about 0.8 fell in twenty minutes.

There have been 4 clouded days, 18 partially so, and 8 clear.

The prevailing winds were N. and W.

Thunder-storms occurred on the 4th, 10th, 14th, 15th, and 27th, accompanied by hail on three occasions.

### The Wool Trade.

The course of the wool market so far, this season, has been different from what was generally anticipated not more than two weeks ago. The prevailing belief was that prices would rule much the same as they did last year, both in the English and American markets, but the demand from the continent of Europe for English and Austrian wools, to supply the waste of manufactured goods incurred by the late war, has carried prices higher than they have been for two years. At the present moment the Americans cannot obtain English wools, as they did last year, at prices which admit of their entrance at the lower rate of duty, and this enables our dealers to buy above the 32c. per pound which marks the limit beyond which the high rate has to be paid. The stock of seasoned wools ready for the manufacturers is at present low in the United States, one reason for which is that the imposition of the full wool duty on unshorn skins, by shutting these entirely out of the market, shuts out a considerable source of supply. The American clip is said to be at least equal to that of former years, and the demand from manufacturers is not greatly in excess of what it has been; so that, in reality, there is nothing unusual in the present demand for wool in the American market, the primary cause of the scarcity and advanced prices being the prevalence of higher rates in England, and the diminished imports consequent thereon. A considerable difference is generally observed in the quotations of wool east and west of Toronto. This season it amounts to from 5c. to 7c. per lb. Brockville quotes at 28c. to 30c.; Oshawa at 30c. to 32c.; while the quotations from London, Galt, Guelph and Chatham range from 34c. to 37½c. In this market most of the clip delivered has been bought at 32c. to 33c. This is a matter of some importance, and has frequently been referred to in these columns. Wool growers, however, cannot be too often reminded of their neglect and advised as to the remedy, which is entirely in their own hands. One thing in favour of wool producers in the western

part of the province is that the winters are milder and shorter, but as a general rule, notwithstanding, the sheep are better housed, and better fed, and this makes a wonderful difference on the length and quality of the staple, as can easily be shown by taking a look of wool in the hand, and testing its strength by pulling it. If the animal has been storm-fed, or left to nibble all winter at nothing but the straw-stack, the lock when pulled will part at the junction of the fall with the winter growth. The staple is thus reduced from long combing to short combing, the latter representing the growth from shearing to the beginning of winter. Wools of this character are obviously less valuable than the long combing staple which bears the strain of pulling throughout, showing, as in the case of nearly all Western wools, that the animal has been fed on roots, and properly housed and cared for during the winter. The attention bestowed upon the sheep during the growth of the fleece seems to beget corresponding care with regard to the preparation of the wool for market. It is found that growers in the western part of the Province wash and clip their sheep earlier than they do east of this; better care is also taken of the sheep after washing the fleece, and between that and clipping, the consequence is that there is more lustre in the staple, and it commands a better price.

The clip generally is expected to be somewhat larger this year than last, owing to the mildness of the winter being favourable to an increased growth of wool. The season has opened earlier by ten days this year than last.

It would be rash to offer a decided opinion on the future course of prices. So long as American orders are in the market pressing to be filled, there is every probability that present quotations will be sustained; but on the least indication of buyers having obtained their full quota, a return to more moderate rates may be looked for.

### Prepare for the Harvest.

There is a great deal more preparation for harvest than perhaps we fully realize. Between seeding time and hay harvest is a comparatively slack time, and we should try to put everything in such a state that we may save every hour, aye every half hour, to the important work of safely housing hay and grain.

Now, what is there to do in that busy time? The reaper—let it now be thoroughly overhauled, put together, the horses put in, and its running tried, the knives sharpened, the bolts loosened, oiled, and tightened again, the rust taken off the cogs and gearing with a little coal oil; if necessary, let it be overhauled by the manufacturer; do anything to have it in such order that it will be ready upon the first day of harvest.

There will be rakes required; get them now, an over-supply for the event of breakages. At the present price of hand rakes, a new one is cheaper than time spent during harvest in mending.

The barn should be cleaned out, and the position in it of the several crops planned. That broken shingle on the roof should be replaced, for a little hole will let in a little water, and a little stream of water will do much damage before it reaches the floor.

Turnips will have to be thinned, and as their growth waits for no man, it often happens that this operation needs performing just at a very busy time. Have the hoes all ready and sharpened.

Extra hands will be required; bespeak them if possible; you must have them at any price; \$2 a day must be paid rather than risk the loss of a crop.

Of all things, beware of running short of wool. This wool question is the very bugbear of the improvident farmer's existence; it is the cause of much contention; but like other horrors when fairly faced, becomes but a shadow.

### Red River.

There has been a Western States fever, and Australian, Californian, and South American fever; and now we have an attack of Red River on the brain. There is no ground to discredit the glowing accounts that we hear of the fertility of the immense Saskatchewan Valley; the more so as letters regularly received from more than one settler in the country agree in the accounts they furnish. At the same time, it may be necessary to remind the reader that "far away hills look green," and that an emigration to a newer country is not a universal panacea for all evils at home. There are many men who will prosper upon whatever soil their foot is set, and there are those whose walk through life will in all probability ever be a retrograde motion. There are "loafers" who have gone to Red River, and there is no doubt that such are loafers yet. A man who is doing well, making good wages, or in good professional, mechanical, or agricultural standing, is perhaps apt to lose the bird in the hand when he leaves his home, whether it be for the new or newest country.

In all new countries an upward course is only to be attained by assiduity and steadiness. Depend upon it that Red River will soon be overcrowded with shop-boys and clerks. The man to prosper is he who, strong in body and in mind, will take to the soil, for farm produce must be the great and general production of this territory.

It may be interesting to our readers to lay before them a few facts about this new Province, which have been gleaned from correspondence, and which, though perhaps only corroborative of what has been before re-

ported, are from a thoroughly reliable source.

The correspondent to whom we particularly refer says that the summers are delightful (in this, indeed, we of Ontario share); winters cold, but steady, with few sudden changes. The climate is on the whole very healthy, sickness being almost unknown; perhaps we must give some share of this immunity to the class of settlers. No doubt, sickness and extra civilization will march together, as they always have done.

The land on each side of Red River, from Pembina to Lake Winnipeg—a distance of 100 miles—is a rich black loam, pure vegetable mould, from one to four feet in depth, subsoil clay, and the land running back, as far as the narrator has travelled, is of the same nature.

On the Assiniboine, the land is somewhat similar to that upon the Red River, until you approach Portage La Prairie, when it becomes lighter, and in some places a sandy loam, with a gravelly bed.

The road passing through Headingly, 14 miles from Winnipeg—White Horse Plains, 25 miles—High Bluff, about 55 miles, to the Portage La Prairie, runs along the River Assiniboine, touching the said river at various points, passing through a splendid grazing and farming country.

Lake Manitoba and all the rivers teem with fish, and there are abundance of duck in spring and fall.

Still going west, some 20 miles from the last named portage, is a settlement growing rapidly—White Mud Creek. This is being located by Canadians. The land is rich as far as this district; it then apparently changes for some distance to a light sandy soil. But of this we have not positive information. About 60 miles west of White Mud Creek is a range of hills (rolling land) called Riding Mountain, well watered and timbered. This is out of the Province of Manitoba; there are no settlers yet; but this spring a party of Canadians intend taking up claims there. Persons who have been there speak highly of the place, and say that there will be the finest settlement east of the Saskatchewan. The climate is milder than Manitoba, being well sheltered by woods. The Assiniboine seems to be settled mostly upon the north side, where is situated the prairie land.

Running from one mile to a mile and a half back from the south side, is open plain, and then the country is densely timbered, especially near the Portage.

Again, there is a fine farming section on the Jack Fish River, near the Stone Fort, some 20 miles from the mouth of the Red River, on Lake Winnipeg. Also, good land for settlement north-east of Red River, between Stone Fort and Winnipeg, there being also near by some pine and spruce.

Our informant believes that the valley of

the Saskatchewan has a far richer and deeper soil, and a finer climate than Manitoba proper. He speaks of the style of farming at present as very poor, and is astonished at the yield—30 or 40 bushels of wheat per acre. They plough about 2 or 3 inches deep, and turn a 12 or 18 inch furrow. They then scrape over with harrows, sow, scrape again, and leave until harvest. He says if the land was properly worked, grain put in carefully and well taken care of, the crops would be something prodigious; but he adds—*if not destroyed by grass-hoppers.*

Last year these pests did a great deal of harm in sections, but did not lay their eggs, and it is thought by the oldest inhabitant that they have left; whether for good, or only for a season, is yet a matter of question.

Very little rain falls in this country; but the very heavy dews seem to save the crops from drought. Crops are sown by the end of May, and when they appear above ground in June there is usually rain, and then a dry time until fall.

The land will raise wheat, barley, corn, oats, roots, and vegetables of every description. Wheat averages from 30 to 50 bushels per acre; barley the same, and doubtless would yield more if properly cultivated; oats, 40 to 80 bushels per acre. Prices at present:—Wheat, \$1 25; barley, \$1 25; oats, 75c.; potatoes, 50c.; turnips, 25c.; butter, 50c.

Farmers in the country say that they have raised wheat off the same piece of land for 20 years, and affirm that the latter crops have yielded better than the first. They object to manure, for they find it makes the crops go all to straw. They get rid of manure, as it has been said that Canadians once did—haul to river bank and *leave her over.*

Canada thistles abound, especially about Winnipeg.

The greatest drawback to the country is that lumber of the first quality cannot be obtained; such as they obtain is chiefly spruce, cotton wood, oak and elm. Little or no pine is to be found within 100 or 150 miles; this is worth from \$75 to \$100 per thousand, and poor at that. Poplar is the wood chiefly used for fuel and fencing. The fencing for one year supplies fuel for the next. In time, however, the vast coal beds along the Saskatchewan will be opened.

It is a rich country in minerals, and when communication is opened up to the Pacific by railroad, the richest mines in the world will be discovered. Such is the opinion of many miners there at present, who have been all through that country. At present the hostile tribe of Blackfoot Indians make it unsafe to prospect in small bodies the headwaters of the Saskatchewan; and the want of provisions, added to the trouble of carriage, have hitherto prevented larger bodies from exploring.

Our correspondent says that he felt the cold but little last winter, when, from 16th

of December to the end of February, the thermometer ranged generally from 10° to 20° below zero, having fallen as low as 45°.

Farmers have large stocks of horses and cattle, but pigs and sheep are scarce. Cattle can graze out all winter, as the grass does not lose its nourishment; but in very deep snow, and when a crust forms towards spring, there is danger of their starving if not then fed.

The half-breeds in possession of farms can be bought out very cheap. Most of them will "vamoose their ranches, and travel west."

In Winnipeg (in point of size only a village) are twelve stores, a tin shop, saddler, gunsmith, four saloons, one restaurant ("equal to any in Hamilton"), hotel, three boarding houses, an Episcopal, a Presbyterian, a Methodist, and a Roman Catholic church, two newspapers, a saw mill, six doctors (and goodness knows how they live.)

This is the gist of the information received from this observant and intelligent correspondent; and while our readers may rely upon its correctness as regards the existing condition of things, there are no doubt circumstances that will perhaps speedily alter prices, &c. At present, it seems nearly all the produce finds a market in the country; but when farmers flock in, and the produce becomes a surplus, then will markets have to be found in other countries, and prices will have to be ruled by the foreign markets, less the expense of transport and the ever present middlemen.

Although Manitoba and its almost limitless surroundings, like all new countries, doubtless opens a grand future to the emigrant, yet that future has to be attained by the majority by constant and close industry; and the man that could not do passably well in Ontario, will not (with few exceptions) greatly better himself in that newer land. It becomes a question of *the man*, though success is no doubt favoured by the smaller amount of opposition to be met with, and the diminished competition consequent on limited numbers.

#### Co-operation among Farmers.

This is an age of combination and organization. Almost all extensive enterprises are carried out by a "company," and while leading minds direct its affairs, the resources of the many are brought to bear on the achievement of the object desired. Great economy as well as larger success are thus secured. These organizations are sometimes tyrannically worked, and the power they give is occasionally exercised unjustly or oppressively. Hence gigantic "monopolies" and "rings" among speculative buyers, "strikes" and violent interference with private rights among mechanics or the members of particular crafts or trades. But these abuses are

not inherent in the system, and do not militate against its legitimate operation.

There is one class, however, which this general tendency to combine has scarcely yet reached. The farmers of almost every country are a comparatively isolated portion of the community, even when they form, as they do in Canada, the large majority of the population. The result of such isolation is in many ways prejudicial to their interests. They more easily become the victims of speculation, besides conducting their business at greater cost in trouble and in money than they would do under well regulated schemes of co-operation. The result of the factory system of cheese making is very suggestive of what might be attained by similar organization in other branches of farm husbandry.

The advantages that should be kept in view in such combined action are manifold. Among them may be reckoned the cheapening the cost of production, enlarging its facilities, and raising the standard of quality in produce, as well as a reduction in the cost of all that is required to be purchased, whether stock, seed, implements, or household necessities, and obtaining the highest price for all produce, without the intervention of middlemen, and the attendant deductions in profit to which the farmer must submit while this class of buyers interposes between him and the consumer.

Let the farmers in any neighbourhood unite together, and select one or more of their number to buy seed, for example, and no one will doubt that a considerable individual saving and a better supply would be effected. In the matter of implements, also, while there are some that every farmer must own, and be able to command the use of at any time, there are others, and these often the most expensive, that might with advantage be the common property of a number; and for all such implements, whether for individual use or the joint interests of the co-operating parties, wholesale prices might be given in place of retail. A similar deduction in cost could be secured in purchasing fruit trees, fencing material, and in short, almost everything the farmer required. The use of pure-bred male animals, and the consequent general improvement in live stock, would thus be brought within the reach of all, instead of being limited to the enterprising and wealthy few.

These are some of the obvious ways in which such a plan of combined action would prove advantageous. Another indirect benefit, but one of no small value, would also be gained in the increased neighbourly feeling that would result. A community of interest, more frequent occasions of meeting, a closer acquaintance with each other's wants, and the mutual interchange of help, would exert a most favourable influence on the social character of the inhabitants of any locality where such united effort in a common calling prevailed, and would do much to



break up that unnatural and selfish isolation in which too many farmers live.

This very important subject might very well come under the consideration of Farmers' Clubs, and the usefulness of such institutions would be greatly enhanced if their functions, or at least their deliberations and efforts, were extended in this direction

KEEP A MEMORANDUM BOOK.—Carry it always with you, and immediately an idea crosses your mind which you wish to retain, enter it. Enter little jobs that have to be done, a piece of fence to be put up, an implement required, when horse food will be finished, who has certain seed that you are wanting in a week or two, and all those innumerable little thoughts of *something that must be done*, which cross the brain at odd times, and which, when a slack day or hour arrives, cannot be thought of. The intelligent store-keeper never trusts his memory for the remembrance of what stock he must renew when he goes to the wholesale houses; and the intelligent farmer would do well in this matter if he committed to paper those humbly little requirements which it is impossible to keep floating on the surface of the memory.

POTATO BEETLES.—We continue to receive specimens of both kinds of potato beetle for identification. Readers of THE GLOBE or CANADA FARMER would not need any further assistance in distinguishing them. Those sent by R. Murray, St. Helens, are Three-lined Potato Beetles; G. R. Littlejohn, Cantown, Three-lined; J. B. W., Preston, Colorado and Three-lined.

FALL SHOWS.—Secretaries of Agricultural Societies, or others correctly informed on the matter, are requested to send us early notice of the times and localities fixed for the coming County and Township Agricultural Exhibitions, that we may be able to publish, as heretofore, a list of shows for the information of farmers and manufacturers throughout the country.

TRADE OF THE COLONY OF VICTORIA.—The imports into this colony in the year 1870 were of the value of £12,455,757 14s. and the exports £12,470,014. The total number of vessels entered inwards at all the ports of the colony, including the ports on the River Murray, was 2,093, of the aggregate tonnage of 663,764 tons; and 2,187 vessels cleared out, having a tonnage of 681,098 tons. The value of the goods laden on ships arriving in Victoria and transhipped to other colonies or countries during the year was £1,145,882. The amount of all the duties and revenue collected by the Customs Department during the year was £1,372,612 12s. 4d., of which £65,267 10s. 9d. was from excise duties. Pilotage rates are returned as £18,130 8s. 7d.

