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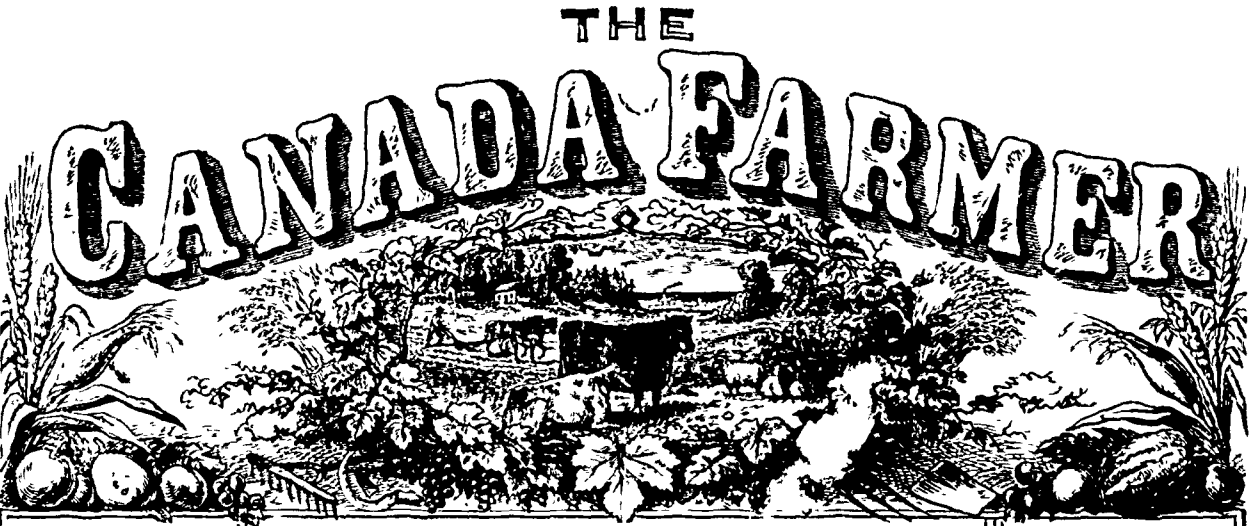
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VOL. IV. No. 5.

TORONTO, CANADA, MAY 5, 1872.

NEW SERIES.

## The Field.

### Potatoes and their Cultivation.

#### II. CULTIVATION.

When the land was newly cleared from the original forest, the potato was always planted in hills, all the mould that could be got from among the fresh roots heaped upon them when planted, and nothing further done to them until digging time. Even after the land was cleared up, this was, and continues still to be the favourite method with many; some planting whole seed, but the most part use cut potatoes for seed. Noah Webster, the author of the well known dictionary, gives the four following rules for raising potatoes:—1st, the seed should be of full growth. 2nd, cuttings produce more than whole potatoes. 3rd, potatoes will not come to perfection without sun; therefore nothing is so prejudicial as to plant them too thick especially on rich soil. 4th, cuttings in drills where the land is light will answer well at nine inches apart.

The preparation of land for potatoes ought to begin the previous fall. If the ground is very foul and weedy, it ought to be ploughed immediately after harvest; then, after being well harrowed allowed to lie and rot a few weeks. It ought then to be well manured, and again ploughed, leaving it lying unharrowed all winter, taking care to let the water off if any is likely to lie on it. In most cases, however, one ploughing in the fall will be sufficient. In the spring, after the grain crops are sown, and the ground has become dry enough to work well, the ground for potatoes has to be cross ploughed and harrowed, but as ground for potatoes does not require to be made so fine as it does for turnips, carrots, &c, if it is at all clean, it does not require much harrowing to fit it for planting. Up to this stage, whether it is intended to plant in drills or hills, the cultivation is the same.

#### DRILLS.

As I have generally planted potatoes in drills, I will treat of that method first. Having the land prepared, drills are opened from 30 to 34 inches wide, and not too deep, should the ground be loose, they will sometimes be made deeper than is wanted; in that case give the drills a single stroke of the harrow lengthwise of the drill, the loose mellow earth falling into the bottom of the drill makes a fine bed for the potato sets. Then plant the sets about a foot apart in the drill,—a little less or more as the variety may grow rank or otherwise. Then cover up with the plough, covering the sets not more than six inches deep. If the ground is cloddy or very loose, benefit may be gained by rolling the land after covering up; but in most cases that is not necessary. They are then left until the young shoots are a nut ready to push through, when we set up the drills anew with the plough, thus cutting all the young weeds that have sprung up in the bottom and sides of the drills. Then harrow the drills well down lengthwise of the drill, thus killing most of the weeds on the top of the drill and making the whole fresh and mellow for the young plants to come through. If this operation is well done it will leave very little work for the hoe. After this, the young plants will generally grow very rapidly. When they have grown a few inches high, take a drill cuttva or (this implement should be of the best kind, one that will not slip over the hard spots—many are not sufficiently careful on this latter point, hence the loose soil that needs the least cultivation gets most,) pass up one one drill and down another, running the cultivator as deep as possible, thus making the bottom of the drill loose and mellow, and killing the young weeds that are just springing up, taking care not to go too near the young potato plants the first time. Then, after a week or so, cultivate them again, going up the drills we come down before, and setting the cultivator a few inches wider so as to get as close to the young plants as possible without injuring them. It is of im-

portance that drills be made at first as straight and equal as possible; for when made all alike wide it greatly facilitates the culture throughout the entire season—the cultivator getting near the young plants all along the drill, without tearing out plants in some places, and leaving other parts uncultivated. It is of great importance that the potatoes (and other root crops) be thoroughly and frequently cultivated during their growing season, as frequent stirring of the soil hastens the decomposition of organic matter, and otherwise renders latent plant food available, and also effectually kills weeds, or rather prevents them from growing at all. This prevention of weeds from springing up is of vast importance if it were only for the sake of moisture. A writer in a late number of the *American Agriculturist* says:—"Every weed robs the ground of moisture—the weeds are constantly absorbing from the soil water through their roots, and evaporating it through their leaves into the atmosphere; the weeds in many a field of potatoes evaporate during our hot July weather 500 gallons of water per day per acre. If this be so it is of great importance to prevent weeds from springing up.

When the young plants reach the proper size, before the roots begin to run much in the drills, we set them up with the plough, if with a single moulded plough, going up and down in each furrow, leaving the drills not too high, and another flat on the top. They may now be considered finished until digging time. Land cannot be cleaned so well with potatoes as it can with turnips, because potatoes are planted earlier, so that there is not such a good opportunity to clean the ground before they are planted, and then they have to be sooner laid by, so that the weeds get a chance to grow between the drills when they cannot be killed (by the plough or cultivator) without injuring the crop.

#### HILLS.

As already stated, my own practice has mostly been to plant in drills; many, however, prefer planting in hills. They think they

get a better crop, and also that they take less labour in hills. Those that plant in hills generally manure in the fall; then after ploughing in the spring, plant the land without any further preparation. Some just plant in every third furrow, either using a marker to mark the ground across the ploughing, or else setting up marks to go by. If planted in this way, they are generally well barrowed just as the young plants are coming up, and are either wrought afterwards with the cultivator, and set up one or both ways with the plough, or else they are cleaned and billed up with the hoe. Others, again, plough and harrow the land well, and then mark out with the plough, and then plant across the drill. When set evenly out in rows, so that they can be cultivated both ways, and set up with the plough both ways very little hard hoeing, if any, is required.

#### HARVESTING AND STORING.

As soon as potatoes become ripe, or their stocks are killed down by frost, it is time to take them up and either leave them in heaps in the field for a short time, (taking care to cover the heaps enough to protect them from a few nights frost), or else put them at once into the cellar, root house, or pit, where they are to remain during winter. Various methods are practised in taking up potatoes: many dig theirs' with broad tined forks made for the purpose; some take them out with the hoe; and others throw them out with a long handled shovel. By all these methods, two drills are dug, the potatoes in both drills, if not picked up as dug, are thrown together in a row, to be picked up afterwards. A number of implements for digging potatoes have been from time to time invented, and tried, but none of them, as yet, have been so successful as to bring them into general use. When the weather is dry and fine we mostly take them up with the plough, ploughing up two drills and carry one, then after gathering the potatoes off the ploughed up drills, we plough up the drills left, and after gathering the potatoes from them, the whole ground is barrowed twice or oftener, as may be required, the potatoes being well gathered up each time the ground is harrowed. Potatoes are mostly kept during winter in cellars, but they may be kept in pits. In that case they want to be well and deeply covered up, as the severe frost of our winter penetrates a heavy covering; with this precaution, they seem to come fresher out of pits in the spring than those that are kept in cellars.

#### DISEASES.

The Potato is subject to several diseases. The severest, and most destructive, is known as the "potato disease." It was first noticed in this Province about thirty years ago. I first saw it in 1844, in that year we had a severe storm of thunder and rain about the first of August. So great was the rain, that the drills were filled with water, which in low places stood full all night; the potatoes in a

day or so looked all black, and blighted, and never grew any more; the tubers were small, watery, watery things, with some rotten ones among them. In the following year the potatoes grew well all the season, and yielded a fine crop. When taken up they seemed sound, but when put together in heaps or in the cellar, they rotted faster than they could be fed out. They seemed to become all black and rotten in a few days, with a very bad smell. Since that time there have been few (if any) years in which the potato crop has been free from disease, and though the disease has constantly become less virulent, it still continues to injure our potato crop. Books, pamphlets, letters, newspaper articles, almost innumerable, have been written on the subject of the potato disease or "murrain," as it was sometimes called, but the cause and the cure for it is yet a mystery. The remedies proposed were numerous, and very various, — cut sets, large and small—whole potatoes, large and small—moist weather and dry weather—early planting and late planting—strong soil and light soil—high situations or low situations—northern exposure or southern exposure—shelter under trees and exposure in open fields—with manure, and without manure—manure applied directly to the sets, and indirectly to the sets—one kind of manure, and another kind of manure—pulling off the stems and letting the stems remain—picking the blossoms, and encouraging their growth—pulling off the seed apples and encouraging them to ripen—weeding the ground clean, and encouraging the growth of weeds around the potato plants—earthing up the rows and allowing them to remain flat—ripening the tubers in the ground and taking them up before they were ripe—trying one variety and another variety—a late variety and an early variety—an old variety or new varieties—steeping or dusting the sets in various mixtures or ingredients; one and all of these modes and methods, and many others, were tried with very partial success, and very often with none at all. For my own part I have been most successful with planting rather early on dry ground, and without applying any manure in the spring.

Besides this disease, which was by far the worst, the potato is subject to other diseases—the curl by which the sets either did not grow at all, or grow small, weak, puny plants,—the dry rot, and now they are attacked by the Colorado Potato Beetle which seems from the accounts given to be the most destructive of any insect enemy that has yet attacked the potato.

#### VARIETIES.

As these remarks have already extended to an undue length, it is not my intention to say much about the varieties of the potato, their name is Legion. For several years past there has been a sort of mania for producing new varieties of potatoes, earlier, or

larger, or more prolific than all others, and selling them at enormous prices. In former times there was such sorts advertised, the first of these that we had any acquaintance with was the *Rohan potato*. As a matter of curiosity, and to show how such things were done, I give its history, (somewhat condensed) as recorded in the *Gardeners' Journal* of that day.

"THE ROHAN POTATO," a new variety.—The following is an extract from a letter written from Geneva, of date, 25th April, 1834, by Prince Charles de Rohan, to M. Jacquemot Nurseryman. "I send you, through my friend Romilly, the potato which I promised you; and to which my name has been given in this country. The history of this potato is not less singular than the potato itself. He who obtained it from the seed, four years ago shows it, but will not give it to any person; he has refused it to King William. He has cultivated it in a little walled inclosure; he only wishes to see it in perfection, and the seed of the following year; he makes them to be taken up in his presence, keeps them under lock and key, and to be cooked for himself and cattle before his face. It is at great risk that I have been able to procure two tubers. This exclusive amateur having learned that I had got some, *Cactuses* which he wished much to have, begged me to give him some, I wished no money, but very much to have some of his wonderful potatoes—he gave me two of them, and made me give my word of honour that I would never send any of them to Holland, Belgium, England, Prussia, or Germany. Happily he has not thought of Switzerland or France, for without this omission, I could not have had the pleasure of offering these to you." The yields given of this potato were extraordinary, equal to anything of the Early Rose, for instance, the size, weight of single tubers are given at 13lbs. 7oz.—11lbs. 9oz.—9lbs. 13oz., and then again of 48½lbs. from one tuber weighing less than half an ounce—of 2½ bushels from one potato—of 18 bushels from four potatoes—of 4 bushels from one Rohan potato, and again of 3 bushels from 8oz. of Rohan potato, &c., &c.