## Horticulture.

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

### American Pomological Society.

This Association, whose object is the promotion of fruit culture throughout the United States and the Dominion of Canada, holds its THIRTEENTH SESSION in the city of Richmond, Virginia, on the 6th, 7th and 8th of September, 1871. All Horticultural, Agricultural and Pomological Institutions in the United States and British Provinces, are requested to send delegations, as large as they may deem expedient.

Arrangements have been made with the various railway companies terminating in Richmond to return all free of charge who have paid full fare in coming, on exhibiting certificates from the Treasurer of the Society that they have attended the session.

*Members, Delegates, and kindred associations are requested to contribute specimens of the fruits of their respective districts.*

Packages of fruits, with the name of the contributor, may be addressed American Pomological Society, care of H. K. Ellyson, Secretary Virginia Horticultural and Pomological Society, Richmond, Va.

The following are some of the premiums offered:—

ONE HUNDRED DOLLARS for the best collection of fruit, embracing apples pears, peaches and grapes—by the Virginia State Agricultural Society.

FIFTY DOLLARS for the largest and best collection of apples, not less than fifty varieties, three specimens of each sort—by Ellwanger & Barry.

FIFTY DOLLARS for the largest and best collection of pears, not less than fifty varieties, three specimens of each—by Marshall P. Wilder.

FIFTY DOLLARS for the largest and best collection of American grapes, not less than twenty varieties, three bunches of each—by Charles Downing.

TEN DOLLARS, or a medal, for the best half bushel of cider apples—by H. H. Smith; and the same for the best twelve bunches of Delaware grapes—by Chas. T. Wortham & Co.

It is to be hoped that the Agricultural Association, and the Fruit Growers' Association of Ontario, will be fully and ably represented at this gathering, and that there will be such a display of the fruits of Canada on the occasion as will show the worthy fruit growers of the American Pomological Society that the Dominion of Canada can grow as fine fruits as any part of the continent of America. We owe it to ourselves, and to

the beautiful land in which we live, to make its resources and capabilities as widely known as possible, and to seize upon every opportunity, and especially such an opportunity as the present, to show the world that we can raise the best apples that are to be found on the globe. It is to be hoped that the councils of the societies, whose charge it is to foster the productive interests of the country, will make such appropriations of their funds as may be necessary to secure a full collection of the fruits of Ontario at least, and send them in charge of some competent persons to this Convention. From what we know of the quality and perfection of our fruits, as compared with those from any part of the United States, we may safely court inspection, and feel confident that we can lead the van.

### Fruit in Nova Scotia.

NO. II.

PLUMS.

These are successfully grown in almost all parts of the Province. We have several kinds of coarse, hardy plums, which are propagated by sprouts and suckers, and on some of the old farms they may be found growing in thickets, without any cultivation, bearing heavy crops for a few years, and bidding defiance to the Curculio, but finally succumbing to the Black Knot, when they are cut down, to be succeeded by a new growth, and the process repeated. Many of these are worthy of better treatment, and will, I think, compare favourably with the vaunted Wild Goose and Miner Plum. As to the better sorts, all that have been tried seem to succeed very well. Even Coe's Golden Drop, which Downing says cannot be ripened north of 41°, has been successfully ripened in this neighbourhood, and Reine Claude de Bavay is considered one of the most profitable market sorts. I would recommend in addition to these the Nectarine, Green Gage, Bleeker's Gage, Yellow Gage, Flushing Gage, Red Gage, Lombard, Prince of Wales, Orleans, Smith's Orleans, Sharp's Emperor, Jefferson, Blue Imperatrice, White Magnum Bonum (Yellow Egg.)

The only disease is the Black Knot, which in some seasons is very troublesome, and the only remedy is to cut it off as soon as it has grown, and before it ripens, and burn it.

"The only insect is the Curculio, *Conotrachelus reniphar*, and this 'little Turk' is a pest in himself. The remedy is—determined and persevering war, year after year, and day after day, with sheet and mallet.

CHERRIES.

These are hardy, and usually fruit well in all sections of the Province. The old Kentish is grown in many places almost without cultivation. On the shores of Annapolis Basin there are many quite large cherry

orchards, mostly a variety of the Black Heart. They are hardy, prolific, and of good quality, and said to reproduce the same kind from seed. The kinds I would recommend are Early Purple Guigne, Mayduke, Black Heart, Waterloo, White Spanish, Black Tartarian, Downer's Late, and Starr's Prolific; the latter a native.

STARR'S PROLIFIC originated on my father's farm, Starr Point, from seed of the Waterloo. The tree is now about twenty-five years old, large, spreading and healthy, a constant and most prodigious bearer. The fruit is medium, roundish heart shaped; colour, bright red; flesh tender, juicy, rich, brisk sub-acid. Ripens one week later than the Waterloo.

#### THE QUINCE

This does well in moist, deep soils, and the cultivation is increasing. Near the town of Annapolis Royal they have been successfully grown from the earliest times, and probably were introduced by the French.

#### PEACHES AND NECTARINES.

These also do well trained against a wall. I have known some worked on the plum, and trained on a brick wall, bear heavy crops at forty years from the bud before failing. As standards, without protection of any kind, the trees are short-lived and the fruit small. Apricots fruit well in a sheltered garden, the moor-park especially.

#### STRAWBERRIES.

This fruit is grown all over the Province successfully, according to the care and cultivation given. I should place Wilson at the head of the list for profit, next Triomphe de Gand, Jucunda, Brooklyn Scarlet, and Agriculturist.

#### RASPBERRIES.

Although they seldom winter kill, still it pays to cover the canes through the winter, as the buds come much stronger. I would recommend Hudson River Antwerp, Fastoff, Franconia, White Antwerp, Brinckle's Orange I know nothing about the 'black caps'; do not think they have been fruited yet.

#### THE BLACKBERRY.

Not much attention has been paid to the cultivation of this fine fruit, as it grows spontaneously almost wherever allowed; by the fences, roadside, and stone heaps, where it is protected from cattle and sheep. A few years ago I tried the Lawton (new Rochelle), but it winter killed badly. I then made a plantation of the best wild plants I could find, and I soon noticed that I had two varieties very distinct; one had tall, strong growing, dark reddish or purple canes, the fruit varying from medium size to small, with large core. It did not improve much by cultivation, and I pronounced it worthless. The other had a feeble, almost branchless green cane, that would bend over until the tips reached the ground, and loaded with fine

large fruit. I am so well satisfied with it that I have not sought for better. The only trouble is to keep it in order so that I can pick the fruit.

#### GOOSEBERRIES.

The English varieties do well on the Atlantic coast and most parts of the Province, but in this valley they are apt to mildew. Houghton Seedling and Mountain Seedling are very prolific, and free from mildew.

#### CURRENTS.

These used to grow everywhere and anywhere, but of late years the currant worm, *Abraxia ribearia*, has been very destructive to both the currant and gooseberry. Powdered white hellebore is the only effectual remedy. The Currant Borer, *Prenocerus supernotatus*, is doing a good deal of injury to both currant and raspberry in some localities. The only remedy I know of is to cut out and burn all the affected parts as soon as discovered. For productiveness and quality, I would recommend Red Dutch, Victoria, White Dutch, White Grape, and Black Naples. In this climate they are better grown in stools, as the snow breaks off the side shoots and destroys the plants when grown to a single stalk.

#### NO. III.

#### GRAPES.

These are usually grown here with the protection of a wall and on the renewal system, and the bearing wood is girdled soon after the fruit is set. By this method, with the protection afforded by the south wall of his office, Dr. Hamilton, the President of our Fruit Growers' Association, was enabled to show a number of bunches of Black Hamburgh at our exhibition in Wolfville last October, which, for size of berry, perfect colouring, and exquisite flavour, excited the admiration of all present. The sorts which are best known, and which have been grown and ripened here for many years, are, of European Grapes—Black Cluster, Miller's Burgundy, White Sweetwater, and Royal Muscadine; of American origin—Isabella, Diana, Concord, Delaware, Hartford Prolific, are the most common, and have been successfully grown. Many other new varieties are being introduced, but are not yet proved.

#### FLOWERING SHRUBS.

I can recommend as perfectly hardy in this locality—Daphne Mezereum, Japan Quince, Dwarf Double Flowering Almond, Rose Acacia, Roses of all hardy sorts, Guelder Rose, Waxberry, Spiraea, Syringa, Missouri Currant, Laburnum, Venetian Sumach, Lilac, White, Purple, and Persian; Ampelopsis, Clematis, Honeysuckle of all varieties.

#### NATIVE APPLES.

The following native varieties of apples are much esteemed:—

SUTTON'S EARLY, originated by Wm. Sutton, of Cornwallis, from seed of Ribston Pip-

pin, is not yet thoroughly proved, but promises well. The fruit is large, conic, slightly ribbed, skin yellowish white, with faint russet markings around the stem. Cavity deep and narrow; stalk long and slender; flesh white, juicy, pleasant subacid flavour; tree thrifty and spreading; young wood stout, dark and downy; season, 20th to last of August.

BISHOP'S BOURNE, is another seedling of Sutton's from the Ribston Pippin. The tree is hardy, a quick grower, spreading; young wood bright and tough. It bears abundant crops of fair fruit, which is much prized for stewing and baking, as it contains a great deal of saccharine, although classed as sub-acid. Fruit is medium, roundish conical, pale yellow shaded, and obscurely splashed and striped in the sun; flesh is white, crisp; tender, juicy, mild subacid, slightly aromatic, season, November and December.

MARQUIS OF LORNE, a seedling from the Gravenstein, by Sutton. The tree is large, vigorous and spreading; young wood stout and dark; the foliage is large, dense and dark; blossoms are large and dark rose coloured; fruit large to very large, oblate, sometimes conic; skin smooth, yellowish white, thickly sprinkled with carmine, and splashed with broken stripes of a darker shade of the same colour; dots small and brown; cavity, wide, deep, and regular, russeted; stem short and small; basin large ridged and irregular; calyx large, open; segments reflexed; flesh white, breaking, rather coarse grained, juicy, pleasant, sprightly subacid; season, November and December; very promising.

MORTON'S RED.—This is supposed to be a native. It was found growing on the farm of the late Elkanah Morton, of Cornwallis. It is a moderately strong grower, with spreading pendulous branches, a very good bearer and a good market apple. Fruit medium, round, inclining to cone, and always fair: skin smooth, of a dull greyish white, nearly covered with light and dark red, through which the grey skin shows in faint striated markings; calyx rather large, closed; cavity broad, shallow, and regular; stem medium, sometimes fleshy and knobbed, in a shallow even basin; flesh white, tender, fine grained, juicy, pleasant subacid: season, December and January, but will keep longer

#### Fruit in the Vicinity of Montreal.

The alluvial terraces surrounding the mountains in this part of the Province of Quebec have long been celebrated for the growth of fruit, especially apples, and in sheltered situations for pears and plums, while small fruits are grown successfully far north of Quebec city. Of the apples which succeed best in the vicinity of Montreal, I note the following in the order of their suitability, viz: Fameuse, St. Lawrence, Pomme Grise, Alexander, Early Joe, Spanish Reinette,

Autumn Strawberry, Duchesse of Oldenburg, Red Astrachan, Bourassa, Dominic, Ribston Pippin, Blue Pearmain, Indian Rare-ripe, Lady Apple, American Golden Russet, Keswick Collin, Early Harvest, Primate, and Tetoffsky; also, the Montreal Beauty and Transcendent Crabs. All the above do well here if proper attention is given to pruning the trees after the leaves have begun to unfold in spring; some of them towards the end of my list, if pruned in winter (as is customary here) become affected with black heart or sap canker, which commences at the pruning, and spreads very often over the whole tree. This applies mostly to trees originated in warmer climates than ours, or rather where the winters are shorter.

The St. Lawrence apple originated in Montreal about fifty years ago, in the garden of the late Henry Schroden, from the seeds of some decayed apples thrown on a manure heap. Three others seedlings of some merit (one of them a russet) originated from the same lot; but the St. Lawrence is the only one now in cultivation, and the original tree is still alive and healthy; or at any rate *was* a few years ago. I have given these few particulars, as the origin of the variety is not generally known. The first Northern Spy and Early Joe apples in this Province were fruited in my grounds from trees brought from Rochester, N.Y., over 22 years ago. Early Joe fruited at five years old, and has borne regularly and profusely ever since, and is a perfect picture of health. Northern Spy fruited when fifteen years old, bearing a few apples that and the succeeding years, and then died root and branch. I have tried several trees of the same variety, with similar results. Both these varieties originated in the same orchard in New York, and both are of the finest quality; but I regret to say that Northern Spy will not succeed here, and we must look to you for our supplies of them, as they have already become the standard winter apple of this market. King of Tomkins County, Baldwin, English Golden Pippin, Detroit Red, Summer Rose, Early Strawberry, Maiden's Blush, Swaar, Gravenstein, Talman Sweet, Twenty Ounce, Hubbardston Nonsuch, and a number of English varieties, are not suited to this climate; while others, such as Esopus Spitzenberg and Fall Pippin, are hardy, but very poor bearers with us.

About four years ago a succession of cold rains in the latter end of May completely killed off the apple caterpillars, which for the last fifty years have been so destructive to the orchards here as to cause many to abandon the culture of the apple altogether. The riddance of this pest has greatly stimulated the planting of fruit trees, and there have been more orchards planted during the last three years than during the ten years previous. I note these facts because it is erroneously supposed here that the protecting of insectivorous birds during the last few years has caused the disappearance of

the apple caterpillar. During a close observation of twenty-five years, I have never seen an insectivorous or any other bird that would touch an apple caterpillar, and my observations are confirmed by our oldest orchardists. I do not wish to undervalue the protection of birds, but I can positively affirm that our exemption from apple caterpillars is in no way connected with such protection.

This whole subject of insect devastation is one which must in future compel the serious attention of the horticulturist. The prevalent ignorance of entomology as practically applicable to horticulture, is deplorable. If the societies of the Dominion would apply themselves to study the conditions under which insect life prospers, they will inaugurate a new element of success in fruit culture, an element becoming every year of increased importance from the constant increase of our own minute but formidable enemies.

I may remark, however, that apple trees here, if we except the caterpillar, are exempt from many insect depredations, owing to the severity of the winters and the depth of the snow, as after a very mild winter insects here are much more numerous and troublesome.

The best time for planting fruit trees here is to take them up in the fall, heel them in for the winter, and plant out in the spring. The cold dry weather so prevalent at the commencement of winter is very destructive to fall-planted trees. If the holes where the trees are to be permanently planted are prepared in the fall, and the tree laid in the same by the heels and well covered, so that in the spring it would only have to be raised to an upright position, not more than one tree in a hundred would fail.

I have planted a great number of dwarf apple trees during the last twenty-five years. With rare exceptions they succeed for a few years only. They form an enormous protuberance at the graft, and if the roots are not thrown out above the junction, the tree either dies or breaks off there. I have only one dwarf apple tree remaining (Autumn Strawberry), which is twenty-two years old, and a marvel of fruitfulness; but I know that it has rooted *above* the stock. Dwarf apples will never be a success here in a pecuniary point of view.

#### PEAR CULTURE.

As this is the most northern limit for the pear tree to be grown with success, I must trespass on your patience a little by stating a few of the circumstances under which pears were formerly grown here, as contrasted with the modes of cultivation generally practised at the present time, as they furnish some useful hints to those who may attempt the culture of the pear in the northern parts of the Dominion. The early French settlers planted in the vicinity of Montreal a great number of pear trees, of kinds that were com-

mon in Europe over a hundred years ago, such as summer Bon Chretien, White Doyenne, Capiumont, Green Chisel, and a few early summer varieties. Many of these trees attained a great age, and grew to a large size. I have trees grafted from a Beurre Capiumont, which was cut down a few years ago in this city, the wood of which was quite sound, and it was at least a hundred years old. I had these scions grafted on perfectly hardy wild pear stocks, and yet I have had the greatest difficulty in keeping these young trees from being winter-killed, in one of the most sheltered and favourable situations on the island of Montreal. Now, previous to the terrible winter of 1858-9, there were quite a number of these large pear trees about here, which bore large crops of fruit, and were, for trees of such age, in a thrifty condition; and I find from personal examination and enquiry that most of these trees were never *manured* or had the ground cultivated about them; that they made a very small annual growth, which was in consequence well ripened at the end of our short hot summers; that this small growth had a tendency to make the tree fruit early, and this early fruiting would check the redundant growth of an unusually favourable season, and enable the tree to ripen its wood as usual. Such were some, at least, of the conditions under which these fine old trees grew and prospered. Let us consider for a moment the conditions under which pear trees are planted by the million at the present day, and which *grow*, but *don't* prosper.

In the first place, the nurseryman endeavours, by high manuring and cultivation, to have his trees fit for sale at two or at most three years from the bud, and his trees are as large as they ought to be at twice that age. These frothy half-ripened things are sent all over the country. The parties who buy them read up on the subject of horticulture; they learn of the immense progress trees make with high culture and manuring, and they saturate their ground with rich stimulating manure. In a season or two the roots have got fully established, and a strong rapid growth follows, very delightful to look at, but which the succeeding winter will certainly destroy.

#### Strawberries in the Niagara District.

There has been too little rain to bring the strawberry crop to perfection, and those plantations which were on warm soil or in sheltered places, where the plants came early into bloom, suffered from late spring frosts, which killed all the crown berries. The result is a short crop of this delicious fruit, and what there is all ripened up at once. The *Wilson* continues to be the most popular sort with those planting for market. *Jucunda* will not yield more than half as many berries; nor will the *Triomphe de Gand*; nor even as many as that except on clayey soils, heavily enriched, the plants carefully grown

in hills, and the runners kept closely cut. *Colfax* is numerous enough, about the size of peas, and sour, without the flavour of the Wilson. It is a vigorous grower; a few plants would cover a ten acre lot. But the season is unfavourable, and it will not do to be very positive concerning the qualities of any strawberry from what can be seen now. At the exhibition of the St. Catharines Horticultural Society, held on the 15th June, although there was a fine display of flowering and foliage plants, only two plates of strawberries were exhibited. A very sad commentary on the strawberry season.

### Weeds in Garden Walks.

I want to tell your readers how I keep the walk in my flower garden clean. It is a very simple plan, and the wonder to me is that I never thought of trying it long ago, for they are something that have given me much more trouble than the beds themselves, and I have never before been able to keep them clean without a great amount of help from Pat. One day last summer I happened to have a large quantity of boiling water to dispose of. For some reason I did not want to throw it in the drain, and we never throw anything in the yard; so after a few minutes consideration I said it should be emptied on the walks in the flower garden, as it would do no harm there, and sure enough it did not. The next day, when down in the garden for flowers, the walks attracted my attention, they looked so uncommonly clean, not a green thing daring to stick up its head. Since then I have bathed them faithfully with scalding water once in two or three weeks, and the weeds are not only killed, but the ground is always hard and smooth, as it does not have to be dug over.—*Cor. in Country Gentleman.*

### Pinching Tomato Vines.

The principal object sought in pruning tomato plants is to check the growth of the vine, and force out fruit buds. If tomato vines are planted in rich soil they will usually grow vigorously, and expend their strength during the early part of the season in producing stems and leaves, showing little fruit until the plants have reached a large size, and then only that which sets early will ripen except in very favourable localities. Every one who has cultivated tomatoes in the North, and allowed the vines to grow unchecked, must have noticed that not more than one-half the fruit upon them reaches maturity, simply because the season is not sufficiently long to permit the plants to exhaust their fruit-producing powers and ripen. It is, therefore, a waste of time and soil to allow vines to grow unchecked in Northern localities, and pinching may be practised with benefit. As soon as the plants are a foot high, pinch off the top; this will force out strong laterals on the stems below, and

on these blossoms and fruit will soon appear. When the laterals are a foot, or a little more, in length, their ends should also be pinched off, checking the growth of stems and leaves, and throwing the whole strength of the plant into the fruit, and hasten its maturity. If the object is to produce ripe tomatoes instead of green ones, then allow no greater number to start than is likely to mature, and this will be much larger and better in consequence of the treatment it has received. On poor, light sandy soils at the North, pinching is seldom advisable, because it will usually weaken the plant so much as to cause the fruit to become diseased, or scalded by being exposed to the direct rays of the sun.—*Rural New Yorker.*

### Culture of the Pineapple.

Very few places seem to have the Pineapple. Why is it so? Their culture is as simple as growing strawberries. I think the answer is simply this: expense and ignorance. The former caused in the labour, burning of fuel, and the laying out of money without receiving the benefit of such, and the latter, in lack of judgment or experience on the part of the gardener. There are some places in which no large amount of expense is incurred, and a good supply of fruit obtained; and others, on the contrary, cause such extravagant expense that it is enough to frighten any person out of the thought of growing them. Hoping that I will be able to throw some light on the subject to those who are not experienced in their culture, I offer the following suggestions, fully confident that if well attended to they will give general satisfaction:

To grow the pineapple to its greatest perfection, it requires a house suitable for that purpose; such a house should be constructed so as to admit all the light possible to the plants. A three-quarter span, 60 feet long, 14 feet wide, (with a pit in the centre 8 feet wide, filled with tan to the depth of 16 inches, and an evaporating tank underneath, having a gradual slope with the roof not more than 4 feet from the glass,) and partitioned off into two departments of 30 feet each, will form a very commodious house; admit plenty of light, easily heated, and each department will hold from 60 to 70 large plants.

#### SOIL.

Five parts good turfy loam chopped into pieces about the size of a walnut, with one part well decomposed leaf mould, and one part sand thoroughly mixed, forms a compost well suited to the growth of the pineapple, and in which its roots will travel very fast, regardless of danger as far as the soil is concerned.

#### KINDS TO GROW.

The varieties of the pineapple are numerous; but few, however, merit general culti-

vation. The following I recommend as deserving of all care and expense that may be bestowed upon them: Broad-leaved Queen, Black Jamaica, New-Providence, and Antiguas. There are others of very good quality, but the above named varieties are all first-rate.

#### PROPAGATION.

The pineapple is propagated from suckers, gills and crowns; some kinds are generally backward in producing suckers, such as Providence plants; when such is the case, plants should be turned out of the pots, (as soon as done fruiting, of course,) and a few of their lower leaves cut off; the rest cut in rather close, and about three inches of the old stump cut off and potted in 32 sized pots, and treated as suckers, when they will produce two or three good suckers. By this method all shy breeding sorts may be increased.

#### CULTURE.

Having got all suckers, gills, or crowns that are wanted, place them in a convenient place in the pine house under the full exposure of the sun, for about a week, after which pare the stump and cut away all the lower leaves that are necessary, so as to fasten the plants in the pots, and pot them in pots according to their sizes; the largest in 32 sized pots, and the smaller into smaller pots. When potted, plunge them in the tan bed up to the rim of the pots, with bottom heat of 80°, syringe over head about twice a week. As soon as the sun is going off the house is the best time for that purpose. Do not give water at the roots until they have reached the sides of the pots, and in future as they are in need of it.

As the season declines, lower the temperature. The temperature for winter should be between 55° and 60° by night, and should not exceed 80° by day. In the latter part of March, or early in April, turn the plants out of the pots, and cut away about two-thirds of the roots; pot in the same sized pots, and plunge back in their former position, keeping them rather close, but not allowing the temperature to exceed 90° for a few days, until they have again taken root hold, when they should be watered more freely, the temperature gradually increasing. I have known the temperature to rise to one hundred and fourteen, the thermometer covered, without the slightest injury to the foliage. As the season advances, sprinkle the plants overhead more frequently; in very hot weather every other day. About June they should be potted into 16 size pots, balls entire. This time the tan will need cleaning, and a fresh supply added to it. This done, the plants should again be plunged. About August give them their final shift in 12 sized pots, and, when potted, the soil should at the very least be one inch below the surface of the pots. The plants having received their last shift, should show fruit in September. As the season declines, the temperature should

be lowered as previously directed, and in bright sunny days syringe about twice a week, to take the mouldiness off the fruit, which is caused from the humidity of the atmosphere. About February, the fruit will begin to colour, when the temperature should be raised to 65° and 70° at night, and may reach 100° by day, without injury, and in April the fruit will be fit to eat.

Growing the pineapple in beds of soil is not much practised; but by this mode fruit can be obtained almost every month in the year, on account of the old plants producing suckers in every stage of their growth. The objection to this mode is, that the fruit is not so large as when grown in pots. When this mode is resorted to, the pots should be filled with soil, which need not be more than one foot in depth, and the plants planted 16 inches apart, in rows arranged alternately.

—E.C.

### The Gladiolus.

We have cultivated this beautiful flower for several years with great satisfaction, and believe it is improving and growing in favour every year.

The bulbs should be set out in the spring singly and in clumps, but at different times, so as to form a succession of flowers from some time in August, when they first begin to open, until the frost comes. When in perfection, you can cut them off and keep them in water in the house several days.

The old bulb dries up and dies in the ground during the season, forming on the top, one, two or three new ones. When the flowers begin to droop, or earlier, if we wish to keep them awhile in the house, we cut off the stalk, and just before frost comes, take up the new formed bulbs with the leaves on, dry them, and hang them up in bunches in our cellar, where they have always kept as well as the potato. Our cellar is cool, dry and well lighted.

In spring they are brought up, the dry leaves broken off, and the new bulbs come out fresh, dry and in fine order. They bear pretty early planting and a rich soil, but like most bulbs, flourish best in a moist soil and moist season, and a little sand is a valuable addition to the soil. They generally seem impatient of too much barn-yard manure, and do best with liquid manure of moderate strength.

Any one who can grow and keep the potato, can, with about the same care, grow and keep the gladiolus. If his taste is to have a great variety of flowers of all kinds of colours, he can buy bulbs, true to their names, at almost any large price he may choose to give. But it is best for every one to begin with a few of the well known varieties at a moderate cost, and to increase his collection by occasionally buying one or more of the more costly varieties. He will soon have a rich collection, and can discard those

that become unsatisfactory. We have varieties that we have raised year after year, true to their colour and form, and should be very unwilling to part with them.—*Country Gentleman.*

### Fruit in the South Riding of Renfrew.

We have received a very interesting letter from an amateur fruit grower, resident in the South Riding of Renfrew, who seems to find a great deal of difficulty in growing our finer varieties of fruit trees. He says he has had the Fameuse or Snow Apple, Talman Sweet, and the St. Lawrence, in bearing for a number of years, and that he finds the Alexander (at least he believes it to be that variety, though he bought it under another name,) to be nearly as hardy as the crabs. A few years ago he planted an assortment of trees from Rochester, which succeeded pretty well for a few years; and the Rhode Island Greening, with one or two others, reached a bearing state, but a few adverse years came round about that period, and they nearly all perished, as indeed did most of the orchards in that vicinity. "I have since tried," he says, "a number of sorts, both on dwarf and free stocks, with very little success. The Early Harvest is always killed; the Northern Spy, the Sweet Bough, the Twenty Ounce, the King of Tompkins, the Rambo, Summer Pearmain, Wagener, Canada Reinette, Jonathan, and Ribston Pippin, fail. Notwithstanding the reputed hardiness of the Red Astrachan (if I have not been deceived in it) it has not succeeded with me. The Keswick Codlin and Golden Pippin bear, but are not thrifty trees.

"Of pear, I have tried about a dozen sorts on quince; but none of them have been a success. Some years since I had a few specimens of the Bartlett and Steven's Genessee, with careful protection. I have a few specimens mostly every year on a couple of trees, which I think are the Wilhelmine (Jaminette), a rampant grower, without protection. I have about half a dozen trees on the thorn, which give a few fruits, but are gnarly and small. I have not succeeded with plums; the Jefferson, Washington, and others, fail; the Reine Claude de Bavay, the Imperial, and a blue plum would, for some years, yield a few fruits, and then perish. The Black Tartarian Cherry, the Mayduke, and other sorts on the Mahaleb, have been a failure. The quince is always killed down."

The gentleman who has favoured us with this information—we would most gladly give his name if we had his permission—has given us the results of his own trials. The spare moments snatched from business cares have been devoted to his garden, and he has cared for his fruit trees with his own hands. To this fact he very modestly attributes much of his want of success; but we feel confident that the thoughtful care of one who labours with a love among his fruit trees, is more

worth than the self-confident skill of many a professional gardener trained in the school of another climate.

Our correspondent's soil varies from a clay loam to a sandy loam, the growth of his trees is always good, and he thinks possibly too good, as a graft or bud will rise the first season from three to six feet.

He says he has had better success with grapes, and has grown them for upwards of twenty-five years; eight sorts comprise his present assortment. We regret that we can not inform our readers what sorts they are; but we hope to hear again from this enthusiastic lover of fruit culture, and be able at some future time to lay before our readers a more detailed account of his experiments. The labours and the record of their results of such a careful and observing cultivator, are a guide to others whose lot is cast in a like unfavourable climate; and we only wish that the gentlemen who, with a love of fruit culture that knows no chill despite the bitter frosts of our Ottawa region, are devoting their energy, stimulated by experience, to ascertaining those varieties and methods of culture that shall enable them to gather fruit from their own gardens, would favour us with more frequent communications.

### Fruit at St. John, New Brunswick.

From correspondents resident at St. John, we learn that owing to late spring and early autumn frosts, and the summer fogs from the sea, but few fruits succeed in that part of New Brunswick. The country about St. John, and for fifty miles inland, is very rocky and barren, and when the wind is from a southerly direction it never fails to bring with it a thick sea fog, that is fatal to nearly all kinds of trees and shrubs.

Plums and Siberian Crabs are the only fruit trees that do well; the plum is free from the black knot as far inland as the fog reaches; beyond that they are badly affected.

Raspberries and strawberries do very well. The English kinds, which do not stand well in the United States, do as well as any other, if not better.

Currants and Gooseberries all do well, but they suffer from the saw-fly, though not from the mildew which is so fatal to the gooseberry in other places. A high, dry atmosphere is no doubt favourable to the mildew. These are all the fruits that have the least chance of succeeding about St. John.

The list of flowering shrubs is also very limited. They are the Lilacs, Syringas, Weigelias, Spiraeas, Mezereon, and Viburnums. English White Thorns do well if planted where water cannot lie and freeze around the stems.

The foregoing remarks apply only to the east and south sides of the Province. On the north-west side the land is said to be

good and the climate fine, with good apple orchards, and there also some varieties of grape vines do well.

### Wilson's Early Blackberry.

The Directors of the Fruit Growers' Association of Ontario have decided to give next spring, to all the members, a plant of this blackberry, (together with a pear tree and a black raspberry), in order that its quality may be generally tested.

The earliness of the "Wilson" blackberry consists in the fact that its crop is all ripened up in a short time, within a period of three weeks, while the Lawton extends over six weeks.

Whether it will prove hardy enough to endure our climate can only be ascertained by actual trial, which is sought by this distribution.

The quality of the fruit has been much praised, and it is said to be of a very fine appearance, retaining its colour better than most varieties, and the plant to be an enormous bearer.

When the cane has attained a height of three feet, it should be pinched back. This will cause the lateral branches to grow strong, and if these are pinched back so as to give the plant the form of a pyramid, it will have a very pleasing appearance, both when covered with blossoms and with ripening fruit, besides producing the best results in quantity and quality of fruit.

### How to Grow Pelargoniums.

Take off the cuttings some time before the plants come into bloom, not after they have done flowering. It is a very good plan to cut back some of the shoots of the old plant, two months before the plant comes into bloom, leaving a few well developed eyes. These will soon break, and when they have made four good leaves, may be taken off and struck in a cool greenhouse. As soon as they are well struck, they may be put into thumb pots, and grown until they have made five well developed leaves. The plants should be grown in a cool house, with a temperature of about forty-five degrees in winter, and kept as near to the glass as possible. The plants may now be pinched back to three leaves, and as soon as the buds have got nicely started, they should be shifted into larger pots. The process of pinching back to three leaves, when these shoots have each made five leaves, may be repeated until the desired size is attained, shifting as the increased growth requires. It will be seen that the great secret of success in raising fine specimen plants lies in growing in a cool temperature, with plenty of light and air, and increasing the number of branches from as near the surface of the pot as can be, so that it shall present one mass of bloom.