Of course after such great accounts, every one wished to procure some of these wonderful potatoes; some of our Agricultural Societies bought a barrel or two of them, and distributed them among the members of the Society—the first I ever saw of them was procured in this way, the person with whom I was working, as a particular favour gave me a small piece of a Rohan potato to plant. My farm at that time consisted of a small part of a little used side-line—I divided the highly prized piece of potato, and planted it in two hills,—they grew uncommonly well,—and as I was quite proud of them, I hoed them frequently after regular work in the evening, hilling them up into two fine large hills, they grew the largest and strongest stalks I have ever seen on potatoes; after-

the great yields I had read of, I thought I should surely have half a bushel from each hill. As the stalks kept long green I was in no hurry to take them up, but one day while at home I determined to dig these fine potatoes—well, I dug the two grand hills of potatoes, and instead of a bushel I got from them a few very small potatoes, no larger than a bean, and could hold them all in the hollow of the hand; so annoyed was I at this disappointment that I pitched them over to a pig on the road, since then, when about to try some new variety, I have not unfrequently been reminded of this experiment with *Rohan potatoes*.

In Canada West in 1861, the average yield of potatoes per acre was 111½, and in Canada East at the same time it was 107½ bushel per acre. The total acres in both Provinces by the census of that year was 255,975 acres, yielding 2,809,361 bushels. I have not yet seen the returns by the census of 1871.

The average yield of potatoes in the whole United States by the returns of 1860 was 116 bushels per acre. The different States yielding from 62½ bushels per acre (the lowest) to 175 bushels per acre (the highest), giving a total of 111,148,867 bushels of potatoes for that year.

The quantity of potatoes grown in some European countries is very great. From some returns published a year or two ago, we learn that Prussia grew about four and a quarter millions acres of potatoes—France over three millions acres,—the United Kingdom over a million and a half acres, and other countries in smaller quantities.

W. R.—*Cobourg*

### Gypsum in Agriculture

Gypsum is a mineral found in rock masses in various parts of this and foreign countries. It is known to the chemist as Hydrous Sulphate of Lime. It is composed of about 28 parts of lime, 40 of sulphuric acid, and 18 of water. Transparent varieties are known as Selenite, massive transparent varieties as Alabaster. When pure it is quite soft and free from grit, so that it may be cut with a knife without dulling it. This native rock blasted or split from the quarry, crushed into small pieces and ground to a fine powder, is known as land plaster. If the rock is heated in a proper vessel, nearly all the water will escape, the mass changing to a pasty condition. This substance, when the water escapes from it, is known as calcined plaster, or as plaster of Paris. When water is added to it, it is immediately absorbed, and the whole becomes a compact mass. This is the material that is used for the hard finish of rooms, for stuccos, for making black-board crayons, for fastening together parts of a lamp, and for various other purposes in the arts. This material is, however, of no use in agriculture,

as by the moisture obtained from the soil, or from rains, it would become a compact and nearly insoluble mass.

Gypsum, in the form of the pulverized rock, or the residuum in salt boiling, was employed as a fertilizer, to some extent, in Southern Europe at an early time. About a hundred years ago it began to be largely used in France as a fertilizer for Lucerne, and on Franklin's return from the French Embassy he brought some to this country. On a hillside near one of the roads that lead to Philadelphia, he sowed some in the form of letters, on a field of clover, according to some, on Lucerne, according to others, and its effect was so marked that the difference in the growth of the plants that grow on the plastered land could be seen at a long distance. For some years there was an extensive trade in French plaster, notwithstanding the fact that there was an abundance of it in several of the States that were then settled. Even now there is a prejudice in favour of gypsum obtained in distinct localities, even though an analysis shows that other specimens are identical in composition.

The exact way in which gypsum acts to render soils more fertile, has been a matter of considerable controversy. Sir Humphrey Davy regarded it as simply an essential constituent to certain plants, and fortified his position by showing that it exists undecomposed in the ashes of these plants. Liebig held that its use was to fix the ammonia of the air. According to this theory, a double decomposition is effected between the carbonate of ammonia and the sulphate of lime,—sulphate of ammonia and carbonate of lime being the results. Hedwig is inclined to the opinion that gypsum acts in the food of plants in some such manner as saliva acts on the food of animals. Others hold that one of the most important uses of gypsum is to retain moisture and give it off in times of drought. There are arguments in favour of all of these theories, and it is not improbable that under different conditions of soil and dryness, the method of its operation may be different.

Gypsum is not to be regarded as farm-yard manure, as useful for all kinds of crops grown on every kind of soil; experience has shown that it exerts little influence on certain soils, particularly those that are unusually moist. Soils in certain locations have shown little improvement by its use, though they resemble other soils in different sections that have been greatly benefited by its application. This may be explained by supposing that they already contain as much as is necessary for plant growth. In relation to the crops that are most benefited by the use of the plaster it may be stated that it is now pretty well settled that it promotes the growth of foliage and that it protracts the period of growth. Few claim that any of the cereal grains are benefited by the application of plaster, though some hold that the stalks are much less liable to lodge, and that the

straw is more valuable when fed to stock. Beans, peas, and all leguminous plants are benefited by its application, as are all varieties of turnips. In relation to corn the testimony is somewhat conflicting, though the weight of it would go to show a marked increase of the crop on sandy soils when the plaster is applied directly to the hill; mixed with ashes and applied to potatoes on the hill, either when the seed is planted, or as a top dressing when the plants are first breaking ground, it has, in many sandy soils, produced very marked results.

The most astonishing results, however, have been noticed in the case of the different varieties of clover. Not only has the yield been in many cases doubled, but it has been found that the plants, either green or dry, are better relished by all kinds of stock. It has also been conclusively shown that clover will remain much longer in the soils that have been treated with plaster. Now, when we consider that clover is one of our most valuable forage plants, as well as the crop that is chiefly used for turning under, especially as a means for preparing soils for a crop of wheat, it is plain that we cannot attach too high an importance to this mineral fertilizer. It is not claimed that plaster exerts much influence on wild grasses, but in relation to its use on pastures that contain cultivated grasses, Mr. Flint says:—"In one instance within my knowledge, a large pasture which had become worn and somewhat unproductive, received a generous top dressing of plaster. The grass started sooner, and continued throughout the season to look far better than the adjoining pastures of precisely the same soil. So far as could be ascertained, the increase of grass over the adjoining pastures was about seventy-five per cent. Nor was this all: The pasture came in the next season with the greatest luxuriance, and its look of beautiful green was the wonder of the whole neighbourhood."

The ordinary and, perhaps, the most approved method of applying plaster to clover, is to sow it broadcast, at the rate of from one hundred to two hundred pounds to the acre. Most prefer to sow it in the morning when the air is still, and at that time of the spring when the young plants have put forth their first leaves. Many in seeding down fields to clover with spring grain, mix the plaster with the clover seed at the time it is sown. It would seem to be a good idea to sow half the amount required for an acre at that time, and to sow an equal amount after the grain is cut. It is better to scatter a small amount of plaster annually on fields, than to add a large dose at one time, as in the case of applying lime. On pastures it should be applied when the ground is moderately dry and after vegetation has taken a good start in the spring. There are machines especially designed for sowing plaster and ashes that may be obtained at most of our agricultural implement stores.—*Prairie Farmer*.

### Harrowing Fall Wheat.

It is extraordinary how thoroughly frightened many farmers become at the bare thought of harrowing winter wheat, in terror lest they should destroy a few blades. Ninety-nine out of every hundred fields of winter wheat in Canada would be better for harrowing in the spring.

This wheat is sown in September. Before winter sets in the ground is probably beaten into a compact state by heavy fall rains. Winter sets in, and throughout this season masses of snow fall upon the land, and in spring it is thoroughly saturated; upon this wet state breaks the hot Canadian April sun. The effect of the hot sunshine upon a wet mass is to bake it, and to form a hard upper crust. The tender young plant requires all its early vigour for its own revival from frost and a long dormant state, and can ill afford to be impeded in its rapid early growth by a crust of hard soil around it. The action of the harrows is to break up and render friable this crust. It also opens the surface, so that warm spring rains can percolate the soil, and carry their refreshing food to the very finest rootlet of the young plant. It allows the warm air to ventilate the soil, and by the action of subsurface heat to set in motion that capillary attraction by which moisture is drawn up yards from the subsoil. It kills many a germinating weed, which would, if left, grow and flourish and soon dispute with the wheat for the lion's share of natural plant food.

The harrow best adapted for the purpose is one with light sharp steel teeth slightly curved backwards. This form of tooth draws out no wheat, but will take out weeds whose roots is not very firmly set, and will divide the young plants, causing them to tiller out more thoroughly. We do not mean to condemn the old wooden harrow for this purpose, for we have frequently used it to great advantage, but we should prefer a harrow (light in build, iron is best, but of good weight) with sharp bright steel teeth, such as would not clog, and bent slightly backwards.

The wheat is a taprooted plant, and in its fall growth and winter setting, takes so firm a hold upon the soil that it is almost impossible to drag out the plant by the root.

Our neighbour, who is much like the Deacon in "Wags and Talks" in the *American Agriculturist*, was much exercised at our harrowing some fall wheat that we grew on shares for him some years ago. He came to the field, where we had a boy with a pair of iron harrows at work, and would have none of it. We were annoyed at his interference and would not give into him; so we told the boy to put two large stones on the harrows and make them "dig in." Our neighbour left, as nearly in a rage as was possible for a good-natured phlegmatic Dutchman, but he faithfully watched the effect of the operation, and the very next spring found him with harrows upon every field of winter wheat upon his large farm.

## Stock Department.

### Breeding Horses for Draught.

So much attention seems to be now concentrated upon the subject of trotting and blood horses that it seems as if the farmers of America were about to take a new turn in their ideas, and go into the business of breeding horses of a fast character rather than those of a useful or profitable class to themselves. Our own observation convinced us years ago that the general class of horses as found on American farms, are too light and weedy in character to profitably and efficiently perform the work required to be done to bring the soil into a high state of cultivation; or to harvest and market the crops that would be grown were a better state of culture more easily attainable. We do not advocate the introduction of the heaviest class of horses for the performance of the work required upon the farm, but only so large a proportion of the blood of the Clydesdale, Norman, or Percheron horse, into the working farm horses of the country, as will give them more size, muscular substance, and endurance, without too far lowering their standard of quick action and fast gait.

A single cross of the draught class of stallions upon common mares of good speed and action, will usually result in producing colts that are just about right in these respects. But to do this with any degree of certainty we must use only stallions of undoubted purity so far as the breed is concerned to which they belong, whether Clydesdale or Percheron. The colts produced from the cross would be of little value to use as stallions, but will make excellent farm horses, while the fillies, when old enough, if again crossed with the pure bred stallion, would bring still heavier produce, the females of which put to a first-class trotting stallion of good size ought to produce fine road team horses. There is however always a large and increasing demand for the draught horse in its purity, for use in the cities to move large loads of heavy goods upon trucks between the warehouses of merchants and dealers and the various railways and shipping points. The kind of horse needed for this work is too heavy and sluggish for the farmer, but it would prove very profitable to many of them to engage in the business of breeding draught horses for sale.

The horse best adapted to this purpose is probably the breed known in England as "Lincolnshire," of which a very few have already found their way across the Atlantic. They are heavier than the Clydesdale or Norman, and also more tractable and powerful. Owing to their docility and even temper they are rarely gelded, and always command very high prices. Numbers of them are bred in Australia and Tasmania,

where they are found in the highest state of perfection, and often exported to India, China and South America. Probably they have found their way from thence to San Francisco, Cal., before this time. Their prevailing colours are black, brown and dark chestnut, often with white feet. They are not allowed to be shod as are ordinary horses, by having all the most valuable part of the hoof ruthlessly cut away in order to give them handsome but contracted feet. Instead of that, their feet are fitted with steel shoes having a sharp bevelled edge all round, and a small calk only in front. Their shoes are nailed on flat, without any pairing away of the frog or sole, more than just sufficient to make the hoof level and even.—*Country Gentleman*.