### The Hawthorn.

Our Double-flowering Hawthorns have been in full bloom during the last half of the month of May, and a splendid show they have made, with their white, pink and purple flowers. The single-flowering sorts are very handsome, but last but a few days; while the double flowers remain for two or three weeks. These trees, which are among the most elegant of the ornamental class, are far too generally neglected by our nurserymen, and it is not an unusual occurrence to find large nurseries entirely destitute of hawthorns. Perhaps the demand for these trees will not warrant the keeping of large or small stocks on hand; if so, then those who desire to ornament their ground are at fault in not planting more, and creating a demand.

Few trees of so hardy a character as the hawthorn make so brilliant a show when in bloom as the single varieties do when loaded with fruit in autumn. The flowers of the double sorts resemble small roses crowded into dense clusters, two or three inches in diameter. There are not only many double varieties, but some of the single that have brilliant flowers, and are well worthy of cultivation.

We have seen a few of the double-flowering white and red hawthorns, in the old gardens about our eastern cities, that are twenty to thirty feet high, but it requires many years for such specimens to grow, but as the plants commence blooming when only two or three years old from bud or graft, there is really no time wasted.

Our native stocks are excellent for the double European sorts, and may be budded with almost as much certainty as the apple. In some soils and localities the hawthorn is attacked by borers; but with clean culture about the stems, and an occasional application of lime or ashes, these pests will do little injury. We advise those who desire handsome trees, and have them not, to try a few double hawthorns. — *Rural New Yorker*.

### The Herbaceous Peonias.

Our gardens have been gay with these showy, sweet scented flowers, and the wonder is that they are not more generally planted all over the country in every garden and door-yard. They are perfectly hardy, requiring not even the slightest protection, flourish in any well drained soil, and need no further care than a little enriching from the compost heap every year, and to be kept clear of grass and weeds. There is also a considerable variety, not that all the names to be found in the catalogues are distinct enough to be all desirable in a choice collection, but by a perusal of the descriptions any one can make a selection of half a dozen that will be distinct and pleasing.

• WHITLEY, is a fine showy white, with

just a shade of creamy yellow when it first opens, and the guard petals tinted with pink.

QUEEN CAROLINE is exceedingly double, of a beautiful clear rose colour, very sweet scented, and often mistaken by those not acquainted with the flower for some monstrous variety of the rose.

HUMEI is a bright purplish rose colour, finely scented and very showy.

FESTIVA MAXIMA is a most beautiful clear white, relieved with occasional streaks of carmine, very double and very beautiful.

QUEEN'S PERFECTION has a double set of guard petals, so arranged that each flower seems formed of two, the one within the other; the colour is a very pretty delicate blush.

DELICHI is exceedingly showy, of a very dark glowing purplish crimson, more double and a finer flower than Pobsii, which it closely resembles in colour.

These varieties cannot fail to please every one, being all of them sweet scented, very showy, and quite distinct.

### Transplanting Evergreens.

Mr. R. Douglas, who has had considerable experience in raising and transplanting evergreens, thinks that too late planting is the principal cause of failure. The growth of a newly planted evergreen he thinks is no just criterion of the hold that the roots have upon the ground, because all the elements of the shoots made this year are, in his opinion, stored up during the previous summer in the buds, so that when transplanted the shoot will extend by force of the nutrition laid up in the buds, and not from the nutriment derived from the roots. If, however, the tree be transplanted early, the roots will have time to get good hold of the soil and develop perfect terminal buds for next year's growth; but if planted late, the amount of nutrition stored up in the terminal buds will be small, and the succeeding year's growth proportionately feeble.

He advises that, in planting, the ground should be thoroughly packed about the roots, packed as tightly as possible; and then loose friable earth thrown over the surface to prevent baking. Nothing is more fatal than to leave cavities under the roots, but so sift in and press down the soil that each and every root shall be brought in perfect contact with the earth.

DAVISON'S THORNLESS RASPBERRY.—A correspondent of the *Horticulturist* writes in high terms of praise concerning this variety. He has found it to be hardy, a superb bearer, and the ladies dresses are not torn nor the hands scratched in gathering the fruit. He plants closely, and mulches the whole surface of the soil with a thick covering of long manure and saw-dust.

## Entomology.

### Insect Crop of 1871.

To the Editor.

SIR,—Enclosed you will find—

1st. A double row of eggs, which I found with one side attached to a twig of a plum.

2nd. A small cocoon, also attached to a plum twig, and from which have just issued a plentiful crop of plain looking caterpillars. These things both seem a little singular, and are new to me.

3. The Fir tree caterpillars are at work. I have caught a few upon some small trees which were transplanted a few years since. Some large trees, sixty rods distant, were nearly destroyed during the past few years, and have been cut down. I hope to keep these caterpillars in check, but have great fears.

I should much like to know the extent of their ravages in this Province. Were it not for this drawback the common balsam fir would make the cheapest and most desirable wind-break in all localities where they occur plentifully. If, however, this caterpillar continues to work as regularly as it has done for several years past in this locality, the labour and the wind-break would be lost.

Other coniferous trees suffer when the supply of balsam fir is exhausted. If, therefore, the plague spreads, an effectual winter wind-break will be a rare thing.

Fearing this, I have planted maples west of my orchard. These will answer well in the summer, and will furnish sugar, and in time good fuel. As I am scarcely troubled with borers, the maples will probably succeed.

Plant lice seem to be very abundant. Even the twigs of balsam fir were covered with them a few days since; now their dried bodies do most abound. The presence of numerous small flies (*Crysopa*, I suppose,) doubtless accounts for the change.

The American Tent Caterpillar, which promised to be an average crop, seems to have fared badly of late. I recently noticed a small army of half grown specimens which had marched half way down the trunk of an apple tree, but their bodies are not now "marching on." On the contrary, their dried remains, with heads erected, still hold the position.

What explanation accounts for the death of these worms?

Perhaps dry, hot days, with nights devoid of dew, caused their destruction. Parasites may have operated upon them. In either case, their death in a body and away from home is yet to be accounted for.

The Bark Louse is hatching, and orchardists must at once use strong soap suds, and similar preparations, to successfully destroy them.

The newly hatched lice may be seen by careful inspection. They move about at first, but soon become stationary. They much resemble small white dots which are found upon apple tree twigs, and are therefore not noticed by most persons. I find a stout woollen cloth suitable for washing and rubbing the bark of trees to free them of lice.

4th. The last report of the Ontario Fruit Growers' Association gives a description of 20 kinds of insects which injure the apple crop, 14 which affect the grape, and 4 which affect the plum. Now, as the edition is exhausted, might not the CANADA FARMER publish these articles, with the accompanying cuts? Very many can obtain the information in no other way. Some of the information contained in these articles has already been given in the CANADA FARMER; but its repetition in a connected form would be valuable to all fruit growers.

E. R. M.

Holloway, June 5.

NOTE BY EDITOR.—(1.) The singular little object that our correspondent took for a double row of eggs is a cluster of tiny cocoons, thirty-two in number, from which have issued a few minute Hymenopterous flies; to what genus and species they belong we are unable to tell, as they are new to us. (2.) The cocoon with a mass of eggs attached, covered with a hard froth-like substance, from which have recently issued a large number of little hairy caterpillars, is the cocoon and eggs of the white marked Tussock Caterpillar (*Orygia leucostigma*, Sm. and Abbott.) There is a full account of this insect in the CANADA FARMER for April, 1871, page 125. It is more than usually abundant this year; see a further notice of the eggs which we copy from the *Canadian Entomologist*. (3.) Our correspondent appears singularly unfortunate with his Fir-trees; we have not observed the caterpillars he complains of anywhere else, though doubtless they do occur here and there throughout the country, as well as in the neighbouring States. We shall be glad to receive some specimens from him, in order that we may determine whether they belong to the Saw-fly (*Lophyrus*) that we suspect. (4.) It is certainly unfortunate that the Report of the Entomological Society was not issued in a separate form, and in much larger numbers, than merely in the Reports of the Commissioner of Agriculture and the Fruit Growers' Association. Two thousand copies were printed, we understand, but the edition was exhausted almost immediately. There is a prospect, however, of its being reprinted in the Transactions of the Board of Agriculture and Arts, a portion of which are now in press. It would occupy far too much of our space to transfer the whole to our columns.

ENTOMOLOGICAL SPECIMENS may be sent for identification, or for information respecting history and habits, to the office of the CANADA

FARMER. Postage should be prepaid. Specimens should be sent in a pasteboard or other box, not loose, but packed with cotton wool, or some similar material. The name and address of the sender should also accompany the package, not necessarily for publication, but as an evidence of good faith, and that we may know where to apply for further information, if required.

### The Colorado Potato Beetle.

To the Editor.

SIR,—The Colorado Beetle has undoubtedly obtained a strong foothold in Canada. I picked one yesterday, 6th June, (a female) sitting complacently upon a potato plant, upon a leaf of which she had already deposited her eggs. This was upon the western outskirts of Hamilton. I have seen specimens found on every side of Hamilton. All measures for the prevention of the importation of this pest into Canada are now useless. He is here, and we must wage war upon him.

Now the insect cannot yet be numerically strong; a single pair of beetles are, however, said by some authority to be capable of producing from 25,000,000 to 40,000,000 in a year. Without giving entire credence to these astounding figures, it must be admitted at the same time that their increase is undoubtedly enormous; and let us bear in mind that every beetle that we kill *now* leaves us with a lesser number of larvae by some hundreds of thousands to contend with at a future day. At the present time, while their numbers are comparatively few, I believe the best mode of destruction is by hand picking. I noticed a plan recommended in an American agricultural paper, and I wish to bring it before the notice of Canadian farmers. It appears to be very practicable in large fields, where the process of hand-picking could not be gone through, and particularly feasible if they should unfortunately appear in very large numbers during a later part of the season.

The writer referred to, residing near Chicago, was much troubled with this insect. He procured air-slacked lime, and early in the morning, when the dew was upon the ground, sowed this broadcast over a belt of a certain width round the outside of the field, leaving it thus for the remainder of the day. The enemy, doubtless like all insects, is particularly averse to lime, and during the day will leave for that inner portion of the field which is free from the top dressing. The next morning another belt is limed upon the dew, the insect is again driven inwards, and the process is continued each morning until he is driven into a comparatively small portion of the field; there he is destroyed either by hand or by the use of Paris green.

The remedy, which is a deadly poison, may in this case, if necessary, be applied in very strong proportions; for if we should even destroy this portion of the crop, the sacrifice

is light when made a means of saving a large proportion of the crop.

Of one thing let us all be assured: As certainly as we neglect the total destruction of this insect during the current summer, so surely will our potato crop be utterly devastated during the coming seasons.

Is it not reasonable to ask that legislative action should be taken upon this subject? Let our Government, by the advice of the most able of our entomologists, determine upon some specific manner in which to compass the destruction of this pest, and make it a punishable matter for any farmer or grower of potatoes upon any excuse to neglect taking the necessary precautions.

C. E. W.

Ancaster.

### Apple Tree Borer.

To the Editor.

SIR,—I find my apple orchard attacked by the borer, or at least a white worm about one inch in length. It appears first to work between the bark and the wood, very near the ground. Some of my neighbours have totally lost their trees by the above worm. Would you be kind enough to give through the columns of your valuable paper a remedy for the above pest?

SUBSCRIBER.

The insect referred to by our correspondent is probably the Buprestis Apple-Tree Borer, though it is impossible to say positively without fuller particulars or the inspection of a specimen. As we have often before described this creature and its habits, we transcribe an account given on a former occasion.

The natural history of the Buprestis Borer may be briefly told as follows:—The egg is deposited by the female beetle in the chinks and crevices of the bark some time during the early part of summer; from this the young grub soon hatches and works his way into the soft sap-wood immediately beneath; here he eats away while the hole inside becomes larger and larger, and he increases in size himself, gradually working his way upwards until he becomes pretty well grown, when he bores into the solid heart of the wood and forms a flattish burrow, corresponding to his own flat form. Some say that this borer never leaves the sap-wood to go into the harder interior, but we have before us a portion of the trunk of a young apple-tree, out of the very heart of which we have cut several of these borers, while others were eating away nearer the surface. When several attack the same tree, their burrows of course approach each other, and sometimes come so near meeting as practically to girdle the tree and cause its speedy death; in any case they very much injure its vitality and bring on decay. We know, indeed, of two young orchards where more than half the trees have been greatly injured by this insect, while some were killed outright; and we have heard of a number of others similarly affected. In the spring of the year, the grub

assumes its pupa, or quiescent, state, and comes out as a perfect beetle in the end of June or during July, when it may be found basking on the tree-trunks in the hot sunshine. It is very lively when danger threatens, and will take wing in an instant if an attempt is made to catch it. Its blackish-brown colour above so much resembles the bark of the tree, that it would easily escape the notice of ordinary observers; but beneath it is of a beautifully burnished dark copper colour, looking as if made of metal, and beneath the wing-covers it is bluish-green. The Two-striped Borer attacks the trees as a rule only near the root, though occasionally at the crotch above; the Buprestis Borer is not particular as to his locality, but attacks the whole trunk, and sometimes even the limbs; they both prefer young trees, probably because the bark is thinner and more easily penetrated by the young grub.

The presence of the grub in the tree may be detected by the discoloration of the bark, and its flattened, dried appearance. All such spots should be opened with a knife, and the inmate ruthlessly butchered on the spot. In young orchards all the trees should be carefully examined two or three times a year, especially in early spring and fall, and all infected ones be promptly treated with an application of the knife. This, however, is a rather slow and troublesome process; it is much easier to keep off the insect than to kill him when he has effected a lodgment. One mode of doing this is to rub the trees over with common soap—soft-soap will do very well—early in June, just before the beetles begin to lay their eggs, and place also a lump of soap in the crotch of each tree, which will be washed down with the rain.

### Entomological Notes and Queries.

FLEA-BEETLES.—The Flea-Beetles sent us by a correspondent, who found them infesting his radishes, &c., belong to two different species; one, the common wavy-striped Flea-beetle (*Haltica striolata*, Illig.) that is so injurious to the turnip crops and the cruciferous plants; the other, a much less common insect, is probably the Downy Flea-beetle (*H. pubescens*, Harris). The remedies most highly recommended are (1) dusting with lime or soot when the leaves are wet with dew; (2) watering with strong soap suds, which we have found tolerably efficacious; (3) catching the insects with a sweeping net.

TWO BEETLES.—The large mahogany-brown coloured, smooth, highly polished beetle, sent us by a correspondent whose note has failed to reach us, is a specimen of the Hermit Osmoderma (*O. eremicola*, Knoch). This insect, with another somewhat similar species, the Rough Osmoderma (*O. scabrum*, Beauv.) is often found clinging to the trunks of trees in the woods, especially where there is any exuding sap. The larvæ feed upon decaying wood in the inside of willow trees, and assist in hastening decomposition. They are not

sufficiently common to be considered destructive. The latter species has a very strong and not particularly agreeable odour, which enables an entomologist to detect their presence at a distance of several yards; we once traced one out by its scent at a distance of at least 60 yards. The other specimen, a small, pale yellowish flattened beetle, somewhat the shape and size of a split pea, is a Golden Tortoise-beetle (*Cassida auriculata*, Fabr.) When alive it is a most lovely little creature, resembling at one time a drop of burnished gold; at another, a liquid pearl, apparently changing its hues at will. When dead, however, it loses all its brilliance, and is rather an insignificant creature. It feeds both in its larval and perfect states upon the Convolvulus or Morning Glory, and one or two other plants. Its larva is a very extraordinary creature; it is of a dark brown colour, and covered with prickles; but what is most remarkable, it protects itself from its enemies and from the heat of the sun, by a parasol of its own excrement, which it elevates over its back on a peculiar fork provided for the purpose.