### Training Steers and Heifers.

I believe that cows that are tenderly treated and frequently petted and handled during gestation drop calves that are gentler and more docile than those do who are often frightened and handled roughly during that period. Hence I take special pains at that time with my cows that they shall have the gentlest and best of care. As soon as the calf is dropped, I commence to feed and handle it, passing my hand often gently all over its body and up and down its legs. It soon learns to drink its milk at my hands, and recognize me as its protector and friend. I pursue the same gentle course with it, if it is a heifer, till she comes into milk with her first calf, and ever afterward I card her, mess her and handle her bag gently; if it is hard and swollen I anoint it with linseed oil or lard, or bathe it with tepid water to soften and take out the inflammation from it and toughen it, and by constant kind and gentle treatment toward her, she becomes very docile, loves to be handled and milked, and looks up to me not only as her master, but as her protector and friend. My cows and heifers that I train in this way never offer to kick me when I milk them, nor offer to run away from me. I never need chains or ropes or straps to confine them during that time, nor milking stools to break over their heads to teach them a wholesome fear of me.

Steers I handle and yoke up the first winter before they are a year old, and during the following summer, to accustom them to the yoke and to walk side by side evenly together. The second winter I put them to a light sled, and put a small rope around the nigh one's horns, not to guide them by, but to secure them from running away from me by sudden fright or some other cause. I then, with a light short whip, proceed to teach them draw, to go forward, to stop, to haw and to gee. I use few words with them and few motions of the whip, not trying to teach them too many things at once. When they are a little older, I teach them to back by choosing a piece of descending ground for that purpose, with the empty sled or cart for a load. I never try to plough without a driver till the steers are four years old.—*Cor. in Country Gentleman*.

### An Omnivorous Ruminant.

The *Holby Standard* records the death of a cow owned by Deacon Ray of that village. This animal was well-known to the people of the village for years for her cunning, craftiness, gluttony and thrift. She could open doors or gates with her tongue, and would steal corn, apples, potatoes, coats, umbrellas, and clothing of the children when out berrying, and devour them so quickly that no one knew where the articles went to. She actually ate two umbrellas belonging to the clergymen, and two leather aprons belonging to the deacon; also a quantity of harness, and closed up on a Buffalo robe. She was a good animal to produce milk, with all her faults. But this cow has just come to a bad end. She opened the granary door of her owner and stole a half barrel of corn and half a bushel of meal, all of which she ate, and died as a glutton should. Some of her enemies undertook to get revenge by eating rib steaks from the carcass, but found the meat as tough as the cow.

"Every cow should fatten one pig," is an old rule and a good one; that is, the daily product of a good cow should be in butter-milk and whey enough to feed one pig, after the cream and cheese are extracted.

On the 13th Inst Mr. F. W. Stone of Guelph shipped, through the U. S. Consul of that place, his pure bred Hereford bull "Sir Charles," which he has disposed of to Mr. T. L. Miller, of Chicago, for \$1000 cash.

**WHOLESALE STARVATION.**—The *Union Intelligencer*, (Dallas), Texas, of March 16th, reports that more than one-half the cattle in the western part of Texas, have died from starvation during the past winter. From other sources we also learn that the mortality among the cattle of Texas and southern Kansas has been very great.

**IN-AND-IN BREEDING.**—During a recent discussion in England, it was stated that the most successful lines of short-horns were those in which one animal was the sire of the sire and of the dam also—thus making the parents half brother and sister by the same sire out of different dams. This system of breeding had produced some of the finest cattle in the country. It was also said that were cattle were closely inbred and preserved their constitutions, they had a tendency to lose colour, save perhaps in the ears, and to become white.

A meeting of the "Association of Breeders of Thoroughbred Holstein Cattle" was held in Boston recently, at which the question of publishing a Holstein herd-book was discussed, and the expediency and desirableness of such a record fully indorsed. A resolution was also passed to the effect that no animal shall be called a thoroughbred Holstein, "except those large improved black and white cattle imported from the provinces of North Holland, Holstein, or animals of undoubted purity of blood of said importation."

## The Dairy.

### Ontario Dairymen's Convention.

#### Mr. Willard's Address.

(CONTINUED.)

#### THE PRODUCTION OF MILK.

But you will ask what are the living vital questions of the day in dairy management, and what can this association do to bring about most desirable results in Canadian Manufacture? Until quite recently, neither the dairy farmer nor the cheese manufacturer has fully understood the nature and causes of milk taints, or the influence of ferments upon the product manufactured. The cheese maker groping along in the dark has employed certain agents, and manipulations to bring about a desired result. From the experience of others or from his own practice, he has fixed upon a set of rules which with good material and under favourable circumstances have accomplished the object sought—turning out a good product. But if the material happens to be faulty and the circumstances unfavourable, he fails of success, though operating under the same rules. Again, he has learned that faulty milk under certain manipulations need not be lost altogether, but may be turned into a second-class product. For several years past the great effort of manufacturers has been to devise means for making a good product out of bad material. Of course much has been learned from these experiments, concerning the treatment of bad milk and of floating curds; but at what a fearful cost! and the result gained is that although faulty milk may be turned into an inferior or second-class product, no skill has yet been able to convert it into the best goods. Had we known precisely the nature of the causes affecting milk and had the energy and unceasing exertions of manufacturers been turned to the primary causes of their troubles, and the correction of faults at the fountain head, the great bulk of American cheese to-day would have been of superior excellence quite beyond anything yet produced.

Suppose a woollen manufacturer skilled in the machinery and running operations of his factory, but with no knowledge as to the qualities of wool, should attempt to make superfine broad-cloth from the coarse, almost worthless tags taken at the factory. He finds it does not work satisfactory, and can not be made into fine goods. Supposing then he attempts to alter his machinery and adapt himself to the situation, would you say that this man is adopting the best plan for success? Would it not have been better to have studied the character of the raw material—to have selected his wool in reference to the quality of goods he was seeking to make—since no amount of ingenuity and effort on his part will enable him to

manufacture superfine cloth from coarse refuse material? He may learn some useful lessons in the management of this kind of wool and perhaps the goods may be sold in market at a low price, sometimes covering the cost of production and sometimes not. Now, the manufacture of American cheese has been carried on somewhat upon this principle. Milk is brought to the factory and the manufacturer cannot tell what is the trouble with it. He soon finds it will not work up into a first-class goods, and so he does the best he can to save it from loss, turning it into as good a product as he knows how.

In my recent address at Ingersoll, I explained how milk is changed from its normal condition by fungi—living organisms that take possession of the fluid, and by their growth and multiplication bring about the various phases of coagulation, and the breaking down of the lumps of curd upon the shelf until it assumes a mellow flaky condition fitted in flavour and texture for the human stomach.

Certain germs or species of fungi are supposed to be natural to all healthy milk, while the same character of germs pervade also the atmosphere, and these last falling upon the milk are absorbed in it, where they multiply and grow, and thus the milk curdles and turns sour, developing what we commonly call lactic acid fermentation. The rennet is supposed to contain an immense number of these spores and its effect in curdling milk is attributed to the growth of living organisms which by their multiplication in the milk cause curdling or coagulation of the fluid. They go also into the cheese upon the shelf, and under favorable temperature they perform the important office of breaking down the casein and converting the cheese into a mellow delicate morsel of food. And so far as these fungi are concerned they are the cheese makers' real friends, and under favorable conditions as to temperature, time and place, they may be controlled to do the cheese makers' bidding. But it is altogether different with those fungi which have their origin in putrid animal matter or in filthy vegetable decomposition. Their influence is altogether harmful, and it is from these organisms, which get possession of the milk or the cheese upon the shelf, that nearly all the trouble comes in prosecuting the cheese making art. We now have positive knowledge that milk is tainted in the cow's bag, before it is drawn, on account of the cows inhaling the odor of putrifying animal matter, such as that coming from dead calves and horses, and the like, left exposed to decay in the open air—that the filth from vegetable decomposition adhering to the udder and hair of cows, while passing through swales and slough holes, becomes detached while milking, falling into the milk, and even though in minute quantities, spoils the milk and unfits it for manufacturing into good a product—that filthy stagnant

pools are filled with living organisms and the animals drinking from these pools take them into the system, when they are carried into the circulation and are secreted in the milk, tainting it, and producing the same character of filth from which they emanated.

These facts have become fully established by the microscopical investigations of scientists, and it is for the dairymen of America to meet the situation squarely and devise means to obviate the difficulty.

Is it not a waste of time and money to be longer dilly dallying over the cheese vats, trying to devise means to get a good thing out of bad milk, when the trouble would be obviated by having good material in the first instance? The most important point, it seems to me, is to educate the farmer in the production of good milk. This work sooner or later must be done, and I am fully persuaded should the dairy association turn their attention to this one point and, resolve upon a system of reformation among farmers in the production and delivery of milk American cheese would at once begin to rise in excellence and make rapid progress toward perfection.

I know of but one man upon this continent who has fully comprehended this question in its bearings, and applied the remedy upon an extensive scale, that man is Gail Borden, the distinguished inventor of the process of condensing milk in vacuo. He has several factories operating in this business where a large quantity of milk is daily delivered. I recently paid a visit to Mr. Borden at his house in White Plains, and examined his extensive milk condensing factory at Brewster. Mr. Borden has made milk a minute study for the last twenty-five years, and probably there is no man living who has given so much attention to the practical handling of milk upon a large scale, and to the causes influencing its flavour and goodness as he.

You will understand that Mr. Bordea has originated and developed an immense business and has been able to put upon the markets of the world a milk that is now acknowledged by consumers to be purer, better flavoured, and altogether more healthful than it is possible to obtain from the city milk man. Consumers who have used his Eagle brand of milk for years tell me they have never opened a poor can, and have never been disappointed in its flavour and quality. Now, as it is more difficult to preserve the flavour of milk for long periods than it is to preserve cheese, and as consumers notice imperfections in milk sooner than they do in cheese, you will ask how has this result been accomplished. I asked Mr. Borden this question. I asked him how much milk received at his factory he allowed as waste, on account of its being out of flavour and imperfect, and he told me that a gallon was lost in this account, that in fact no bad milk was now received at the Brewster factory.

He told me that in his early experiments he made many failures, that he had tried to convert bad milk into good as you cheese makers try, but that no ingenuity or device had yet been able to overcome the difficulty, nor did he believe it could be overcome by any process of handling, for sooner or later its imperfections would make their appearance in the product manufactured. He said his success in making a good article of milk depended not so much upon the formula in the best specifications, as upon the condition of the milk when brought to the factory, and the care and attention given to every part of the process from the washing of the vessels and the thorough cleanliness which should be observed in every department. The success of the milk manufacture at our three factories known as the Gail Borden Eagle brand, he said, is due to the attention which we give to the personal inspection of every department of the dairies on the farms which is assigned to one person at each factory; the constant examination of every man's milk by samples taken and subjected to tests as to cream, sweetness, and the time it will keep after being brought from the dairies. In short there is nothing in any manufacture requiring so much care and everlasting vigilance and attention as that of milk.

Now Mr. Borden begun in the first place at the farm. His milk must come from upland pastures or well drained soils. The animals must not be allowed to wallow in swamps and mud holes. They must be provided with clean running water or good water pumped from wells. Attention must be given to the food the cows eat, and nothing is allowed in the pastures or the food that will taint the milk. No milk is received from cows that have not calved at least 12 days, unless by consent of manager. The cows must be milked in cleanly stables, and not allowed to pass through accumulations of manure at the entrance of the stables or in the yards. The milk must be drawn in the most cleanly manner, and strained through wire cloth strainers. It must be cooled in a bath of cold water to below 58°, and the water must be sufficient to reduce the milk to this temperature in 45 minutes. Cows in heat must be separated from the herd and kept quiet during its continuance. Dogging or fast driving of cows is not allowed.

A sample of every man's milk is taken daily at the factory and tested in regard to standard of lactometer, temperature, cream, time it will keep. A record is also kept opposite each party's name of the amount of milk rejected and the cause of rejection, with such other remarks as the case requires. The inspector visits every man's farm at least once during the month, and oftener if the register shows any variation in milk from a certain standard. In this way Mr. Borden has educated his patrons until as he affirms no losses are sustained on account of bad milk.

Now I ask you if this is not the most practical and common sense method to be adopted. It has been found to produce the highest results and greatest profits in Mr. Bordea's factories, while the farmers themselves have reaped more money by far than their neighbours following the old careless system of producing faulty, rotten milk, and at the same time the first are more intelligent, and the happier from the consciousness of well doing. Oh my friends I feel an earnest desire for the success of dairying everywhere upon this continent, and I am fully convinced we shall never rise to the highest excellence in this branch of industry until this work of education begins to take root and becomes developed upon the farm. I would urge this matter of producing milk as most vital to your success. Let every factory assemble its patrons at once, let there be full understanding and agreement among all concerned. Let an inspector of milk be appointed, clothed with authority to visit farms. Let the rules adopted be rigidly enforced, do not make any half way work about it, but proceed with the determination that nothing short of "Gilt Edged" cheese is to be manufactured. That point is within your reach at once. When water is not abundant on the farm, introduce the system among farmers of aerating and cooling the milk by means of the recent invention for this purpose, which consists of forcing air by means of a common bellows through a pipe to the bottom of the can. It is a simple, cheap, and efficient appliance. In this way you at once strike ahead of the best dairy practice, and with attention to curing cheese upon the shelf, will be able to compete with the finest goods in the world. The extreme fine flavour and quality of the high priced fancy Cheddar's of England, is due to 5 points, viz: perfect milk; draining the whey early from the curds; a slow development of acidity in the curds exposed to the air; a thorough expulsion of the whey; and a uniform temperature of 70° in curing the cheese upon the shelf. I speak from no mere theoretical stand point, but from actual observation, and the handling of the curds in the best Cheddar's dairies of England.

#### RENNET.

I have a word here in passing to say about rennet. In a recent letter from Dr. Cole of Potsdown he informs me that calves killed soon after being dropped, and before sucking will yield a rennet of much greater strength than in any other way, and that the skins of such calves make stronger and better leather than the hides of calves dressed in the usual manner. The suggestion is new to me and may be worthy of some experiment.

#### CURING CHEESE.

The second great question for the attention of American Dairymen to day is the proper curing of cheese upon the shelf. The subject has been almost entirely ignored by our dairy associations, and by the dairymen

of America. The curing of cheese has as much to do in securing fine flavour and quality as the manipulations of the milk and curd. Luscious sums are thrown away annually in the best dairy regions of New York, simply on account of imperfect curing rooms. I do not know of a single "fancy gilt ed. factory" in the State but that has lost during the past two years, more money on account of damaged cheese, caused by imperfect curing rooms, than would have paid the whole cost of a large and properly constructed "Dairy House." I doubt whether there is a curing house upon the continent where ventilation and uniform temperature can be controlled and maintained.

A well made cheese when removed from the press to the cheese room contains a certain amount of moisture, a part of which must pass off in the ripening process, or the cheese will not acquire good flavour. If the cheese is kept in a damp or badly ventilated place, the excess of moisture will develop another class of fungi, a different kind of fermentation than that required for good cheese. From experiments made, it has been found that 2,000 pounds of newly made cheese will give out nearly two pounds of moisture during twenty-four hours, and the sooner the room is cleansed of such moisture the better; for if it is condensed and falls back upon the older cheese or the cheese is constantly saturated with these exhalations it will injure the flavour. We turn newly made cheese daily, in order that this moisture may readily pass off, and the fermentation of the cheese be carried away in a uniform manner. Ample ventilation then is important—ventilation that shall carry off these fumes of decay and cheesy exhalations. From a large number of well conducted experiments the principle has been established that a temperature of about 70° is the best for curing well made cheese; to secure fine flavour and a rich mellow texture as well as long keeping qualities, the growth of the fungi, or fermentation, must be slow and uniform. You may force it forward by high heat and light salting, but always at the expense of long keeping qualities. The system of preparing cheese for market at 20 days old is a most pernicious system, and is the source of fearful losses to American Dairymen every year. It is admissible only when you know where to place your goods and know they are to go into immediate consumption. In 1866 I saw the result of such manufacture in numerous instances—cheese that come in good condition, and if sold at once would command 76s; in a week's time so fell off in flavour that it went begging at 50s. I know that American Dairymen and American Dealers often boast of our system, because we can make cheese that is so soon ready for market that the shelves can be cleaned from month to month, but they do not couple it with the fact that much of our cheese sells in England for 30s. to 45s. the cwt., and

even less. Some one loses on these goods, for no cheese of good flavour, that can be held, would be sold at such a fearful loss.

I think the American method of curing cheese is grossly defective, and it is upon this point that we need the application of science and the genius of inventors. It will not do to take the chances of the weather in a climate so variable as ours. Our intensely hot summers must be counteracted in some way in the curing house, and if we really set about it we can overcome the difficulty, and the time when this should be done is now right upon us. I believe that a good many old curing houses could be improved by building around an inside wall, leaving six or eight inches space between it and the present wall, and by arranging double windows. It has been suggested that saw-dust or some non conducting substance be placed between the walls. I saw something of this recently in Ohio. It was a storehouse for keeping late made cheese after it was cured during the winter. Messrs. Horr & Warren, of Wellington, have a storehouse of this description, where on the 24th of January they had over 10,000 boxes of cheese stored in boxes, and though the weather had been intensely cold, no trouble was had from frost. I am inclined to think that the plan of dry, well ventilated cellars or basements could be adapted so that a low even temperature in hot weather may be secured at little expense and trouble. I would have such a basement under the whole dry house, at least six or eight feet below the surface of the ground. The walls should rise above the ground three or four feet, so as to give an abundance of sunlight throughout the whole. I would have the rooms ten or twelve feet high in the clear, and the bottom should be thoroughly underdrained. Then the floor should be jointed and covered with cement or flagging, so that no water could enter from without, or accumulation of slops be possible. Ventilators with wickets should be arranged leading to the roof. The trouble with underground structures or basements as curing rooms is that often no attention is paid to drainage and ventilation, and hence in such cases they make very imperfect curing rooms. But on the plan I have proposed these objections would be obviated. Then if necessary waste water from the ice-house may be conducted in metal pipes along the ceiling, and the cool air falling from them would preserve a low temperature in the room. Mechanics with whom I have consulted affirm that cold spring water flowing in large metal pipes along the ceiling and then out of the building where it may be utilized for other purposes, would be sufficient to reduce the temperature to 70° or below, even in the hottest weather. Hot water pipes arranged about the room, and connected with the boiler, would be the best means of raising the temperature in cold weather when heat is required. I do not

pretend to give the best plans, but I offer suggestions by which the hot weather cheese may be kept in flavour, until fall or such time as it may be sold, at not much expense in the way of curing rooms.

I wish I could convince you of the great importance of having properly constructed curing rooms where good ventilation and a low even temperature may be maintained; and I speak to you from no mere theoretic standpoint, but from well conducted experiments in my own dairy practice. Some years ago I built a farm Dairy House with curing room in the second story, along, even with the floor on two sides of the room were openings through the sides of the building, five on a side, provided with wickets so as to regulate the quantity of air to be admitted as desired. In the centre of the room there was a large ventilator, running from the ceiling up above the roof of the building, also provided with a wicket for regulating the air. Here I experimented from time to time in the curing of cheese, and I found even with this arrangement that a temperature not above 75° could be maintained in the hottest weather of summer, by regulating the wickets, and by the use of water upon the floor, which in its rapid evaporation would reduce the heat as desired. By attending to this matter I found that cheese could be preserved in good flavour throughout the season, when the factories and farm dairies about, were not able to keep it, and my experiments have convinced me that any temperature above 50° could not be safely allowed for curing cheese, and that with proper attention to temperature, well made cheese could be cured so as to retain a mild sweet nutty flavour for a long period. In my examination of English cheese in 1866, I tasted of samples from one to two years old, in which this mild clover flavour had been retained to perfection, and Mr. Herding and others assured me that the preservation of flavour was on account of the curing. When cheese is properly cured in an even temperature of 70°, and breaks down mellow and flaky it is not so liable to lose flavour afterwards, though exposed to higher heat. The great damage from heat seems to result during the first forty days. In other words two cheeses from the same vat, the one kept at 70° for forty days, and the other at 90°, and both then subjected to high heat, the first will retain its flavour a much longer time than the other.

#### MARKETING AND MARKET FAIRS.

Now, the knowledge and practice of a good system of dairy farming is very essential to success. To know how to manufacture good butter and good cheese, and to properly cure and pack it, is also of prime importance. But there is something beyond all this which not infrequently depresses and paralyzes all our best endeavours in dairy management. I refer to a loose and unskillful manner of marketing dairy produce.



It is quite needless for me to say to you that no farmer, no produce dealer, no business man can conduct operations with success when his necessary expenditures are greater than the receipts. Well directed labour in any department of industry should have an adequate reward, and that it fails to accomplish this end is the result often of some lack of foresight and consequent mismanagement on the part of the operator.

The exports of cheese from the United States to Great Britain during the past year have been the largest ever made. According to official returns from the Custom-house, they amounted to 68,732,520 lbs from Jan'y 1871 to Jan'y 1872, or about 12 million pounds more than the previous year.

The make of cheese in Canada is estimated to be from 10 to 15 millions of pounds, and the exports are supposed to be 8 or 9 millions of pounds. If we call it 9 millions, the exports from America to Great Britain last year were about 77 millions of pounds.

I have no statistics showing the amount of money, which you have received the past year for Canada cheese, but I can give you the amount of money which Great Britain has paid the United States for cheese shipped for the years ending July 1st 1869-70, and July 1st, 1870-71. In 1869-70 England paid us \$3,881,931 for 57 million pounds cheese. In 1870-71, \$8,752,990 for nearly 61 million pounds or about, the same amount of money for 7 millions more pounds of cheese. If the amounts were compared from January to January a much greater difference would be shown, because prices from July to December 31st 1872 were much lower than in 1870.

The shipments from the United States last year, 1871, were in July, 12,421,565 lbs.; in August, 11,552,496 lbs.; in September, 10,095,725 lbs., showing that the half of our whole exports was in hot weather.

You need not be told that the average price of cheese the past year (1871) has been low. As much of your cheese I am told has been sold for 7c. to 8c., the fact doubtless has been forcibly impressed upon your minds at every sale of cheese during the season, or up to January 1872. And under the present system of marketing, I can see no prospect of much better average prices in the future.

True there are several circumstances that have conspired to bring about a weak state of the market, such as the general decline in the price of all farm products, especially the low rates of bacon and pork; but the chief cause of low prices is the stupid manner in which our cheese is brought forward in hot weather and forced upon the markets.

There is scarcely a factory within my knowledge in New York that is provided with room sufficient to keep the hot weather cheese. The factories push forward immense quantities of cheese in July and August, not only from the fear that it will lose flavour at

the factory, but because there is no room to hold it. The local dealer who buys is in a hurry to be rid of it, for fear of losses in hot weather. The shipper is also afraid of it, for the same reason, and every one who handles cheese in hot weather is in hot haste to shift responsibility and risk upon some other shoulders than his own.

I cannot see how it is possible to sustain prices under such a condition of things. It is a forced sale from beginning to end, and the law of forced sales is that real values cannot be realized. The remedy, it is obvious, lies in additional Curing Houses at the factory, so constructed that cheese may be held from time to time, as desired without fear of deterioration or loss of flavor.

It is believed by many that dairymen are to get relief by the abandonment of dairying in some other locality. Thus in the United States dairymen at the East talk of getting relief by the abandonment of dairying at the West, thereby reducing the general make of cheese. I do not think we can look for any permanent benefit in this direction. The business will be developed from year to year in new localities, where lands are adapted to the dairy. You cannot convince the West that more money is to be made in pork or grain raising, than in dairying, even at present prices, because the facts are against any such assumption.

The cost of transportation eats out the profit on grain raising at the West. The cheese makers of Illinois are altogether better off this year than the grain raisers of that State, and so of Wisconsin and other States. We are not over-producing in dairy goods—that is not the matter; but we lack enterprise in opening up the home markets, and in supplying the kinds and qualities of cheese desired by our people. And then again we persist in forcing forward our goods when there is most risk in handling, and when they cannot be taken except at a heavy margin to cover prospective losses. The fact has become notorious that America furnishes no old cheese. There is a demand for good old cheese at high prices, but it cannot be had at any price.

I am told that in Canada your best cheese goes abroad, and that no effort is made to promote consumption among your own people.