LARGE WATER-BUG.—B. W., Mimico.—The huge insect which you sent us, and which you state you hoed up from beneath a piece of sod on the 25th ult., is a specimen of our largest species of water insects, and belongs to the true bug family (*Hemiptera*); its scientific name is *Belostoma americanum*, Leidy. It lives in the water, and feeds on other aquatic insects; but frequently at night it comes out of its usual element and flies about, oftentimes venturing into houses, apparently attracted by light. We have had a live specimen in a jar of water for several weeks, and though his food has been of the scantiest description, he continues to swim about in a very lively manner; he is about two and a half inches long, and nearly an inch broad.

### The Eggs of the Vaporier Moth.

(*Orgyia leucostigma*.)

Attentive readers of the entomological portion of the late report of the Commissioner of Agriculture for the Province of Ontario, will have noted the fact already well known to entomologists, that the female moth of this species is wingless, and lays her eggs on the outside of the cocoon from which she has escaped. Last fall the moths were unusually common, and their nests of eggs are now so abundantly distributed among our fruit trees, that unless some effort is made to destroy them, the larvæ will probably be exceedingly numerous and destructive during the approaching season.

The full grown caterpillar of this species, when about to change to chrysalis, selects a leaf on which to undergo its transformation, and this in such a position that, while the chrysalis is firmly attached to it on the one side, it is firmly secured by silken threads to



the under side of a branch on the other, thus securing the leaf from falling to the ground in the autumn. The female, after its escape from the cocoon, rarely moves more than a few inches from it, waiting the attendance of the male moth, after which she at once commences to place her eggs in the position already indicated. But how are the eggs, when laid, kept in their place on the top of the cocoon? Dr. Fitch says that the eggs are extruded in a continuous string, which is folded and matted together so as to form an irregular mass. On removing this mass of eggs from its place of attachment, the surface of the cocoon appears covered with fragments of a transparent gelatinous looking substance, which has evidently been applied in a fluid state. The bottom layer of eggs will usually number 100 or more, and their interstices are well filled with this same gelatinous substance, which adheres so strongly to the eggs that when the nest is torn open they cannot be separated without bringing away portions of this material firmly attached. Another irregular layer of eggs is placed on this, then a third, and sometimes a fourth, before the total number is exhausted, and through the whole of these the gelatinous matter is so placed as to secure every egg, not by being imbedded in a solid mass, but surrounded by the material worked into a spongy or frothy state. Possibly this may be to economize the amount used. Over all is a heavy layer of the same with a nearly smooth greyish white surface, the whole number of eggs being placed so as to present a convex surface to the weather, which effectually prevents the lodgement of any water on it.

Within this enclosure are deposited from 375 to 500 eggs. We give these numbers because we have counted the contents of several, and 375 is the lowest number, and 500 the highest we have found. The egg is nearly globular, flattened at the upper side—not perceptibly hollowed—with a dark point in the centre of the flattened portion surrounded by a dusky halo. Its surface is smooth under a magnifying power of 40 diameters; but when submitted to a higher power, appears lightly punctured with minute dots. Its colour is uniformly white to the unaided vision; but the microscope reveals a ring of dusky yellow surrounding it immediately below the flattened portion. Its diameter is 1-25th of an inch.

A careless observer seeing a dead leaf here and there upon his trees might readily conceive that it was accidentally blown into the position it occupied, and perhaps held there by a spider's web or something of that sort but as will be seen from what we have said, a closer examination will furnish food for thought, in the wise arrangements made by the parent moth in providing for the safety of her future offspring; and at the same time may well excite alarm in the fruit grower's mind when he perceives promise of the approaching birth of such a horde of hungry caterpillars as even one of these will produce. —*Canadian Entomologist.*

## Poetry.

### Poverty.

O shame that in this world of flowers,  
Where all the common joys are best,  
Where God's own voice the poor has blest,  
We should repine through faithless hours!

The heavenly light and the freshening breeze,  
That creep 'mid morning mists along,  
Call us to thankful matin song,  
And prayer for help and inward ease.

For inward ease and sweet content,  
Which make the nightly shadows fleet,  
Which make the daily labours sweet,  
Till daily strength is cheerily spent.

How sweetly rest the sons of toil—  
Those friends of heavy-lidded sleep  
Nor know they of the foes that creep  
O'er silken quilts the night to spoil.

The blessed light of common day  
Through cottage gardens sweetly steals,  
As happy there the robin feels  
As where the marble fountains play.

But what are these?—The lesser rays  
Of that eternal Sun of Love  
Whose brighter radiance from above  
With rapture fills the flying days—

With rapture fills the mother's breast,  
With rapture fills the husband's heart;  
Ne'er could unbounded wealth impart  
The title of joys by God impart.

O, wealthy man in hut of clay,  
O, wealthy past the miser's dream,  
When through the broken roof there stream  
The light of love, the heavenly ray.

### The Small Birds' Appeal.

All day we flit across your view,  
Brown, black, or crimson breasted,  
Yellow or blue, or speckled hue,  
Purple or golden-crested.

We do our best to please your eye,  
With colours brightly blending;  
With fairy motion gliding by,  
Or angel like ascending.

All day we strive to charm your ear  
With concert of sweet singing;  
And even when the stars appear  
We keep the copses ringing.

At times we waken in your heart  
A thrill of soft emotion,  
And into world-worn spirits dart  
An impulse of devotion.

Faithful, we stay the winter through,  
Although the snowstorms bluster,  
And trusting you, since we are true,  
Around your homes we cluster.

Or if we fly the north wind's sway,  
Soon as the spring is blooming  
Back o'er the sea we wing our way—  
We know our time of coming.

We guard the growth of tree and wood,  
Or soon their grace would wither,  
Seeking our food on leaf and bud,  
Still fluttering hither, thither.

Oh, spare our useful, happy life—  
The voice and form which charm you;  
And wage not an unnatural strife  
With birds that cannot harm you.

Our Maker, be it ne'er forgot,  
Appoints the birds man's teachers:  
Oh, silence not, with murderous shot,  
God's careless, tuneful creatures.

## Household.

### Painting Farm Implements.

An old Dutch friend of mine used to paint everything that wanted paint, and some things that did not. He always bought oil by the gallon, and paint by the quarter hundred weight. Many times, when I have seen him painting a plough, harrow, or wagon, red or blue, as the case may be, he would say with a pleased contemplative look on his face, "Oh, paint costs nothing. I love to paint. All our houses in Holland are painted." I rather think my Dutch friend was right. Paint does not cost anything, or rather it saves so much that any outlay in paint is returned two-fold by the long lasting effect of its preservative qualities.

I believe so much in paint, that whenever I appear about the house, paint pot in hand, I am greeted with a storm of "Now, papa, do put up a guard to warn us off the paint." And if you will believe it, I generally do attend to this rather forcibly administered petition—retrospective views showing me clearly enough that to paint family dresses, and thereby incur the accompanying looks and reproaches, does not pay. Out of doors, and away from the house, a little painting done now and then is a great acquisition, and never incurs the above admonition; but painting in the house requires more care and should be done out of hand—all there is to do at once—so that the habit of watching for the painted portion should not become too irksome from its long continuance; and moreover, the smell, so unpleasant to some people, is soon got over.

The outside of a house is altogether an exception to the foregoing rule. It must be painted when and where it wants paint; but a little care will prevent any of those unpleasant annoyances of painting children's and ladies' dresses; and besides, in painting the outside of a house, most of it is done out of the possibility of doing harm, and the smell outside is not an annoyance to any one.

In compounding paint, always use good pure boiled linseed oil, and put about 5 to 7 ÷ 100 of dryers into it, and the paint will dry rapidly. Above all things, do not put on any coat too thick: the thinner the better. If paint is daubed on as thick as it can be got to stand on the wood, or even in a less degree, it never looks well.

After having finished for that time, if you contemplate doing some more painting in a few days, you must keep your brushes stuck into water. If they dry up they are ruined, and all the hair comes out. When you have finished for the winter, clean them carefully with soap and water, and put them away in a dry place, not warm or near a stove, but cold and dry, and, when wanting them again, immerse them for an hour in hot water, and

the handle will swell up, and all will be tight and as good as ever. But if some hairs are loose, and there seems some difficulty in keeping them tight in their proper place, point a small piece of pine, and drive it in amongst the hair and under the band. This will effectually wedge all fast, and prevent any loosened hair coming out.

J. C.

### Rice.

The use of rice as a breadstuff is probably coeval with the human race. Like that of the other cereals, it extends beyond the reach of record. Under the name of *oriz* in Arabic, *arusa* in Greek, *oryza* in Latin, *ris* in French, *reis* in German, and *rice* in English,—it has been known to history for two or three thousand years, being mentioned by Theophrastus 2,200 years ago, and by Horace, Pliny, and Celsus at a later date. Its native place is probably the steaming river bottoms of India, whence it travelled eastward and northward to China and Japan, and westward to Egypt and to us. When it reached Egypt we know not; early enough, as many think, to give rise to that singular exhortation of the royal preacher of Israel, 2,800 years ago, in which, alluding probably to the mode of sowing rice on the swollen surface of the Nile, he says, "Cast thy bread upon the (face of the) waters: for thou shalt find it after many days," Eccles. xi. 1. After being introduced into Italy from Greece, as we learn by the form of the name, and being domesticated for centuries in all the southern countries of Europe, it was carried, in the year 1605, to the then infant colony of Carolina; where it was soon cultivated to such extent, and brought to so high a degree of perfection, that the rice raised upon the southern seaboard of the American colonies, now the United States, has been ever since known in Europe as Carolina rice. As an article of food it surpasses in importance every other cereal in present use. Wheat may be more nutritious, rye more hardy, maize spread over a wider range of temperature—but rice feeds the greatest number of human mouths. Among the swarming millions of the tropics, and of China, it occupies the same place as wheat in the warmer parts of the temperate zone, and rye in the colder. It has been estimated that, if the human race were divided into families according to the predominant use of the several grains, the rice eaters would occupy the first place in number; while wheat and maize would contend for the second, with a fair promise of victory for the maize; and the fourth place would be held by rye, oats, and barley. Indeed, besides being "the staff of life" in the most populous parts of the earth, it is now so extensively used among all the other grain-eaters of the human race, that it is questionable whether a greater amount of it is not consumed as a breadstuff than of all the other cereals combined. Among botanists it is known by its Latin name, *Oryza*. There is

but one species, though there are many varieties; for the wild rice, so called, of the North American ponds and lakes, is not a rice, but a reed—not an *Oryza*, but a *Zizania*. Food chemists tell us that it contains "less of the nutritive principle than wheat." This, however, is in some measure compensated by the fact that of all the cereals it is the most compact—a merchantable bushel of maize, or Indian corn, being rated at 56 lb., and wheat at 60 lb., while rice, which rarely sells by bulk, and therefore has no established standard like the others, seldom weighs less than 65 lb. to the bushel, and oftentimes more. Its compactness is shown also in its resistance to being crushed, having almost a gravel-like hardness, and also in the fact that skilful boiling will cause it to expand and double, perhaps treble, its former bulk. But, however weighty in the scales, it is exceedingly light upon the stomach. In general wholesomeness, in delicacy of flavour, and in the variety of uses to which it is applicable, it is probably not surpassed by any other grain. To the strong stomach of the day labourer it is as well suited as the coarse bread of the Indian corn, rye, or oats; while for the delicate appetite of the invalid, or for the tender organs of the babe, it is a safe substitute for sago, arrowroot, tapioca, or cassava.—*Food Journal*.

### Apiary.

#### Save Old Comb.

The value of old comb to give to new swarms can hardly be estimated; yet many bee-keepers destroy, or, in other words, make wax of the combs whenever the bees die, and put their swarms into empty hives. To judge of its value, let bee-keepers put a swarm into a hive filled with combs, and note in how much less time such a hive is filled with brood and honey than when a swarm is put into an empty hive. Some persons suppose when the comb looks dark-coloured that it is unfit for the bees; but such is a mistake. Combs may in many cases be in use ten years, and still be of value. The colour being dark is no objection, if the cells are perfect.

Others again suppose that when the bees die in the cells the combs are of no use; but this, too, is a mistake. The bees will remove all, or nearly all, the dead bees, repair the cells, and fit the combs for the reception of the eggs and honey much more easily and in a much shorter time than they can make new combs. It is always well, however, to remove all the dead bees that can be conveniently removed, as it saves the bees the time and labour of doing it. Broken pieces of comb are also valuable to put into honey boxes; but in this case it is better to have the comb new and white, as dark or old comb gives a dark appearance to the honey, though it in no wise injures it. J. H. THOMAS.

### Poultry Yard.

#### Warren Leland on Poultry Raising.

A gentleman in Michigan made inquiries of the New York Farmers' Club about poultry raising, and Mr. Warren Leland answered:—

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

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

3. Another reason why I have such luck is because my poultry yard receives all the scraps from the Metropolitan Hotel. Egg-making is no easy work, and hens will not do much of it without high feed. They need just what a man who works requires—wheat bread and meat. Even when wheat costs two dollars I believe in feeding it to hens. As to breeds, I prefer the Brahmas, light and dark. I change roosters every spring, and a man on the farm has no other duty than to take care of my poultry. I often have three thousand spring chickens.

#### Technical Terms Applied to Poultry.

To the novice in poultry lore the following explanation of terms applied to this department of stock may prove useful:—

*Brood*—Offspring or hatch of chickens.

*Broody*—Inclined to sit or incubate.

*Carunculated*—Covered with fleshy protuberances like a turkey-cock's head and neck, or the head of a Musc drone.

*Casque*—The helmet-like fleshy protuberance or comb of the Guinea fowl.

*Clutch*—The number of eggs set upon by a fowl, or the number of chickens brought off.

*Clung*—Shrunk and stringy, applied to flesh which has never been properly fattened, or which has fallen away after being fat.

*Crest*—The tuft of feathers which some fowls, like the Polands, have upon their heads.

*Deaf-ear*—A name improperly applied to the true ear of the fowl. A shallow hole, or depression, with a hair-like covering.

*Dubbing*—Trimming off the combs and wattles of game fowls, for fighting, or for exhibition.

*Dunghills*—Common fowls; those of mixed breeds, not crossed with definite purpose, or those of a breed degenerated.

*Fluff*—Soft downy feathers in masses upon certain parts of fowls—as upon the rumps and thighs of Cochins.

*Gills*—The flap that hangs below the beak.

*Hackle*—Long shining feathers on the neck of the cock or hen.

*Molting*—Periodical shedding and renewal of feathers.

*Pea-comb*—A triple comb—a principal comb with a small one on each side.

*Poult*—A young turkey, or other gallinaceous fowl, before it takes on the full plumage of a mature bird.

*Primaries*—The largest feathers on the wing.

*Rose-comb*—A full, broad, flat comb, called also "double comb."

*Secondaries*—Quills growing on the second bone of the wing.

*Top-knot*—See crest.

*Vulture-hocked*—Having the feathers on the thigh project backward, below and beyond the "hock" joints.

*Wattles*—The fleshy excrescence that grows under the throat of a cock or turkey.

*Wing-coverts*—Feathers covering part of the forearm of the fowl.—*People's Practical Poultry Book.*

### Ground Bones for Poultry.

The editor of the *Canadian Poultry Chronicle*, in an excellent article on rearing and feeding chickens, after enforcing the necessity of scrupulous cleanliness, feeding well, often, and not more at one time than will be all picked up, and using by preference as the staple feed coarse oatmeal moistened with milk, and the occasional mixture of rice or other grains—for the sake of variety—thus alludes to the efficacy of ground bone:—

"Mr. Wright recommends, in addition to the above, the use of 'ground bones' or 'bone dust.' This latter substance, he says, has many advantages, and, after several years' experience, we can affirm without hesitation that there is a marked difference both in the size and stamina of birds reared with it over others. It adds to the size of birds; it postpones their maturity or 'setting,' as poultry men call it, after which growth nearly ceases; it greatly prevents leg-weakness in the cockerels; and it tends to produce full and profuse feathering, and to assist in fledging. Burnt bones, or phosphate of lime, have not the same effect by any means; and raw bones crushed have the fault of inducing early laying in the pullets, whereas the bone dust rather postpones it. The proportion should be about a tea spoonful to every half pint of meal, and be given thus from the time the chickens are ten days old."