You cannot in my opinion do a more unwise thing than to try and force your nasty, ill flavoured goods down the throats of your home population. For by putting a superior article before your own people, you coax them to eat, and so educate their appetite that they will eagerly relieve your dairy houses of a considerable portion of stocks at good prices, thereby saving the cost of transportation, and the numberless profits of the middlemen. The same system of picking out all the best goods for export, prevails largely in New York, and it is a vicious

system, because it checks home consumption which should be promoted by every means possible. There are hundreds of villages in the United States where it is impossible to get a pound of good cheese from one year's end to the other, and many people who are naturally lovers of good cheese cannot understand why it is not offered for sale.

#### ADVANTAGE OF CENTRAL MARKETS.

It has been abundantly proved wherever the experiment has been tried, that an organized system of marketing is not only a benefit to the producer but to the produce dealer. When goods are scattered over the country it requires immense labour on the part of dealers to hunt up and get supplies together. It is also quite expensive, not only taking time which is valuable, but necessitating an outlay for horse hire and other travelling expenses, which in the aggregate during a season amounts to a very large sum, all of which the dealer must either lose from his legitimate profits, or take out of the farmers' earnings by purchasing at so much below the actual market value of the article for sale. Suppose a farmer has five tubs of butter, or a few hundred pounds of cheese ready for market. The dealer makes a journey to the premises and buys the goods. His time is very much more valuable than that of the farmer's, and the actual expense of the journey (say \$10, and perhaps more) must be met somewhere. Neither the farmer nor the dealer can afford to lose this sum. It is a waste of time and a useless expenditure of money resulting from a wrong system of marketing, for if producer and dealer agree to meet on a certain day at some convenient market point, a large amount of goods can be examined in a brief time and at minimum expense. But this is not the only advantage. There is a constant change going on in the great markets of the world. The price may be up this week and down the next. When goods are scattered over the country in separate lots, it takes too much time to gather them together, and hence the dealer must run large risks, or must make a liberal margin on his prices to cover any prospective loss on account of the delay in getting to the city to meet present demands and present prices. If the dealer can meet the producer at the railroad depot and purchase his goods and ship them at once, he knows to a certainty when they will arrive at their destination, and thus he reduces his risks. And it is very important to the farmer that these risks be reduced to the lowest possible point, for heavy losses on the part of the dealer always react upon the producer, making dull markets and depression in business. It is right and proper that dealers be paid liberally for their services, for the risk of their capital, and for their skill in handling produce, and what we seek by a central market is not to deprive them of their just compensation, but to cut off useless expenses, and make business more

safe and profitable to both parties. Again, a central market stimulates to better production and more permanent improvement. There is many a farmer and factoryman who has no adequate idea of the relative quality of his goods until they are set side by side with these that are better, and where they can be fully tested and compared. At a central market you meet with numerous experts, and the judgment of different persons gives more satisfaction and gives greater weight than that of one person, whose opinion is often suspected of being warped or biased, perhaps for private ends. Then at a regular central market there is always a community of interests, a spread of intelligence, not only as to market values, but as to production and manufacture, which are of very great importance to the producer's interest.

I have endeavoured to shadow forth some of the more salient advantages that result from the establishment of country markets, markets which ought to be inaugurated at least in every dairy section in the country. The plan has long existed in England, and I was very forcibly impressed with its great practical benefits. During my visit to Great Britain, in 1868, in England, convenient facilities of grounds are provided, where all kinds of farm products are collected for sale on market days. Farmers find these markets of the utmost advantage, whether they be sellers or buyers. If one wants to buy a horse, a cow, a pig, or any other farm product, he goes to the nearest market where are collected a variety of these animals and which are offered at different prices. Hence farmers themselves who are purchasers find the markets economical, because the expense of travelling over the country to look up the article desired is saved, while, at the same time, those who have goods to sell have an opportunity of meeting persons who desire to purchase, and thus they readily dispose of stock or goods that would perhaps depreciate on their hands awaiting a customer.

Nothing strikes an American in England with more force than the fact that an English farmer can pay such enormous rents for land and yet save something by farming. The English consumer pays, for the most part, but little more than the consumer here. Indeed, the cost of living is cheaper in England than in America, and yet the farmers on an average get more for their produce than the farmers of America. How is this to be accounted for, except it be that they have a better system of marketing, by which the consumer is brought more near the producer, and a great many useless expenditures and risks to the dealer are cut off than by our system, which is more expensive and speculative in its character.

At the English cheese markets, the cheese from the surrounding neighbourhoods is brought into the market place and piled in parcels under an open, shedlike building,

and here the cheese mongers from all parts of the Kingdom (or their agents) assemble and purchase such goods as are most desirable, while the different interests of dealers and the strong competition of the trade regulate the price, and prevents any of those losses that follow from selling below market rates on account of lack of intelligence or a healthy competition.

The advantage of a healthy competition among buyers, who know just where to place their goods, has a very marked influence upon sales and prices. I have known goods to sell at the Little Falls market late in the day, and after the leading dealers had left the market, at full one cent per pound below the earlier sales. Why? Not because the goods were worth less money, but because the dealers present had made up their supplies and were not certain where to place a surplus. This is a natural law of trade; the risks are increased and consequently a larger margin must be exacted.

#### Dairy Experimental Stations.

The Swiss Agricultural Association (in a circular just issued)—after calling attention to the improvements in cheese making lately introduced in Sweden, Denmark, and America, and to the step taken in Australia, Holland, Bavaria, Italy, and elsewhere, to encourage the formation of co-operative cheese factories, and diffuse useful information on the subjects of dairy farming and dairy manufactures—appeals to those who have the furtherance of one of the most important agricultural industries of Switzerland at heart, to assist in establishing and maintaining a "dairy experimental station," of which the following is the programme:—

1. Practical department, having a dairy attached to it.—(a) Testing of new and so-called improved utensils, apparatus and fittings, suitable for large undertakings (cheese factories) and private dairies. (b) Permanent exhibition of the same—i. e., such as are approved of—either of the size used in practice or as models. (c) Experiments in different branches of dairy manufactures, and comparison of their respective advantages from a commercial point of view.

2. Theoretical department.—(a) Analysis and examination of milk and milk products. (b) Permanent exhibition of apparatus employed for the analysis of milk, and for other scientific purposes connected with the dairy. (c) Special study of the important processes (fermentation, ripening, &c.) involved in dairy practice.

3. Theoretico-practical department.—(a) Course of instruction (theoretical and practical) for dairymen. (b) Ditto for other persons taking interest in dairying. (c) Solution of questions relating to dairy practice and manufactures.

## Poultry Yard.

### Poultry-Keeping for Women.

There are many women who, especially within the last half dozen years while the price of eggs has been so high, make money much faster by tending poultry than by sewing. It is an occupation especially suited to women because it involves patience and constant attention to details, rather than strength. Then again the hardest thing for many men to learn, in handling either poultry or bees, is gentleness. How many times we have seen boys, and men with no more sense than boys, jerk hens roughly from their nests, enter the poultry-house abruptly and frighten the occupants till they rush in a fluttering mass into the farthest corner, and keep the poultry community in constant agitation and distress. But all domestic animals appreciate the manners of women attendants when they are fortunate enough to be cared for by them. Now that there are women gardeners and florists who by commendable industry and business qualities have risen to eminence in those callings, and while one of the most successful, if not the most successful, bee-keepers in the whole country is a woman, we hope to see others give poultry more attention than it has hitherto received. Aside from profit, the keeping of fine poultry for fancy is an elegant pastime very popular with English ladies, and we see no reason why the fashion should not be adopted here.—*Poultry World*

### The Health of Poultry.

The essentials to the health and well-being of poultry—so far as accommodation is concerned—are very few and very simple; but it is essential to see that they really are provided, in proper proportion to the size and number of the birds. Pure air, and shelter from wind and weather, are all that is required, whether the establishment covers acres or is confined to a few square feet. Pure air, of course, implies both proper cleanliness and proper ventilation; and good shelter implies a retreat dry under foot as well as above, which must also be open to the light, or the fowls will not resort to it. But unless the whole establishment be on a considerable scale, large and expensive houses are neither necessary nor desirable; and any amateur at all accustomed to the use of tools may do—as we and many others have done—the whole of the work of his fowl-house with his own hands. Indeed, we strongly advise this where possible; for it will not only benefit both the health and the pocket of the proprietor, but will give him a deep and lasting interest in the undertaking, which will of itself go a long way to command success.—*Illustrated Book of Poultry*.

## Correspondence.

### My Farm.

To the Editor.

SIR,—In company with many of my neighbours a part of my Fall wheat, sown rather late last September has been badly winter killed. It is at least vexatious to see so much work thrown away.

The question then arises, in what manner is the matter most easily to be remedied. It takes much thought, and not a little pluck to deliberately plough up a field of Fall wheat. My neighbour, a most intelligent farmer, and one of long experience, called to see me the other day, and I got him to come with me and visit my field, at present the bug-bear of my mind. I was in a state of disgust with it that day, the weather was close, cloudy, and foggy, and I had made up my mind for the fourth or fifth time to plough it under and plant Spring wheat. My friend would not hear of it, he said plant the Spring wheat, but do not plough up the Fall wheat. Drag the Fall wheat thoroughly and then sow two bushels of Fife Spring wheat per acre—cover with drags and roll.

I had doubts, chiefly about the ripening of the two grains together. However, my friend dispelled all doubts, saying that he had successfully adopted the plan on many occasions. I shall therefore try it and hope I may be able to record the result as favourable in the Fall of the year.

We held our first Fair a short time since and it proved every way a success. It was talked about so thoroughly and puffed in the papers so irrepressibly, that one half the township came out to see a failure. They were agreeably disappointed—every fat animal brought to the grounds was disposed of at fair current prices, and the interchange of seed grains was very brisk. The whole success of the establishment of regular fairs in a particular locality depends upon that of the first held. The great mistake too often made by the movers in the matter of fairs is over sanguineness—they attempt at once to jump into monthly fairs.

These fairs cannot be established at once, they require to overcome an immense amount of lukewarmness amongst their legitimate patrons the farmers; and men have to be educated up to the fact that the public fair ground is the place at which they will meet buyers to the great advantage to themselves.

When farmers once find out that there is a reasonable certainty of finding a ready market near home, they will continue to send articles in geometrical progression, until the fair seasons large dimensions, and the enterprise on its part begins to rest upon the agriculturalist, and causes him to raise far more stock than he would do were he solely dependent upon the local buyers.

It is in this way that the fairs at Guelph, and neighbourhood, have been raised to so successful a pitch, and equally good fairs may be established in almost any part of the country if taken in hand and commenced with judgment by a few energetic men.

It is gratifying to see that Hamilton is endeavouring under the patronage of the City Council to establish fairs, but I think they have fallen in the usual error—that of endeavouring to begin with monthly fairs. The townships round Hamilton are not great stock raisers. As a rule our farmers in this neighbourhood have a certain number of fat cattle for Christmas and Easter, but there are few fit for the butcher at any other period, in fact only just enough to supply the demand of local butchers who daily go round buying a beast or two at a time. If Hamilton would be content to hold at first, say four fairs—at Christmas, Easter, Midsummer, and late in the Fall, respectively—we believe that they would be more successful. One fair poorly attended by buyers does very much to discourage farmers from attending these markets. And it would be more advantageous to the very laudable enterprise of the City Council, to hold a few successful fairs than twelve, of which four or five are very poor, in the course of the year.

I conceive it would also be very much to a large city's advantage to encourage in every possible way the holding of local fairs in its neighbourhood. It is not the monthly fairs held in Guelph alone, that draw such large numbers of buyers from a distance to that locality, but the series of fairs held upon consecutive days in the villages around Guelph. For instance a buyer demanding a large number of stock for shipments, stays at Mount Forest, and for several consecutive days can work down through Mount Forest, Durham, Fergus Elora, &c. to Guelph, collecting as he goes a large herd for shipment upon the railways.

There are hundreds of farmers who cannot spare time, nor the expense, of driving their two or three heaves perhaps 30 or 40 miles to the large city, but who can drive them to the villages in their own locality, and it is comparatively inexpensive for the buyer to drive his herd, increasing as it goes along at each fair held upon his route to the point of embarkation.

The farmer's busy time has now fairly commenced, all is hurry and shove, and already has, I think, one of the great mistakes of Canadian farming been made. Many in this neighbourhood have sown barley—the land is not fit—it is dry on the surface and ploughs and works nicely but it cannot be warm. There is little or no growth in the grass, and surely that is a sure indication that there cannot be much growth upon the arable.

If there should now come a warm southern rain with hot sun after it, barley in the

ground will do well, but on the other hand, and the probability is very great, if a dry time of a week or ten days should set in, barley cannot grow, and seeds that lie in the ground must either grow or rot.

Again, should we have a cold rain after the barley is sprouted, much of it will be checked, and a sudden check upon young plants is like that upon young calves, it is never fairly recovered. I believe that ground will warm more quickly now for being worked, but I cannot think that it is wise to sow until we receive a more perfect assurance of what is usually called growing weather.

So little is the frost out of the ground that to-day, (26th April) in an open field where a few branches have been lying, my plough was thrown out of the ground for several feet, by ice upon the surface.

In this matter the advantage of under-draining is very apparent. In the neighbourhood of Hamilton, in a naturally wet spot, I find the frost in an under-drained field completely out of the ground, the drains running freely, while here upon high sandy land we cannot drive a stake more than eighteen inches in any spot.

OLD COUNTRY.

Ancaster, April 26, '72.

### Farmers' Wives and Daughters.

To the Editor.

SIR,—The letter in the *GLOBE* from "Vina Bell," giving a description of farmers' wives and daughters does not represent country life in its true light. Of course there are those who do not keep hired help and dress in their homespun, but they do not represent the whole community, as all do not possess the same amount of wealth, nor occupy the same position in society. I believe that any farmer who has a good farm, and understands his business, need not make his wife and daughters their own servants. I am a farmer's wife, living in a very productive part of the country, where most of the farmers if not wealthy are in very prosperous circumstances. In nearly every house of my acquaintance hired help is kept, our duties are not so manifold that when friends visit us we are obliged to invite them into our kitchens, but we can spend the time to entertain them in the proper place. Of course we understand how to do all kinds of work, even to making biscuits and milking cows, nor do we think it a disgrace, but it is not customary to shoulder milk pails, nor do we consider it lady-like—we leave the shouldering to the rougher sex. I think it a very rare occurrence for young ladies to receive their beaux in the barn-yard, and instead of moonlight walks and debilitated dresses, a pleasant drive is generally preferred. I think the proper position of a farmer's wife is to look closely after her household, but not to be worn down with hard work, that

she should have time for reading, sewing, music, and fancy work. Without some trace of female refinement no house is a home. Farmers' daughters should be just as refined as their city cousins, their dress and education should not be that of the last generation, but they should have every advantage of the age as far as their fathers can afford it. Then instead of our sons and brothers seeking city wives and homes, they will find as agreeable companions and as happy homes in the country.

KELVIN.

### Growth of Combing Wool.

(To the Editor)

SIR,—Your correspondent under the above heading advises farmers to sell those sheep from which they have clipped cotted fleeces. This advice is wrong, first, because it does not follow that a sheep having a cotted fleece this season will have a cotted fleece next season, on the contrary I have bought from farmers whose wool was nearly all cotted in 1870, when in 1871 they had none cotted from the same flock. If your correspondent can give the cause and remedy for cotted sheep, he will confer a favour on not only your humble servant, but upon all the farmers of Canada. I might also add that thorough bred sheep, even yearlings or first clips are not exempt from cotted fleeces. In the season of 1870 there was more cotted wool than I have ever seen, either since or before.

### WOOL BUYER.

Muskoka.

An esteemed correspondent writes to us from Rosseau that "this is a very new and wild country, which has to be seen to be described or appreciated. We have had sleighing ever since the 10th of November, and no signs of spring yet, 25th March. Last week I opened a pit of potatoes and found only an inch and a half of frost in the ground, so as soon as the snow is gone, the soil is ready for tillage, and we can get in our crops as early, if not earlier than you can in front. We expect navigation to open about the 21st of April, and then we are only one day from Toronto."

### Fish Manure

(To the Editor.)

SIR,—I see in the January number of your excellent paper an article headed "Fish Manure." Now on that subject I would like to give my experience; and I would be very happy were it to be of any benefit to Mr. George Mackinson, Newfoundland, coming as it does from the opposite extremity of our Confederacy.

Here on Fraser River we have in the fall of the year a run of what we call Dog Salmon;

they are rather poor for ordinary purposes. After spawning a great many die, and might be gathered up by thousands along the banks of this river. I have gathered them to manure my garden. I make a compost heap by spreading a layer of straw on the bottom, then a layer of fish, another of straw, more fish, and so on, until I have as many as I wish; then I cover all well with straw, and to keep the flies from blowing the fish I cover all over with a few inches of earth, being careful to beat the earth down to the back of the pile. In the spring I have a fine compost, which would well be put on land.

I think were Mr. Mackinson to put his fish in any water-tight receptacle—add barrels for instance—and have the fish just covered with water, he could effectually keep them from being blown, and he could destroy any maggots by adding a little quicklime before making his compost heap. I do not think the little lime necessary to destroy insect life would have any injurious effect beyond slightly hastening decomposition. I know that Chemistry does not recommend the use of lime in that manner, but that it has been tried and found to do well.

A FORSYTH.

Hope, British Columbia,  
March 20, 1872.

PATENTS.—It is not lawful for any one to construct a patented article "for his own use" without purchasing a "right."

## The Canada Farmer.

TORONTO, CANADA, MAY 15, 1872.

### Encouragement to Emigrants

We have never seen that much could be done by the Canadian Government, whether general or local, in the way of paying the trans-oceanic passage money of immigrants. The proximity of the States makes it so uncertain that those thus assisted will remain in the country that it would, in many instances, be only paying money to build up a rival state to engage in any such work. While, however, we have been and still are of this opinion, we have no inclination to oppose any moderate scheme for giving assistance to the right classes of immigrants in getting across the Atlantic, and for, at the same time, making it quite certain that they will settle in Canada.

Such a scheme has been sanctioned and is now in operation. It is something like the following:—If any benevolent person or society in Britain wishes to assist poor deserving persons to emigrate, by advancing the

passage money, they may by-and-by get returned to them, by the Local Government of the Province in which their *proteges* settle, six dollars for every statute adult—that is every one above twelve years of age—two under that age counting as one adult. In order to this they must certify to the Canadian Emigration Agent at the shipping port in the old country that the parties named and assisted by them are healthy, sober, industrious persons, and are either accustomed to farm labour, are female servants, or mechanics of certain specified kinds. The Emigration Agent examines the intended emigrants, and, being satisfied on the different points, gives a certificate to that effect on his own responsibility to the Agent in Quebec, who also is to examine their condition on arrival, and certify and transmit them to Toronto, or any other place they wish to go to, where they give up their certificates to the Government authorities, who enter their names and all particulars in a book kept for the purpose. Three months afterwards, on producing evidence that they are the parties named, and that they have resided all the time in Ontario, or any other province as the case may be, and are apparently settled in the country, the Government cheque for the sum we have mentioned is forwarded to either the individual or the society that may have advanced the passage money. This is not much in the way of help, but it is something, and the precautions are all that could be taken under the circumstances. We presume that if any individuals can get themselves so certified from point to point, and at the same time have been able with difficulty to scratch together the money needed for their passage by their own exertions, they will in due time get the six dollars a head returned to themselves, as would be the case of any benevolent friend who had assisted them. At least it would be only reasonable that they should.

BRET SUGAR.—We have received from Mr. A. H. White, of Peterboro', excellent samples of Beet Sugar and Syrup manufactured by him. In reference to this experiment he observes:—"I had only some 16 lbs. of Beets to experiment with, and all the appliances used were of the simplest description, but I am satisfied from the success that attended my efforts, that the manufacture of sugar from beet, will in a few years be one of the established industries of this country. I may add that I am now receiving a consignment of nine varieties of sugar beet, direct from the best districts in Germany, with which I propose experimenting on a larger scale this season."

### Immigration Societies.

In the midst of the discussion of the Washington Treaty, the Bill at present passing through Parliament for the encouragement of Immigration by Societies, formed for the purpose of assisting persons to come to this country may be overlooked. The following are its chief provisions:—

"Each of the Provinces of the Dominion is to be divided from time to time into immigration districts, each district having an immigration office and an immigration agent. In each of these immigration districts an Immigration Aid Society, or societies, may be formed under this Act for the purpose of assisting immigrants to reach Canada from Europe, and to obtain employment on their arrival; and also of enabling persons in want of laborers, artisans or servants to obtain them by such immigration. The number of persons constituting a society must not be fewer than twenty-five, nor its capital less than \$500. These societies are to have powers to enter into agreements and contracts, either with members of their coporation or with others, for any purpose relating to immigration, and to lend and to borrow money, and to take or give security for the same. Thus empowered, the Society may receive applications from persons desiring to obtain artisans, servants or laborers, from Britain, or any part of Europe, and may enter into contracts with such persons including the obligation on their part to employ the immigrants under such terms as may have been stipulated for. It may also receive in advance moneys to be expended by the Society, or take security for the repayment of all or any part thereof. These applications for immigrant aid are to be forwarded to the district agent, with the report of the Society's action thereon, and afterwards to be transmitted by him to a Dominion agent in Europe along with the funds so advanced by the Society, the Dominion agent thereupon to take the necessary steps for procuring and forwarding to the proper place in Canada the immigrant or immigrants required by the application. These European agents are to take security from immigrants for repayment of advances, and these advances may be recovered by the Society or any indorsee in any way in which a like sum is recoverable in the place where the suit is brought. Minors, too, may bind themselves for the repayment of advances, and an immigrant may bind himself to serve some person nominated by the Society for the amount advanced; the sort of employment, rate of remuneration, &c., having been stated in a proper legal instrument."

The plan here sketched may work satisfactorily, but it is liable to the serious drawback which must ever result from engagements to labor being made by proxy without the parties interested having seen each other.

Still perhaps it is as feasible a plan as could be thought of and gives some prospect of those who advance money to help persons across the Atlantic recovering their own. To keep track of those who have given such "promises to pay," will always be a difficult and an unpleasant business.

We understand the Dominion Authorities have also agreed to lend a helping hand to those who are ready to advance money to bring out relatives and friends to this country. Application is to be made to some of

the immigration officials, and a statement forwarded of the number to be brought out and all other particulars.

The officials will then send back a notice of the exact sum required in dollars and cents. upon receipt of the money passes will be made out and forwarded to Mr. Dixon, in London, to be by him distributed to the different emigration agents, according to the localities specified, and arrangements made between them and intending emigrants. It is thought that the fact that settlers in Canada are sending money to bring people out is sufficient guarantee that these will settle in some one of the provinces of the Dominion, and so a deduction of about seven or eight dollars is to be made at once upon the charge for each adult. This, with what can be recovered from the Ontario Government at the end of three months, as we recently explained, brings down the passage money for steerage emigrants to about one-half the regular fare, or from six guineas, about \$31 to three, or not quite \$16.

This will be a great advantage, if it can be wrought satisfactorily. It will require very careful management on the part of the emigration agents, but it is worth a trial and all who have friends whom they would like to help out in Canada had better take a note of it.

### To Young Beginners.—III.

If you have entered upon your farm this spring—you must look for a very hard-working year. You do not know your land, and you have everything to purchase. Find out from the former occupant, exactly what each field has borne for the last few years and govern yourself accordingly.

Every farmer should have every bushel of his seed bought before the spring work commences, more especially must the young farmer. Buy the best of seed, and see that you get what you bargain for. When you buy oats, seek such as weigh well, are thin in the skin; this may be tested by cracking them in the teeth; but above all things smell the oats carefully; if they are the least musty, don't have them; for although, they may not have been wetted enough to hurt them, yet it is impossible to tell whether or not the germinating properties of oats which are musty have been affected. This last is a very important point, and applies to all seeds. In buying barley for seed select plump samples, and such as has not been too closely cut by the threshing machine. You will find it difficult to obtain barley in some sections that is free from oats; search however for it, for you cannot screen oats from barley. We once bought seed barley with a lot of light oats in it—we soaked the barley and many of the oats came to the surface and were skimmed off, but we had very many oats in our crop nevertheless.

See that peas are not buggy—some say

that buggy peas will grow, doubtless some of them may, but we think it must be only the minority that do sprout.