## Agricultural Intelligence.

### Agricultural and Horticultural Societies in Ontario, 1871 and their Secretaries.

N. B.—Electoral Division Societies are printed in small capitals; the rest are township societies:—

ADDINGTON—J. B. Aylsworth, Newburgh.

Camden—J. B. Aylsworth, Newburgh.

Loughborough—W. Boyce, Loughborough.

Portland—J. Cook, Harrowsmith.

Sheffield—J. Aylsworth, Tamworth.

ALGOMA—C. J. Brampton, Sault Ste. Marie.

BRANT, NORTH—Dr. R. Dickson, Paris.

Brantford—W. P. Croome, Cainsville.

Onondaga—W. Burrill, Jr., Onondaga.

Paris Horticultural Society—Henry Hart, Paris.

BRANT, SOUTH—W. Sanderson, Brantford.

Brantford Horticultural Society—B. F. Fitch, Brantford.

BOTHWELL—Wm. Latimer, Selton.

Euphemia and Dawn—Isaac Unsworth, Florence.

Howard—C. Grant, Ridgetown.

Zoue—John Taylor, Bothwell.

BROCKVILLE—Bethnel Loverin, Greenbush.

BRUCE, NORTH—James Saunders, Paisley.

Arran—J. N. Gardner, Invermay.

Bruce—H. Murray, Underwood.

Elderslie—J. C. Gibson, Paisley.

Saugeen—James Muir, Normanton.

BRUCE, SOUTH—A. S. L. Mackintosh, Walkerton.

Brant—A. S. L. Mackintosh, Walkerton.

Carrick—Dr. J. Murphy, Mildmay.

Culross—V. Fraser, Teeswater.

Greenock—J. Cunningham, Greenock.

Huron—T. Wilson, Kincardine.

Kincardine—J. Bradley, M. D., Bervie.

Kinloss—R. L. Hunter, Lucknow.

CARDWELL—John Allen, Mono Mills.

Adjala—J. C. Hart, Keenansville.

Albion—L. R. Bolton, Albion.

Caledon—D. Kirkwood, Rockside.

Mono—J. Lindsay, Orangeville.

CARLETON—A. S. Woodburn, Ottawa.

CORNWALL—J. S. McDougall, Cornwall.

DUNDAS—A. G. Macdonell, Morrisburgh.

Matilda—Thos. McNulty, Iroquois.

Mountain—Alva Carragan, Inkerman.

Williamsburgh—Wm. Whitteker, Williamsburgh.

Winchester—James Gallispie, Winchester.

DURHAM, EAST—John Foot, Port Hope.

Cavan—J. W. Soothern, Millbrook.

Hope—R. Dickson, Port Hope.

Manvers—A. Ryley, Bethany.

Port Hope Horticultural Society—F. E. Gandrie, Port Hope.

DURHAM, WEST—R. Windatt, Bowmanville.

Cartwright—James Parr, Cartwright.

Clarke—G. S. Lovekin, Newcastle.

Darlington—R. Windatt, Bowmanville.

Bowmanville Horticultural Society—W. R. Clinnie, Bowmanville.

ELGIN, EAST—H. F. Ellis, St. Thomas.

Bayham—R. L. McCally, Vienna.

Dorchester South—M. Fullerton, Lyons.

Malahide—W. M. McCausland, Aylmer.

Yarmouth—L. S. Leonard, St. Thomas.

ELGIN, WEST—A. Barclay, Wallacetown.

Albora—Richard Coates, Rodney.

Southhold and Dunwich—J. A. Philpot, Iona.

ESSEX—Henry Botsford, Amherstburgh.

Colechester—Walter Grubb, Oxley.

Gosfield and Mersea—C. Palmer, Leamington.

Malden and Anderson—H. Botsford, Amherstburgh.

Maidstone—T. F. Kane, Maidstone.

Rochester—J. A. Hogan, Woodslee.

Tilbury West—J. F. Dodd, Trudell.

FRONTENAC—Isaac Simpson, Kingston.

Pittsburgh—R. J. Milton, Kingston.

Storrington—Thos. Conklin, Inverary.

Wolfe Island—H. O. Hitchcock, Wolfe Island.

GLENGARY—Daniel Campbell, Williamstown.

Charlottenburgh and Lancaster—T. McDonell, Williamstown.

Lochiel and Kenyon—Alex. McDonell, Lochiel.

GRENVILLE, SOUTH—T. J. Tracy, Prescott.

Edwardsburgh—James Robertson, Spencerville.

GREY, NORTH—Thomas Gordon, Owen Sound.

GREY, SOUTH—S. E. Legate, Durham.

Artemesia—Robert Terille, Wesherton.

Egremont—D. Allan, Holstein.

Melanethon—H. Jarvis, Horning's Mills.

Normanby—W. H. Ryan, Mount Forest.

Osprey—J. Ganey, Maxwell.

Proton—J. G. Peer, Ronaldsday.

HALDIMAND—Jacob Young, York, & R.

Dun and South Cayuga—T. Q. Hamilton, Port Maitland.

Rainham—John Law, Rainham Centre.

Seneca, Oneida, and North Cayuga—F. A. Nellis, York.

Walpole—W. R. Hewitt, Cheapside.

HALTON—W. C. Beaty, Omagh.

Esquesing—John Murray, Esquesing.

Nassagaweya—S. R. Lister, Nassagaweya.

Nelson—Robert Miller, Nelson.

Trafalgar—H. M. Switzer, Palermo.

HAMILTON—F. C. Bruce, Hamilton.

HASTINGS, NORTH—Jas. J. Ryan, West Huntingdon.

Dungannon, Farady, &c.—John Wilson, L'Amable.

Huntingdon—James Hagarty, Huntingdon.

Madoc—Charles Gream, Madoc.

Rawdon—G. E. Bull, Stirling.

HASTINGS, EAST—P. R. Palmer, Thurlow.

Thurlow—G. R. Palmer, Thurlow.

Tyendingaga—Charles Anderson, Melrose.

HASTINGS, WEST—D. R. Ketcheson, Wallbridge.

HURON, NORTH—S. Malcomson, Clinton.

Ashfield and Wawaposh—J. M. Roberts, Dungannon.

Grey—D. Stewart, Dingle.

Howick—W. Lawrie, Wroxeter.

Hullett—E. Holmes, Clinton.  
 Turnbury—R. A. Graham, Wingham.  
 Wawanosh, East—J. H. Taylor, Westfield.  
 Huron, South—Hugh Love, Sr., Hill's Green.  
 Hay—R. Brown, Zurich.  
 Stanley—John Walker, Jr., Varna.  
 Stephen and Osborne—John Greenway, Exeter.  
 Tuckersmith—Wm. McConnell, Egmondville.  
 Goderich Horticultural Society—Peter Adamson, Goderich.  
 Kent—James Hart, Chatham.  
 Chatham—John Lillia, Jr., Wallaceburgh.  
 Harwich—W. R. Fellows, Rond Eau.  
 Raleigh—A. H. White, Charing Cross.  
 Tilbury, East—J. Fletcher, Tilbury East.  
 Kingston—E. H. Smyth, Kingston.  
 Lambton—Wm. Mowbrey, Logierait.  
 Bosanquet—M. Wattson, Widder Station.  
 Brooke—E. Bowlby, Napier.  
 Enniskillen—John Hendra, Ossian.  
 Moore—H. J. Miller, Corunna.  
 Plympton—John Simpson, Aberarder.  
 Warwick—Geo. Smith, Warwick.  
 Lanark, North—Wm. Templeman, Almonte.  
 Dalhousie—James Donald, McDonald's Corners.  
 Lanark—Jas. Stewart, Middleville.  
 Pakenham—A. Fowler, Pakenham.  
 Ramsay—Gilbert Forgie, Almonte.  
 Lanark, South—Arch. Campbell, Perth.  
 Beckwith—A. McArthur, Carleton P.  
 Bathurst—Peter Cameron, Perth.  
 Drummond—Timothy Doyle, Perth.  
 Montague—E. Chalmers, Smith's Falls.  
 Leeds and North Grenville—Samuel Connor, Frankville.  
 Leeds, South—Wm. Brough, Gananoque.  
 Crosby, North—R. D. Reubens, Newboro'.  
 Lansdowne—W. Thomson, Lansdowne.  
 Yonge and Escott—J. C. Alguire, Farmersville.  
 Lennox—Charles James, Napanee.  
 Amherst Island—Capt. C. Skene, Emerald.  
 Fredericksburgh, North—W. N. Dollar, Napanee.  
 Lincoln—James Lawrie, St. Catharines.  
 Clinton—John Akers, Beamsville.  
 Grantham—William H. Emmett, St. Catharines.  
 Grimsby—J. T. Middleton, Smithville.  
 Louth—J. Pauling, Port Dalhousie.  
 London—Wm. McBride, London.  
 Middlesex, North—W. K. Atkinson, Ailsa Craig.  
 Adelaide—A. Preston, Adelaide.  
 Biddulph—C. M. Webb, Granton.  
 Lobo—J. Irvine, Lobo.  
 McGillivray—R. Shoutts, McGillivray.  
 Williams, West—J. Dawson, Sylvan.  
 Williams, East—T. G. Shipley, Falkirk.  
 Middlesex, East—H. Anderson, London.  
 Dorchester, North—J. B. Lane, Dorchester St.  
 London—R. Orr, Arva.  
 Westminster—Thomas Fleming, London.  
 Middlesex, West—James Keefer, Stratroy.

Ekfrid—A. Douglas, Longwood.  
 Metcalfe—H. Thompson, Napier.  
 Mosa—A. Thomson, Wardsville.  
 Monck—A. McKeague, Wellandport.  
 Maistor—Samuel Atter, Abington.  
 Gainsboro—J. Upper, St. Anns.  
 Pelham—Samuel Beckett, Ridgeville.  
 Wainfleet—J. Priestman, Jr., Marshville.  
 Western Branch, (Dunnville, Canboro' and Sherbrooke).—Wm. Braund, Stromness.  
 Niagara—Alex. Servos, Niagara.  
 Northumberland, East—R. P. Hurlburt, Warkworth.  
 Brighton—A. A. Becker, Hilton.  
 Cramahe—W. Easton, Colborne.  
 Murray—H. Fieldhouse, Rosa.  
 Percy—R. P. Hurlburt, Warkworth.  
 Seymour—John Clark, Burnbrae.  
 Northumberland, West—C. Bourn, Cobourg.  
 Alnwick—J. Thackeray, Roseneath.  
 Hamilton—R. Cullis, Cobourg.  
 Haldimand—J. Gillard, Grafton.  
 Cobourg Horticultural Society—A. J. Hewson, Jr., Cobourg.  
 Norfolk, North—D. W. Freeman, Simcoe.  
 Middleton—L. C. H. Heron, Courtland.  
 Townsend—Nelson Boughnee, Waterford.  
 Windham—D. W. Freeman, Simcoe.  
 Norfolk, South—A. W. Smith, Simcoe.  
 Charlotteville—L. H. Montrop, Vittoria.  
 Walsingham—H. Morgan, Pleasant Hill.  
 Woodhouse.—T. M. England, Port Dover.  
 Ontario, North—John Christie, Manchester.  
 Brock—T. H. Glendinning, Sunderland.  
 Mara and Rama—George Boulton, Atherby.  
 Reach and Scugog—John Christie, Manchester.  
 Scott—And. Turner, Ashworth.  
 Thora—N. J. Paterson, Beaverton.  
 Uxbridge—Thomas Todd, Goodwood.  
 Ontario, South—George Robson, Whitby.  
 Pickering—James Brown, Pickering.  
 Whitby and East Whitby—John Willis, Whitby.  
 Ottawa—A. S. Woodburn, Ottawa.  
 Oxford, North—R. W. Sawtell, Woodstock.  
 Blandford—John Oliver, Ratho.  
 Blenheim—Wm. Key, Richwood.  
 Nissouri, East—J. W. Robinson, Kintore.  
 Zorra, East—R. Campbell, Jr., Strathallan.  
 Zorra, West—James Munro, Embro.  
 Oxford, South—R. T. Williams, Culloden.  
 Dereham—R. T. Williams, Culloden.  
 Norwich, North—W. S. Scarff, Norwich.  
 Norwich, South—A. B. Moore, Otterville.  
 Oxford, North and West—W. H. H. Gane, Ingersoll.  
 Oxford, East—T. H. Arnell, Vandecar.  
 Peel—D. L. Scott, Brampton.  
 Toronto—M. W. Cook, Cooksville.  
 Toronto Gore—John Linton, Humber.  
 Perth, North—S. Campbell, Stratford.  
 Elma—D. Falconer, Newry.  
 Logan—T. Coveney, Mitchell.  
 Mornington—S. Whaley, West's Corners.

Wallace and Elma—J. C. Tilt, Listowell.  
 Perth, South—W. N. Ford, St. Mary's.  
 Blanchard—Robert Beatty, Kirkton.  
 Fullarton—Wm. Davidson, Carlingford.  
 Hibbert—J. Reading, Cromarty.  
 Peterboro' East—W. E. Roxburgh, Norwood.  
 Asphodel and Belmont—W. E. Roxburgh, Norwood.  
 Dummer and Douro—A. S. McGuire, Warsaw.  
 Dysart—James Irwin, Haliburton.  
 Otonabee—J. Drummond, Mathers.  
 Peterboro' West—J. Carnegie, Jr., Peterboro'.  
 Monaghan, South—H. Crossley, South Monaghan.  
 Peterboro' Horticultural Society—S. Balmer, Peterboro'.  
 Prescott—John Shields, Vankleekhill.  
 Caledonia—H. J. Bradley, Fenaghville.  
 Longueuil, E. and W. Hawkesbury—S. Cass, Vankleekhill.  
 Plantagenet, North—Henry Smith, Plantagenet.  
 Plantagenet, South—A. McLean, Riceville.  
 Prince Edward—J. P. Roblin, Picton.  
 Ameliasburgh—E. Roblin.  
 Hallowell—L. B. Stinson, Bloomfield.  
 Hillier—S. W. Flagler, Wellington.  
 Sophiasburg—A. Greely, Picton.  
 Picton Horticultural Society—Thos. Bog, Picton.  
 Renfrew, North—N. W. Jackson, Westmeath.  
 Ross—Robt. Allen, Cobden.  
 Renfrew, South—R. McLaren, Renfrew.  
 Admaston—Alex. Brown, Admaston.  
 Grattan and Wilberforce—S. G. Lynn, Eganville.  
 McNab—A. Hamilton, Balmer's Island.  
 Russell—Ira Morgan, Osgoode.  
 Clarence—Geo. Edwards, Clarence.  
 Cumberland—C. Hunter, Osborn.  
 Gloucester—James Johnston, Ottawa.  
 Osgoode—J. Campbell, Osgoode.  
 Russell—E. F. Loucks, Russell.  
 Simcoe, North—John Darby, Barrie.  
 Medonte and Flos—Wm. Harvey, Elmavale.  
 Nottawassaga—H. M. Frame, Glen Huron.  
 Orillia—H. Sutherland, Orillia.  
 Oro—Joseph Thomas, Edgar.  
 Sunnidale—Alex. Hislop, Stayner.  
 Tiny and Tay—T. C. Ross, Penetanguishene.  
 Vespra—Geo. Sneath, Midhurst.  
 Simcoe, South—W. M. Stevenson, Bradford.  
 Gwillimbury, West—W. M. Stevenson, Bradford.  
 Essa—John Scott, Thornton.  
 Innisfil—Thomas McConkey, Lefroy.  
 Mulmur—J. A. Love, Stanton.  
 Tecumseth—Henry Stone, Tottenham.  
 Totsoronto—Geo. Cumming, Rosemont.  
 Stormont—Geo. Shaver, Wales.  
 Finch—D. G. McMillan, South Finch.  
 Osnabrock—Geo. Shaver, Wales.  
 Roxburgh—John Bennett, Athol.  
 Toronto—William Edwards, Toronto.

VICTORIA, NORTH—John McTaggart, Kirkfield.

Bexly, Saxton and Digby—S. J. Corbett, Oak Hill.

Fenelon—H. Davis, Fenelon Falls.

Muskoka—R. J. Eell, Bracebridge.

Eldon—G. W. Miller, Woodville.

VICTORIA, SOUTH—W. J. Thirkell, Lindsay.

Emily—J. R. McNillie, Omemece.

Mariposa—W. H. McLaughlin, Oakwood.

Verulam—J. L. Read, Bobcaygeon.

Lindsay Horticultural Society—J. H. Knight, Lindsay.

WATERLOO, NORTH—M. Springer, Waterloo.

Wellesley—Geo. Oakley, Cross Hill.

Woolwich—James Hall, Winterbourne.

WATERLOO, SOUTH—Alex. Macgregor, Galt.

Wilmot—R. C. Tye, Haysville.

WELLAND—Alexander Reid, Crossland.

Bertie—E. A. Dickont, Point Abino.

Crowland—John McIntyre, Crowland.

Humberstone—E. W. Farer, Port Colborne.

Stamford—George Hyatt, Stamford.

Thorold—Robt. Spencer, Allanburgh.

Willoughby—James McCredin, Chippewa.

WELLINGTON, NORTH—Robert Mitchell, Arthur.

Amaranth—R. T. Martin, Whittington.

Arthur—Jas. Isles, Arthur.

Minto—Alex. Meiklejohn, Harriston.

Peel and Maryboro'—Thomas Henderson, Holland.

WELLINGTON, CENTRE—John Beattie, Ferguson.

Eramosa—Wm. Tolton, Eramosa.

Erin—J. W. Burt, Coningsby.

Garafra East—John Preston, Reading.

Garafra West—J. J. Dobbin, Garafra.

Nichol—Alex. Goforth, Ferguson.

Pikington—Robert Cromar, Salem.

WELLINGTON, SOUTH—George Murton, Guelph.

Guelph—George Murton, Guelph.

Puslinch—Joseph Grant, Aberfoyle.

Guelph Horticultural Society—Geo. Murton, Guelph.

WENTWORTH, NORTH—J. Weir, Jr., W. Flamboro'.

Beverley—W. McDonnell, Brockton.

Flamboro', East—Thos. Stock, Watford.

Flamboro', West—C. Durant, W. Flamboro'.

WENTWORTH, SOUTH—W. A. Coley, Ancaster.

Ancaster—F. Snider, Ancaster.

Barton and Glanford—C. Grey, North Glanford.

Saltfleet and Babrook—J. Davis, Mount Albion.

YORK, NORTH—E. Jackson, Newmarket.

Georgina and North Galloway—Angus Ego, Georgina.

Gwillimbury East—A. J. Hughes, Sharon.

King—Joseph Stokes, Schomberg.

Whitchurch—M. Jones, Bloomington.

YORK, EAST—James Robinson, Markham.

Markham—Jas. Speight, Markham.

Scarborough—J. Crawford, Malvern.

York—John McCarter, Toronto.

YORK, WEST—B. Bull, Davenport.

Etobicoke—W. A. Ide.

Vaughan—Thomas Grahame, Woodbridge.

York—John McCarter, Toronto.

### Agricultural and Arts Association.

#### MEETING OF THE COUNCIL.

A meeting of the Council of the Agricultural and Arts Association was held on Wednesday, June 21, in their rooms, at the corner of Yonge and Queen streets. Senator Skead occupied the chair, there being also present, the Rev. Dr. Burnett, Messrs. M. Farley, G. Graham, R. Gibbons, Stephen White, J. Young, G. Munton, L. Shipley, G. McDonnell, W. Wilson, and J. C. Rykert, M.P.P.

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

#### TRIAL OF IMPLEMENTS.

The following letter was read:—

PARIS, May 20.

*The President and Directors, Agricultural and Arts Association:*

GENTLEMEN,—I have the honour to transmit the tender of the North Brant Agricultural Society for grounds whereon to hold the trial of agricultural implements for which you have offered prizes to be competed for during the present summer.

I remain, your obedient servant,

(Signed) D. R. DICKSON,

Sect. N. B. A. S.

The tender was as follows:

To find grounds whereon to hold the competition trial of agricultural implements under the auspices of the Agricultural and Arts Association of Toronto.

Mr. William Capron offers a 23 acre field of D.C.H. wheat, adjoining the corporation limits, within 300 yards of the railway station.

Also, a 20 acre field of Timothy immediately east of the above, and a field of peas adjoining the field of Timothy.

The necessary logs to be sawed into cord-wood will be placed within 150 yards of the field of Timothy easy of access.

The above fields are all in one block. Mr. Horace Capron offers a field for the trial of ploughs and cultivators in the immediate neighbourhood, about a quarter of a mile from the railway station.

Probably there is not a more convenient locality to be found in the Province than the above, and the other facilities cannot be surpassed. Paris is situated at the junction of the Great Western with the Buffalo and Goderich Branch of the Grand Trunk Railways, with excellent gravel-road from all parts of the county converging thereto.

By order of the Committee.

(Signed) D. R. DICKSON,

Secretary N. B. A. S.

The CHAIRMAN spoke in high terms of recommendation of the suitability of Mr.

Capron's grounds for the trial, and his tender was accepted.

Mr. J. C. RYKERT moved, seconded by the Rev. Dr. BURNETT—"That there be separate classes in reaping and mowing machines—for combined reapers and mowers; prizes to be the same as in other classes—combined machines to compete by themselves. The time for entries to be extended to the 6th of July.

After a long debate upon the motion, a vote was taken with the following result:—

YEAS—Messrs. Rykert, Farley, Burnett, Wilson, Shipley, and McDonnell—6.

NAYS—Messrs. Graham, White, Gibbons, Young, and Murton—5.

The resolution was carried by a majority of one. A committee was appointed to superintend the trial.

#### THE MEETING AT KINGSTON.

A letter from Mr. Isaac Simpson, of Kingston, was read, stating that a local committee had been appointed to carry out the arrangements for the Exhibition in September next, and also intimating that the Ontario Hall City Buildings, would be at the disposal of the Board for their annual meeting.

The committee appointed at the last meeting of the Council to confer with the authorities at Kingston, in reference to the preparation of the grounds and buildings for the exhibition this autumn, reported that they had visited Kingston, and the Secretary read a memorandum relative to the alterations required to be made for the purposes of the exhibition. The report of the committee was adopted *mem. con.*

#### THE BUILDING ON THE MODEL FARM.

A letter from Mr. Adam Crooks, M.P.P., was read, offering two thousand dollars on the part of the University of Toronto for the building of the association on the Model Farm, in the grounds of the University. The offer was accepted.

#### ACCOUNTS.

Several accounts were presented and referred to the Finance Committee.

#### PRIZES.

It was moved by Mr. STEPHEN WHITE, seconded by Mr. RYKERT, and carried unanimously, "That the prizes given for the trial of implements be not paid until the close of the exhibition at Kingston, and that the successful competitors be required to produce their implements thereat, the implements to be eligible to compete for prizes at the exhibition.

After transacting some business of a routine character, the Council adjourned until half-past seven o'clock in the evening.

#### EVENING SESSION

The Council resumed at half-past seven o'clock. The only business transacted was the appointment of the judges at the ensuing exhibition at Kingston in September next, and the acceptance of THE GLOBE Printing Company's tender for the printing of the Herd Book.

The Council adjourned about half-past ten o'clock.

### Cattle Diseases.

**CATTLE PLAGUE.**—In Northern France the underpest rages in the arrondissements of Valenciennes, Cambrais, and Avesnes. In Dunkerque and Hazebrouck the health of stock is reported to be satisfactory. In the department of Ardennes the plague has appeared in two communes near the Luxembourg frontier. In Lille the disease is decreasing according to the last reports. Italy experienced an incursion of the plague in the early part of the month of April at Como, and Novara, near the Swiss frontier. The authorities appear to have been on the alert, and adopted stringent measures, a prevention with good results, as no fresh cases have been reported since the end of April. Belgium has been free from cattle plague for some weeks, and no fresh outbreak has been reported. Poland is also reported to be free, but fresh outbreaks are of common occurrence in that country. In Galicia and Buckowina the cattle plague still prevails.

**PLEURO-PNEUMONIA.**—There is a slight increase in the number of infected counties.

**FOOT-AND-MOUTH DISEASE.**—The number of cases has slightly increased, but in comparison with the corresponding return of last year the attacks have decreased by nearly two-thirds.

**LARVAE IN THE HEAD OF SHEEP.**—Investigations long since made into the natural history of the gad or breeze fly established the fact that the larvæ of the variety known as the *Oestrus ovis* located themselves within the sinuses of the head of sheep. The number of larvæ obtaining an entrance through the nasal passages into the frontal and other sinuses is, however, as a rule, exceedingly limited, and as such it is very rare that any ill effects are produced by their presence. A parallelism of this is to be met with in numerous cases where parasites are present. The ill consequences are in proportion to their number, not to the simple existence of the parasites. There are other cases, however, where even one parasite may cause irreparable mischief, or even death itself; for example, an hydatid *Cenurus cerebralis* in the brain of the sheep. These facts are alluded to for the purpose of explaining how it is that this year we have heard so much of the serious results which have followed the full development of the larvæ of the *Oestrus ovis*. Sheep have suffered to a most serious extent in many of the southern counties, and in not a few instances even death has supervened. The leading symptoms have been a copious discharge of a glutinous kind from the nostrils, occasional cough of a choking-like nature, frequent sneezing, impeded respiration, swellings around the nasal openings, effusion into the areolar tissue beneath the jaws, great depression, leading in many instances to a semi-comatose condition, loathing of food, and in the latter stages, even diarrhoea. The number of larvæ found in

examining the sinuses has often exceeded a score. Doubtless others have escaped, so that we are without positive information as to how many may originally have been present. The inhalation of the fumes of burning tar, especially if made more potent by casting on the flame small quantities of sulphur from time to time, has proved useful to those sheep which gave early indications of being affected, by causing a more speedy expulsion of the larvæ. The exhibition also of a little turpentine mixed with glycerine has led to a similar result. It seems almost unnecessary to add to these remarks by further reference to the natural history of the *Oestrus ovis*. It may, however, be stated, that in the latter months of the summer the fly deposits its ova near to the nasal openings, notwithstanding the efforts which are made by the sheep to guard against this being done by herding themselves as close together as possible, and keeping their muzzles almost buried in the dust. Within a few days the young larvæ, scarcely visible to the eye, are hatched, and immediately they begin to crawl into the nasal passages, and to feed upon the natural secretion furnished by the mucous membrane. They march onwards into the frontal and other sinuses, where, as their proper habitat, they remain until about the beginning of the month of May, or a little later, by which time they will have attained their full development. The change they are now about to undergo, viz., the pupa state, leads to their efforts to escape, and which, as has been shown, may be attended with serious consequences to the sheep. When free from their dwelling-place they bury themselves just beneath the surface of the soil, and are soon transformed into their perfect chrysalis form. After a few weeks—sometimes five or six, but varying according to circumstances—the fully formed *oestrus* bursts from its prison house, seeks its mate, and in due course the impregnated female deposits her ova on the part of the sheep already described. Climatic variations greatly influence the perfecting of the transformations of the larvæ. In cold seasons they perish in considerable numbers, while in hot they are preserved, and hence in such years as 1868 and '70 myriads of *oestri* were perfected which otherwise would not have been.—*The Veterinarian for June.*

It is said that 900,000 head of cattle will be driven from Texas to market this year.

A large plantation near New Orleans has been devoted to the cultivation of ramie, instead of cotton, this year.

Crop reports from Georgia and Alabama are bad. Farmers were late in planting, and excessive rains, with cool weather, have done much injury.

There are fine prospects of large crops in Oregon. The rains were very heavy, which is considered a certain indication of success in that region.

### Shows in Great Britain for 1871.

We subjoin a list of forthcoming shows to be held in England during the present year, at which there are usually good exhibitions of Short-horn cattle. It is extracted from *Thornton's Circular* for April, 1871:—

July 10th to 15th. Meeting of the Royal Agricultural Society of England at Wolverhampton.

July 19th to 21st. Lincolnshire Society's Meeting at Brigg.

July 26th to 28th. Meeting of the Highland and Agricultural Society of Scotland at Perth.

August 2nd to 4th. Yorkshire Society's Meeting at York.

August 5th to 11th. Meeting of the Royal Agricultural Society of Ireland, at Stephen's Green, Dublin.

September 20th and 21st. The Northamptonshire and Peterborough Society's combined Meeting at Peterboro'.

November 25th to 30th. Birmingham and Midland Counties' Exhibition of Fat Cattle at Bingley Hall, Birmingham.

December 4th to 8th. Smithfield Club Show of Fat Cattle at the Agricultural Hall, Islington, London.

In many parts of the Western States, potato bugs are creating great consternation. The potato crop in several localities are reported as being in danger of utter destruction by these pests.

The English colony at Wakefield, Riley Co., Kan., has established a general market for all kinds of live stock and farm products. It will be conducted in accordance with the markets in England, and be held once a month.

The hay crop on Long Island, N.Y., is reported to be almost a total failure, by reason of dry weather, hot sun, and cold nights. This crop is a specialty with very many farmers on the island, the aggregate value of it being estimated at a million annually.

Mr. John L. Gibb, Compton, has sold to C. K. Harrison, Pikesville, Md., the imported Ayrshire bull Glenluee, the two imported heifers, Miss Meikle and Merryton Lass, the heifer calves Lily 3rd and Park 3rd, and the bull calf Argyle.

**INSECTS IN THE UNITED STATES.**—Our exchanges from all parts of the United States speak of the prevalence of insects this year. The seventeen-year locust has re-appeared in Illinois. The Hessian fly has committed extensive depredations on wheat in Tennessee, Kentucky, and Southern Indiana; scores of complaints of chinch bugs come from Illinois and Iowa, and some from other sections; in still other places immense swarms of black caterpillars and army worms (the true army worm that lives on grass and other vegetation on the ground) are doing great damage; and, worse than all, the potato beetle from the Rocky Mountains is rapidly extending, and causing great damage.

**TRIAL OF IMPLEMENTS.**—The trial of implements under the auspices of the Agricultural and Arts Association will take place at Paris, on Wednesday, July 19th, on the farms of William and Horace Capron.

Mr. Isaac Pettit, of Grimsby, had new potatoes, peas, and strawberries of his own raising on hand on the 6th June.

The Thirty-first Annual Exhibition of the New York State Agricultural Society is appointed to be held at Albany, Oct. 2-6, 1871.

The county council of Wellington has granted \$3,000 to the South Wellington Agricultural Society in aid of a central exhibition.

Twenty-four carloads of strawberries, comprising 256,000 quarts of the fruit, weighing 250 tons, passed through Wilmington, Del., for the North in a single day recently.

The Paris *Star* says the rains have done the spring crops vast benefit, but fears it will have to chronicle a scanty crop of hay and fall wheat. Potatoes and Indian corn have prospered, and large quantities of wool are coming into market. The price of wool at Paris has varied from 34 to 37½ cents per pound, according to grade.

The first lot of Australian wool ever brought to California has just come, amounting to 50,000 pounds, and costing about 15 cents in Australia and one cent for freight. Another lot of 200,000 pounds has been ordered. These wools will not remain in California, but will be cleansed there and shipped East.

A correspondent at Wellesley, Co. Waterloo, states that a heavy frost occurred on Thursday June 22. Vines of every description are wilted down, and potatoes badly injured. It is feared that the fall wheat and other crops will be injured. It was nearly equal in severity to the frost of June 10, 1859, which committed such havoc amongst the fall wheat and other crops throughout the country.

Lord Dummore, in a letter to *Bell's Messenger*, states that in addition to the two heifers from Duchess 101st and Duchess 103d, he has received from Mr. Cochrane, of Canada, the 11th Lady of Oxford, in calf to 6th Duke of Geneva. This very fine animal was obtained by Mr. Cochrane from Hon W & King, of Minneapolis, Minn., a few months ago, probably to fill this order of Lord Dummore.