In buying potatoes for seed, we would recommend the Early Rose and Peerless, as the two most profitable kinds.

We think it generally a mistake to grow too many kinds of potatoes. It causes very much extra trouble in keeping apart when dug and when stored away.

Of turnips we think very highly of Carter's Imperial Swedes.

The Greystone turnip (white) is an immense yielder, can be sowed late, and makes excellent food until the month of January.

Do not forget to sow some carrots—the most useful food for horses that we can grow—and let a space be devoted to mangles for the milch cows. These roots come in well in early spring when the swede is apt to get bitter to the taste.

We have always made a point of growing a patch of vetches near the stables. These we plant as soon as we can get on the ground and they form the best of green fodder for horses during the latter part of the heavy spring work.

We propose in future to give a brief summary of the most important practical points to be kept in view in the preparation of the land and in the sowing of grain and roots.

As the time will very shortly arrive when it will be advisable to seed down where required upon fall wheat, we would enter our protest against thin seeding of the grasses, and recommend at least a bushel to six acres of clover alone, or of clover and timothy mixed equally in bulk.

### The Drought.

The present spring is, we believe, unprecedented in the meteorological history of this Province for the scarcity of rain. From a statement, with which we have been kindly furnished by Professor Kingdon, of the Toronto Observatory, we learn that the average rainfall throughout the whole of Ontario, during the months of March and April this year, was 2.85 inches against 6.35 inches in the corresponding months of last year; and in the district of country in the vicinity of this city, the quantity of rain that fell during that period was, it appears, even lower than the Provincial average; the figures for what is called the "central district," and which includes Toronto, being 2.44 for March and April, 1872, against 8 inches for those months last year. In this section of the country less rain appears to have fallen than in any other part of Ontario; the eastern and north-eastern districts come next in point of drought. In consequence of this unusual lack of moisture everything had by Saturday last become

almost as dry as tinder. Since then we have been blessed with two or three seasonable showers; but unless these continue the danger from fire, against which even now the greatest precaution is demanded, not only by persons residing in cities and towns but also by farmers, will soon be much greater than it has been in the history of the country. Not only have wooden buildings been so thoroughly seasoned that a spark dropping on one of them would be nearly sufficient to set it in a blaze, but besides this trees have become so sapless that a fire having once broken out in a wood it would be almost beyond the power of man to arrest its progress. In the State of Pennsylvania, in which the rainfall has not been, we apprehend, much if any less than in this Province, a fire started on Saturday last, as was stated in our telegraphic columns on Monday, in some woodland; and the flames, doing considerable damage and threatening the destruction of two towns, continued to rage and to spread in defiance of the most heroic efforts towards their extinguishment until an opportune shower of rain fell and averted the impending danger. In this instance, the fire was in the vicinity of a railway, and it was therefore probably originated, as are most of those occurring in the country, by a spark from a locomotive. To show that a danger at present really exists of our experiencing such fiery visitations as those which last fall devastated large portions of Wisconsin and Michigan and destroyed many valuable lives, or of some of our cities or towns suffering such a calamity as that great conflagration which laid the greater portion of the proud city of Chicago in ashes, we may mention that the rainfall during the two months just past was nearly one-third less than in the months of July and August last year when it was 4.025 inches, or than it was in August and September of that year, the two months immediately preceding the great catastrophe to which we have alluded, when it amounted to 4.09 inches.

#### Notes on the Weather.

The unusually protracted winter of 1871-2 has been prolonged throughout the greater part of April, comparatively few signs of vegetation having been manifest, and very little farm work done, till late in the month. The reports received from various quarters in regard to the condition of the winter wheat, are on the whole far more encouraging than the character of the last season seemed to warrant. Though killed out apparently or badly injured in some quarters, in others its appearance is healthy and promising. Dry weather has prevailed, and farmers look with some anxiety for seasonable rains to cooperate with the anticipated warm weather in bringing forward their meadows and crops generally.

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

The mean temperature of the month of April was  $40^{\circ} \cdot 5$ , being  $0^{\circ} \cdot 6$  lower than the average, and  $2^{\circ} \cdot 4$  lower than April, 1871. The highest temperature occurred on the 26th, when the thermometer reached  $70^{\circ} \cdot 0$ , and the lowest on the 2nd, when it fell to  $22^{\circ} \cdot 7$ . The warmest day was the 26th, the average of which was  $58^{\circ} \cdot 3$ . The coldest day 22nd with an average of  $30^{\circ} \cdot 4$ .

The amount of rain during the month was only 0.91, being 1.52 less than the average. It fell on 9 days. Snow fell on 4 days, and only amounted to 0.6, or one-fourth of the usual fall.

The amount of sky clouded is less than the average and may be divided as clear days 5, clouded 6, partially so 19.

The prevailing winds have been West and Easterly, and the velocity exceeds the average as 9 to 8.

The following notes give the dates of the reappearance of migratory birds and other animals:—

- April 2nd, Song Sparrows, numerous.
- " 5th, Blue Birds.
- " 6th, Swallows.
- " 9th, Wild Geese.
- " 10th & 11th, Pigeons in large numbers.
- " 12th, Yellow Woodpeckers.
- " 25th, Frogs heard.

#### To Subscribers.

In consequence of the interruption and disarrangement of business caused by the printers' strike, the publication of the May number of the CANADA FARMER has been unavoidably delayed; and we have further to ask the indulgence of our subscribers for the issue at this time of only half the usual amount of matter; which, however, has been thought preferable to any further delay, with a view of making up the full complement of forty pages. At some suitable time, probably during the period of the Provincial Exhibition, the deficiency will be made good by the publication of additional pages, so that at the close of the year the volume shall not be lacking in the amount of reading which we have been accustomed to furnish in the twelve monthly numbers. Our subscribers will, we feel sure, make allowance, under the circumstances, for this temporary deviation from the regular course of publication.

**BEEF ROOT SUGAR.**—Besides the beef sugar sent us by Mr. White, of Peterboro, we have received an excellent sample from Messrs. Kraft and Myhus, of Bridgeport, manufactured by them during the past season. These examples show, if proof were wanting, that sugar can be made from Canadian grown beet. We commend the example of these enterprising pioneers in this new branch of industry, and heartily wish them and others embarking in the same business, the success which their energy and perseverance deserve.

We direct attention to the advertisement of superphosphate manure, manufactured at the "Bone Superphosphate Works," in London, Ont. The article is highly recommended and comes before the public with strong testimony derived from chemical analysis of its manurial value. }

The fact that the "Short-Horn Herd-book," recently issued, contains additional pedigrees of 2,000 bulls, and 3,000 cows, indicates the firm hold this breed has taken upon American farmers.

## Horticulture.

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

### Transplanting Trees.

The time is approaching when this very important operation will engage the attention of a large number of our readers. The season will evidently be late. It is already the second week in April, and the frost is not out. The time usually at command for taking up and setting out trees will be considerably shortened, nevertheless there will be plenty of time to plant the trees, if they can only be taken up, and the expansion of the buds be thereby prevented. Those who have a considerable number of trees to plant, should take them up as soon as the frost is out and heel them in on the north side of a building or high board fence, or in a root cellar or outhouse, where the sand will not start them quickly into growth. Those who receive their trees from the nurserymen should treat them as soon as they arrive in the same way.

Trees that are kept from expanding their leaf buds may be safely planted out after the trees standing in the soil are in full leaf. Therefore do not be in any hurry to get the trees out because other trees are coming into leaf and blossom, but take sufficient time to plant each tree well. If the trees are properly planted they will be very sure to live, but if they are thrust in hurriedly they will be very apt to die.

As soon as the trees are received select the coolest spot on the place, and the one most constantly in the shade, and there heel in the trees. To heel in is to dig a trench deep enough to receive the roots of the trees, place the roots in the trench, and cover them with sufficient soil to keep them moist. It is immaterial whether the trees are kept upright or the tops are laid in a nearly horizontal position. If the tops are laid nearly horizontal and it is thought necessary in order to secure them from the sun, they can be covered with straw, evergreen branches or light boards.

After the bulk of the trees have been thus secured, a few may be taken to the planting ground, first wrapping an old piece of sack or old rug of any kind around the roots, to shield them from the sun and wind. A cold drying wind is as injurious in its effects on exposed roots as the rays of the warm sun. Prepare the whole by digging out a space of sufficient diameter to receive all the roots when spread out in their natural position. Loosen up the soil in the bottom of the hole, and if it be necessary, in order to plant the tree as deep as it stood before, to dig into the subsoil, throw out some of the

subsoil and fill in with surface soil until the hole is at the proper depth. Never plant a tree so that it will stand, after making allowance for the setting of the newly disturbed soil, deeper than it was in the nursery. Many trees are killed by planting them too deep. There is less danger from planting too shallow.

After the hole is prepared, take out one of the trees from the parcel and wrap the sacking carefully around the remainder. Examine the roots, and pare smooth with a sharp knife any roots cut or mutilated with the spade. Place the tree in position with the hands, spread out the roots and work in some of the fine surface soil among the root-branches and fibers. Fill the hole with the surface soil, leaving the subsoil to be put on last. Press the soil about the roots firmly but gently, and if the earth is dry, finish by giving a bucketful of water to each tree.

After the trees are all planted, do not fail to give each one a liberal mulch at once. If this be deferred to a convenient season, that time may never come. In our climate, a liberal mulch is of the very highest importance. More trees die for the want of mulching after having been planted than from any other cause. To mulch is to cover the ground over the roots of the trees, to the depth of four to six inches, with old refuse hay, straw, or half decayed litter from the barn yard, or leaves, or saw-dust. This mulch prevents the ground from becoming baked by the sun, and keeps the moisture from evaporating. The roots are therefore preserved in that moist state and even temperature which is the most favourable to their rapid growth.

These hints will be of great service to our readers during the months of April and May, if they will only take the pains to act upon them.

—NOTE.—This article, as well as that on digging trees, is past date, having been unavoidably delayed; but the advice given may be useful for future guidance.

### Digging Trees

#### A HINT TO THE NURSERYMEN.

The season for taking up trees is at hand, and there is every prospect that the time in which deciduous trees can be taken up will be shorter than usual. It will be hurrying times as soon as the frost is out of the ground. Good, careful, trusty men will be scarce, they always are. You will be impatient to have the trees dug up and sent off. Letters will come in from customers ordering a bill of trees, of perhaps three score different varieties, to be forwarded by the next train. Other letters will come saying that if the trees cannot be sent at once they need not be sent at all. You will be tempted to tell the diggers they must hurry, but stop and think before you do so. The diggers are careless enough naturally. It is nothing to them whether the trees have any roots left

on them or not. It is easier for them to get the tree up by cutting the roots short off than by taking them carefully out. They are always inclined to take the way that gives them the least trouble. If they can escape your censure they won't trouble themselves about the roots. They are nothing to them, it is none of their tree that they are digging. Now if you hurry them you can't scold if the roots are cut too short. They will reply that you did not give them time enough.

It is a very difficult thing when work is pressing, hands are scarce, and men are careless, to get trees properly taken up, even when you insist upon it that if they only dig ten trees in a day you want those trees dug well. But the matter is only made worse if the men once get the idea that you are in a hurry, and that there is any probability that they may make quantity of trees dug answer for quality of work done. Our advice then to our nurserymen is, "in your patience possess ye your souls." Be more strict and vigilant concerning the roots of the trees than ever. Your customers will learn to appreciate your care, and a reputation for sending out trees that have been well dug and well packed will be worth a great deal to you. If your men have got the nine hour fever, engage them at fair wages by the hour, on the condition that they shall work twelve hours each day during the packing season. Give due praise and reward, if merited, to those who dig the trees best. And let it be fully known and understood by Canadian planters that the best dug, most carefully handled, and best packed trees, and therefore the most likely to live, are sent out by Canadian nurserymen.

### Fruit Growers' Association.

The Fruit Committee of the Fruit Growers' Association Report that at the last meeting held on the 8th of February, 1872. C. Smith, of Glanville, exhibited three varieties of apple for name of which No. 1, was the Yellow Newtown Pippin, the two other sorts were unknown, that numbered 2 had a flavour resembling the Seek-no-further, number 3 was not thought to be of much value.

D. Hammond, also exhibited three sorts which he desired should be named, the one numbered 3 was the King of Tompkins County the others were not known.