**SALE OF LORD WALSHINGHAM'S SHORT-HORNS.**—The short-horn herd of the late Lord Walsingham was sold by auction on the 18th of May, under the direction of Mr. J. Thornton. The lot comprised 46 cows, which brought an average of £41 9s., and 11 bulls at an average of £36 11s. 2d.—57 head in all, which realized a total of £2,308 19s. No very high prices were realized, the heifer Canondale fetching the highest, 80 guineas.

At the great sale, on the 27th ult., of thorough-bred brood mares, colts, fillies, hunters, saddle and carriage horses, the property of Mr. John Shedden, at Lower Lachine, near Montreal, the sum of nearly \$14,000 was realized. Among the horses sold were the celebrated stallion "Thunder," for \$1,700; a two year old filly, by "Thunder," \$555; brown quarter-bred colt by the same, \$175; the two year old stallion "Marquis of Lorne," by "Brutus," \$520; one year old grey filly by "Thunder," \$450; the imported mare "Arnica," in foal to "Thunder," \$600; a black four-year old filly by "Wagram," \$580; and the well-known mare "Di Vernon," \$275. Nearly all the "Thunder" stock went up among and beyond the four hundreds; and three Shetland ponies of the "Tom Thumb" get brought \$540.

Speaking of the crops in that section, the *Hamilton Spectator* says fall wheat is happily free from the assaults of the midge or fly, and more than an average crop may be looked for. The spring crops generally are backward, particularly oats, but under the influence of the present genial weather they will yet be good. Barley looks healthy, and stands thick in some localities; and peas seem to be very good indeed. The potatoes vary according to quality of soil, but are likely to be a fair crop. Indian corn is excellent, and altogether the crops may be called good. There is certainly little ground for complaint, notwithstanding a farmer here and there along the mountain has had to plough up part of his spring crop. There is every reason to be thankful for the prospect.

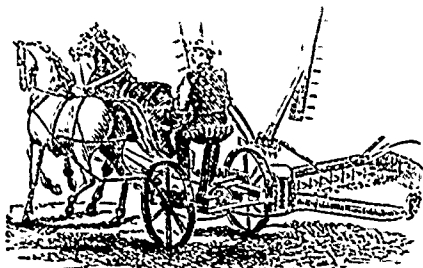
The Western Fair Association have printed the prize lists of the annual exhibition to be held at London on the 26th, 27th, 28th and 29th September. The amount of premiums offered foots up \$8,000. The classification is as follows:—Class 1, Blood horses; 2, General purpose horses; 3, Road or carriage horses; 4, Heavy draught horses; 5, Durham cattle; 6, Devon cattle; 7, Hereford cattle; 8, Ayrshire cattle; 9, Galloway cattle; 10, Grade cattle; 11, Fat and working cattle; 12, Cotswold sheep; 13, Leicester sheep; 14, Southdown sheep; 15, Fat sheep; 16, Yorkshire pigs; 17, Suffolk pigs; 18, Improved Berkshire pigs; 19, Essex pigs; 20, Other small breeds of pigs; 21, Poultry; 22, Grain, seeds, hops, &c.; 23, Roots and other field crops; 24, Fruits, &c.; 25, Garden produce; 26, Plants and flowers; 27, Dairy products; 28, Groceries and provisions; 29, Agricultural implements; 30, Agricultural tools; 31, Cabinet ware, &c.; 32, Carriages, sleighs, &c.; 33, Chemicals; 34, Drawings, engravings, architectural and mechanical, &c.; 35, Fine arts; 36, Fine arts; 37, Ladies' work; 38, Ladies' work; 39, Machinery, castings, &c.; 40, Sewing machines; 41, Metal work; 42, Musical instruments; 43, Natural history; 44, Paper, printing, &c.; 45, Saddlery, trunks, &c.; 46, Shoemakers' work; 47, Leather; 48, Woollen, flax and and cotton goods, &c.

## Miscellaneous.

**A STORY WITH A MORAL.**—A dealer in pork has a precocious son who was expert in cards, and, in playing with his young companions, was seldom on the losing side. He began at first to bet on the game, and ere long would play regularly for money with any of his age disposed to accept the risk. He came home one day, bringing several dollars which he had acquired in his small way of gaming, and exhibited his gains to his father with quite an air of triumph. The thoughtful parent shook his head and told his son that the money was not honestly acquired. "But I did not cheat," said the boy. "I hope not," replied the father; "but did you give the loser any equivalent whatever for it?" The boy hung his head, and the parent added, "Money is honestly acquired where there is an exchange of products or services, and the receiver gives an equivalent for it; to take another man's property and give him no equivalent for it, is to rob or cheat him." A few months after the father came home from the Produce Exchange with an elated aspect and announced that he had settled his speculative contracts in pork by the receipt of nearly fifty thousand dollars. His son eyed him steadily a moment and then said: "What did you give the other man, father, as an equivalent for the money?"

**MIND IN FARMING.**—We find the following remarks in an exchange, and fully concur in the view taken of the intellectual nature of agricultural pursuits, and the necessity of regulating farm operations by a wise exercise of an educated judgment:—"Much has been said and written about the cultivation of land and the rearing of farm stock, and great improvements have been effected from the ingenuity of men of arts and science; but for all that has been said and done, there is often such a diversity of opinion on 'knotty points' amongst eminent men, that a man of moderate intellect is often baffled which opinion to adopt, as being best calculated to promote his interest. To the studious farmer every day brings forth something new, and the oldest and most experienced admit, when their career is near an end, that they were only beginning to know a little of the laws of Nature. A farmer, like the general of an army, requires to be continually on the watch; new difficulties daily arise; he purposes doing a certain thing to-morrow; the weather, or some other element, causes him to shift his position; and having continually new and unforeseen difficulties to meet, his anxiety increases, and his mind expands to meet the difficulty. With all these troubles before him, he rises early and enjoys much pleasure in watching the progress of experiments in his growing crops; sees his stock of all kinds continue to increase; sees his fields in all their loveliness; and hears the song of the sweet warblers in the woods—pleasures which go far to make up for his hard toil and stormy blasts.

## Advertisements.



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 Johnson'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 op-

erated 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.

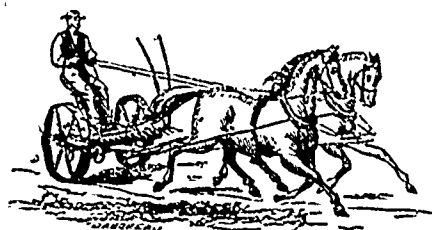
The Table is attached to the Machine both in front and rear of the Driving Wheel, which enables it to pass over rough ground with much greater ease and less injury to the Table. The Grain Wheel Axle is on a line with the axle of the drive wheel, which enables it to turn the corners readily.

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, impro-



ved 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, Pulton, 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.



LARGE SALE OF PRIZE

Short-Horn Cattle!

WE will sell, without reserve, at Public Auction, on Wednesday, August 9th, 1871, at our residence, Grove Park Farm, near Sangamon Co., Illinois, forty head of thorough bred Short Horn Cattle, consisting of Cows, Heifers and Bulls, including the renowned Bull Tycoon 7339, and all our prize show animals. This will be a rare opportunity for those wishing to purchase show and prize cattle, and all are true and sure breeders. This herd of Durhams is equal to any in the world, and is the result of judicious breeding and choice selections from other herds.

Our residence is four miles north and west of Berlin, on the Toledo, Wabash and Western Railway. Conveyances will be furnished at the Depot to and from the Farm on the day of sale. Catalogue furnished on application.

TERMS.

A credit of three (3) months will be given, with approved security, if not paid at maturity, to bear 10 per cent. interest from date. A discount at the rate of ten per cent. per annum for the three months, will be made to those wishing to pay cash in hand.

JAMES N. BROWN'S SONS.

GREEN HOUSE HEATING.

GREEN Houses and Conservatories heated up on the most approved principle. Estimates given.

BOILER, CAST-IRON PIPE, TANKS, AND FITTINGS COMPLETE, FOR SALE, WHOLESALE AND RETAIL.

DAVID S. KEITH,

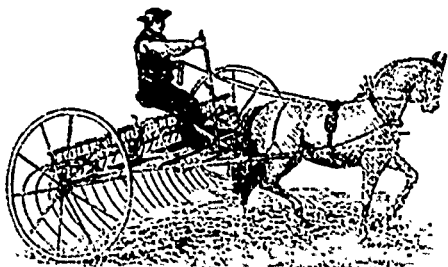
Water, Gas, and Steam Engineer,

169 KING ST. WEST, TORONTO.

Patentee of the Circular and Tubular Jacket Boiler for Green House and Bath Heating.

VINEGAR: HOW MADE FROM CIDER.

Wine, Molasses or Sorghum, in 10 hours, without using drugs. For circular address P. L. SUGG, Vinegar Maker, Cromwell, Ct. A2-9-12



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 any other rake. It does not gather dust in the hay. Will rake over rougher ground. Is light and strong, well-made and nicely finished, the frame, &c. being made of the best hickory. The teeth are fine spring steel, independent of each other, and will yield to pass obstructions without bending or breaking. Furnished with or without our Plaster Sower and Broadcast Seeder, Grass Seed Sower, and Hay Tedder—each machine being complete in itself, yet combined when desired. Farmers joining together and ordering four Rakes will be furnished at a great reduction in price. For references, &c., send for our Descriptive Catalogue, containing nearly 100 illustrations of Implements, of which we have by far the largest variety in the Dominion.

JAMES SOUTAR & CO.,

Chatham Agricultural Works and Warehouse, 25-5-11, Chatham, Ont.

Colorado Beetle Exterminator.

This preparation will effectually destroy the COLORADO BEETLE, now infesting our Potato crops. The cost is not one-tenth that of Paris Green, and it is even more efficacious. Sold in boxes with directions, at 25 and 50 cents a box.

HUGH MILLER & CO.,

Toronto.

DUTCH BULBS.

ANT. ROOZEN, Florist, has pleasure in intimating that his Catalogue for 1871 is now ready, and will be forwarded to all applicants, free. Ant. Roozen's 54 collections for our door culture contains 24 Hyacinths, 75 double and single Tulips, 12 Polyanthus, and 200 Crocus, larger collection in proportion. All bulbs, such as Lilies, Gladioli, Anemones, Liliacines, Crocus, C. Imperialis, &c., at the lowest prices. Orders should be sent by 15th August. ANT. ROOZEN, 48 D., London, Ont. A3-5-51.

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.,

v2-11-12

Homoeopathic Chemists, London.

Markets.

Toronto Markets.

"CANADA FARMER" Office, July 12th, 1871.

FLOUR AND MEAL.

The produce market generally has been dull and inactive, with a declining tendency in prices. The following are the present wholesale quotations.—

Flour—Superfine, \$5 10 to \$5 20; Spring Wheat, extra, \$5 30; Fancy, \$5 35 to \$5 40; Extra, \$5 75 to \$5 80; Superior Extra, \$5 50.

Oatmeal—\$5 25 to \$5 30.

Cornmeal—In small lots, \$3 50 to \$3 65.

Bran, in car lots, \$13.

GRAIN.

Wheat—Spring, \$1 20 to \$1 23, Do Midge Proof, \$1 20 to \$1 23; Souties, \$1 25 to \$1 30; Treadwell, \$1 25 to \$1 26.

Barley—No. 1, 65c to 70c; No. 2, 60c to 62c.

Oats—49c to 50c.

Peas—78c to 80c.

Rye—65c to 80c.

HAY AND STRAW.

Hay has not been supplied freely, and prices have somewhat risen, being now from \$15 to \$18 per ton.

Straw is scarce, and in demand at \$10 to \$12 50.

PROVISIONS.

Beef, by the side, 6 1/2c to 7c.

Mutton, by the carcass, 7c to 8c.

Potatoes—Per bag, 85c to \$1 10.

Poultry—Turkeys, \$1 to \$2, Chickens, per pair, 55c to 45c; Ducks, per pair, 60c to 70.

Pork—Mess, \$17 to \$17 50; Extra Prime, \$16.

Bacon—Cumberland Cut, 8c to 9c; Canada, 8c.

Lard—In tinucis, 10c to 11c, in tierces, 10c to 11c.

Butter—Choice dairy, 16c to 16 1/2c; Medium, 14c to 15c; Poor, 13c.

Cheese—8c to 12 1/2c; Resor's Sulton, 18c, Royal, 17c.

Dried Apples—7c.

Hops—Ordinary, 4c to 5c.

Salt—Goderich, \$1 50 to \$1 60

Live Hogs—\$4 50 to \$5.

THE CATTLE MARKET.

Bovine (live weight) \$3 to \$5 50 per wt

Sheep—\$4 to \$5.

Calves—\$3 to \$5.

Lambs—\$2 to \$5.

HIDES AND SKINS.

Hides—From 7c to \$1 1/2.

Sheepskins—50c to \$2.

Calfskins—12c.

Wool—57c to 57 1/2c.

Contents of this Number.

THE FIELD:	PAGE.
Hay Making; Root Root Sugar.....	241
High Farming; Soils—sand and Gravel.....	242
Soils—Loam; The Growth of Corn.....	241
Practising Chalk; Pasture Land; Potatoes—New Varieties; Talk with Farmers—Maple Sugar.....	245
Drilling for Turnips.....	246
Planting Sugar Beet; Sanford Corn; A Visit to a Well managed Farm.....	247
Cabbage as a Field Crop; Milk Weed.....	248
STOCK DEPARTMENT:	
Root Pulpers.....	249
Pig Breeding and Feeding; Basement Stables.....	250
Quality in Pork; The Alderney at Home; Color in the Horse.....	251
How Calves are Reared in Hohenheim; Hair and Color in relation to Vigor and Fertility.....	252
Selecting, Breeding, and Care of Cattle, Whipping Horses, items.....	253
VETERINARY DEPARTMENT:	
Digestive Organs of the Ox; Injuries and Invasions of the Digestive Organs of the Ox; Infertility among Cows.....	254
THE DAIRY:	
Dairy Farming.....	255
Coloring Cheese; Establishing a small Dairy.....	256
CORRESPONDENCE:	
Editorial Correspondence.....	257
Experiments with the Potato Beetle; Farm Accounts.....	259
Comparing Notes.....	260
EDITORIAL:	
Drought as Affecting Soils and Vegetation.....	260
The Weather and Crops; The Wool Trade.....	261
Prepare for the Harvest; Red River.....	262
Co-operation among Farmers.....	263
HORTICULTURE:	
American Pomological Society; Fruit in Nova Scotia.....	264
Fruit near Montreal.....	265
Strawberries in the Niagara District.....	266
Weeds in Garden Walks; Pinching Tomato Vines; Culture of the Pine Apple.....	267
The Gladiolus; Fruit in Renfrew; Fruit at St. John's, New Brunswick.....	268
Wilson's Early Blackberry; How to Grow Pelargoniums; The Hawthorn; Herbaceous Peonies; Transplanting Evergreens.....	269
ENTOMOLOGY:	
Insect Crop of 1871; The Colorado Potato Beetle; Apple Tree Borer; Entomological Notes and Queries, Eggs of the Vapourer Moth.....	270
POETRY:	
Poverty, The Small Birds' Appeal.....	272
HOUSEHOLD:	
Painting Farm Implements.....	272
Rice.....	273
APIARY:	
Save Old Comb.....	273
POULTRY YARD:	
Warren Leland on Poultry, Technical Terms applied to Poultry.....	273
Ground Bones for Poultry.....	274
AGRICULTURAL INTELLIGENCE:	
List of Agricultural and Horticultural Societies.....	274
Agricultural and Arts Association—Meeting of Council.....	276
Cattle Disease; Items.....	277
MISCELLANEOUS:	
Mind in Farming; A Story with a Moral.....	278

THE CANADA FARMER is printed and published on the 15th of every month, by the GLOBE PRINTING COMPANY, at their Printing House, 26 and 28 King Street East, Toronto, Ontario, where all communications for the paper must be addressed.

Subscription Price, \$1 per annum (POSTAGE FREE) payable in advance.

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

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

GEORGE BROWN, Managing Director