R. Graham had two varieties he wished named, number 2 was the Flushing Spitzenbergh, No. 1, not known.

Mr. Heslop, of Ancaster, sent four varieties of apple for name. Those marked No. 1, are two sorts of Pomme Grise, No. 2 was Fallwater, No. 3, Rambo, and No. 4 Northern Spy.

J. R. Hess sent four varieties, of those the committee thought No. 1 might possibly be the Baldwin in bad condition, No. 2 was the Spy, the others not known.

A. M. Smith exhibited fine samples of Spy, Greening and Talman Sweet.

Mr. Boutheo brought some excellent samples of Northern Spy.

J. Shaw, of Barton, sent some fine specimens of Baldwin, Greening, Golden Russet, Spitzenbergh, &c

C. Arnold, of Paris, exhibited Norton's Melon, a fine flavoured fruit well worthy of cultivation, and samples of Othello and Canada Grape. The flavour of the Canada was exceedingly fine. Also, samples of the English Walnut, Juglans Regia, grown at Paris.

Mr. Osborne, of Beamsville, brought some Isabella grapes, kept in perfect order, and of fine flavour, which had been buried in the ground, first covering them with leaves in a box.

A. B. Bennett, of Brantford, exhibited finely preserved Diana grapes, and specimens of Easter Beurre Pear.

Mr. Holton, Hamilton, exhibited choice samples of Baldwin, Greening and Spy, also a seedling apple, under sized, pretty, not high flavour.

S. King, placed on the table some specimens of the Wagner apple which were both handsome and good.

Mr. Brooking, Ancaster, exhibited eight varieties of apples, including fine Spitzenbergh, Spy, &c.

D. McPherson, Front Lancaster, sent fine sorts, among them Talman Sweet, Golden Russet, Esopus Stizenburgh, seedling No. 1 and No. 2 were over ripe and in bad order.

A. Morse, Smithville, brought some Greenings, and seedlings. Seedling No. 1 was of large size, striped, firm, nearly sweet, good keepers. No. 2 was lacking in flavor.

Mr. Townsend, Hamilton, brought fine specimens of Easter Beurre, large, melting, and delicious.

John Magill, of Oshawa, exhibited a seedling apple of medium size, striped, of mild and pleasant flavour.

D. Hammond, showed a seedling apple, handsome in appearance, and of pleasant flavour.

Joseph Neff, Port Colborne, brought a seedling apple, but the specimens were in bad order.

Attwood sent again some apples which he had previously brought to the attention of the committee, supposing them to be a new variety, but it now appears that it has been more widely disseminated than was supposed, samples having been also received from Ancaster, and London as an imported sort. It is therefore not entitled to be brought in competition for the prize offered for Canadian seedling apples.

## Entomology.

### Lady-Birds

From Luminous insects to Lady birds is a long leap to take in our description of neutral and beneficial insects. The intervening families of beetles, however, are so addicted to the destruction of our property in one form or another, and the exceptions are so few and inconspicuous, that we must pass them all over, and go on to the consideration of the pretty little creatures—as useful, too, as they are pretty—that are generally known by the name of “Lady-birds,” (vulgarly *Lady-bugs*). They belong to the family *Coccinellidae* and (in Entomological language) to the Pseudotrimerous section of the order Coleoptera. The non-scientific reader is at liberty to skip these long names; we insert them for the satisfaction of those who like to know all about everything.

After the Luminous Insects (*Lampyridae*) which we lately brought before the reader, there comes, according to the generally received classification, a large number of most destructive insects. Of these we may mention the *Plinidae*, the species of which “are found in old houses, in furniture, in rotten palings, stumps of trees, etc., which they and their larvæ perforate with round holes in every direction, which are filled with a very fine powder formed of gnawed wood and excrementa; some species feed upon collections of dried plants, skins of insects, etc.; whilst others bore into our chairs, tables, and other woodwork, books, etc.; other species feed upon almost every substance, devouring ginger, rhubarb, cayenne pepper, etc., and rendering ship-biscuit often unfit for use; others again feed upon woollen clothes, wheat in granaries, and other stores,—a most noxious family certainly. After them come the *Scolytidae*, the members of which are very destructive to trees and timber; the *Cantharidae*, useful for blistering purposes, as ‘Spanish flies,’ but very injurious to vegetation; the *Curculionidae*, one or two well-known species of which are enough to condemn the whole family, e. g. the Plum Curculio and the Pea-weevil; the *Cerambycidae*, or Capricorn Beetles, the larvæ of which are wood-borers, and attack trees of every kind; and the *Chrysomelidae*, beautiful golden insects many of them, but including such noxious creatures as the Three-lined Potato beetle, the Turnip fly or Flea beetle, the Colorado Beetle, the newly imported Asparagus Beetle, etc.

The “Lady birds” belong to the last family of all of the order of beetles. They are so common and so well-known to every child that it is hardly necessary to give any description of them. Who is there, indeed, that has not set one on cut-s’ratched finger and sung to it in childish glee, “Lady-bird, Lady bird, fly awsy home; your house is on fire and your children all burned?” In

France they are much regarded also, and called by children “*Petes a box Dieu*,” “*Vaches de la vierge*,” etc.; and in England they are termed *Lady-craws* as well as *Lady-birds*.

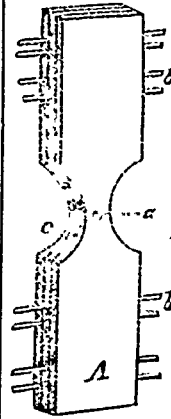
The general colours of these insects are yellow, red, or orange, with black spots; and black, with red, white, or yellow spots. Their shape is hemispherical, and though they vary somewhat in size, an average specimen bears a considerable resemblance in size and figure to an ordinary split pea (they have very short legs and therefore creep but slowly; their powers of flight, however, are considerable. When alarmed they fold up their legs under the body and drop to the ground, and if handled they emit a yellowish fluid from the joints of the limbs which has rather a strong and disagreeable smell. In old times this fluid was considered to be an admirable specific for tooth-ache! We have never, however, possessed sufficient courage to test its qualities in this respect ourselves!

As every one knows—or certainly ought to know by this time—the Lady Birds, both in their larval and perfect states, feed upon the obnoxious Plant-lice (*Aphides*), and are thus of the utmost service to the gardener, orchardist, and hop grower. Some species also prey very successfully upon the dreaded Colorado beetle, and assist beneficially in reducing the numbers of this new insect plague. —(See CANADA FARMER 1871, p. 308). Among the hop-yards of England, and of this country too, these insects play a very important part, and are now so well known as benefactors that they are carefully preserved from destruction. In Kent and Sussex—the counties most famous for the culture of hops—the Lady-birds sometimes become enormously numerous, so much so that they swarm over the surrounding country in countless millions, penetrating even into London. In the autumn of 1870 they were so thick at Ramsgate, and other places in Kent, that the ground seemed covered with red sand; streets, roads, buildings, and dresses of persons in the open air were covered with them. Along the sea-shore they were washed up by the tide in incredible quantities. It was supposed that these swarms came across the channel from the Continent, but it is more probable that they came from the English hop-yards, where, we are told, both the beetles and larvæ had been unusually numerous throughout the summer. Similar swarms have been occasionally noticed in previous years.

More than thirty species of this family of beetles are known to inhabit Canada. We annex an illustration of the larval and perfect state of one of the most common species, the Nine-spotted Lady-bird (*Coccinella Novem Notata*). This will suffice to enable the reader to identify these useful creatures if he is not already familiar with them. We need only further say—Spare their lives and encourage their propagation by all means; they are the most useful class of insects that we have.

### Thomas Wier's Patent Apple-Worm Trap.

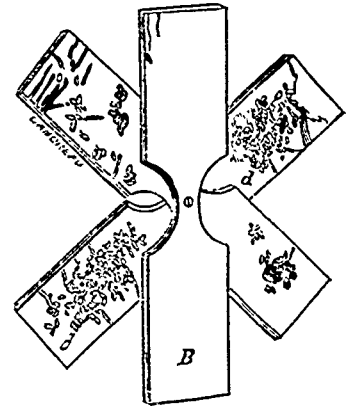
Mr. Thomas Wier, of Lacon, Ill., has hit upon a very simple device for alluring apple-worms, which is destined to play an important role in counterworking their injuries.



The trap (see figure A closed, B open) consists of two, three, or more thin pieces of boards, 12 to 20 inches in length, and 2 to 4 inches wide, with a screw (a) through their centre. The screw must be long enough to be firmly driven into the trunk of the tree, so as to hold the boards in position. The boards are cut out on each side of the screw, as at c, to facilitate their separation

when fastened together by the silken threads of the worms, and to better expose the latter when the trap is opened.

The advantages of this trap so far outweigh the disadvantages that it may be considered the best we yet have. These advantages may be stated as follows: It is cheap, accessible to all, easily placed on the tree and removed again; wood forms, perhaps,



the most natural covert for the worms; the traps may be collected with little trouble, by the barrowful, submitted to a killing heat, in one way or another, and replaced again; they may be used on the ground as well as on the tree. Its disadvantages are few. One it has, in common with all other snares or traps for this insect, namely, that it can never exterminate the Codling-moth, for many reasons that will suggest themselves to all who have any acquaintance with the insect. Another is, that where one trap only is used it can be attached to but one side of the tree, and in this single respect, notwithstanding all the theories of my friend Wier, it must always be inferior to any trap that encircles the tree.

The worms will spin their cocoons between the inner shingle and the tree as freely as be-



tween the shingles themselves, and I suspect that it will be found less tedious and cheaper to detach the traps and kill the worms by wholesale, than to open them on the tree. Those who prefer the latter method, will be pleased to learn of the means described by Mr. Wier, who says: "The quickest and best way to do this is to have a large tin pan bent in on one side, so as to fit closely to the trunk of the tree. When you reach the tree, drop upon your knees, place the depression in the pan against the trunk of the tree, hold it there by pressing your body against it, and you have both hands free to open the trap. When opening it, many of the pupae or chrysalids will fall into the pan, and some of the worms. Kill the rest or scrape them into the pan. The trap must be turned clear around, as many will be found between it and the bark of the tree. A person will open and kill the worms in from 400 to 800 traps in a day." I have known one of these traps to be so thoroughly torn to pieces by the Downy Woodpecker, that if they are to be preserved from year to year, it would be dangerous to leave them on the tree during winter.—*Riley's Report on Insects.*

## Household.

### The Uses of Waste Paper.

A correspondent of the *Western Rural* mentions many things for which waste paper can be used with great advantage, from which we quote the following:—

"Few housekeepers are aware of the many uses to which waste paper may be put. After a stove has been blackened, it can be kept looking very well for a long time by rubbing with paper every morning. Rubbing with paper is a much nicer way of keeping the outside of a tea-kettle, coffee-pot and tea-pot bright and clean, than the old way of washing them in suds. Rubbing with paper is also the best way of polishing knives and tinware after scouring. This saves wetting the knife handles. If a little flour be held on the paper in rubbing tinware and spoons, they shine like new silver. For polishing mirrors, windows, lamp-chimneys, etc., paper is better than dry cloth. Preserves and pickles keep much better, if brown paper, instead of cloth, is tied over the jar. Canned fruit is not so apt to mold if a piece of writing paper, cut to fit the can, is laid directly on the fruit. Paper is much better to put under a carpet than straw. It is warmer, thinner, and makes less noise when one walks over it. Two thicknesses of paper placed between other coverings on a bed, are as warm as a quilt. If it is necessary to step upon a chair, always lay a paper on it and thus save the paint or woodwork from damage."

## Poetry.

### Spring Song.

Blow Spring, upon the top of earth,  
And draw the Winter from the hills;  
Oh! draw men from a thousand ill,  
And touch their sadness into mirth!

Blow through the woods, and wake again  
New leafage on the naked trees,  
That creak and chatter to the breeze  
Which hurries from the northern main.

Blow round about the garden bower,  
Where clinging rose and jasmine stray,  
And where the liquid forces play  
That roll the bud and spread the flower.

Blow o'er the hills and lakes and plains,  
And stir them with thy quickening life,  
Till nature feels the generous strife  
Of being working in her veins.

Blow through the haunts of sin and death  
Where festering vices thickly breed:  
Blow unto man a better creed,  
And sift them with thy winnowing breath.

### Trust, and do Right.

Courage brother, do not stumble,  
Though thy path be dark as night;  
There's a star to guide the humble;  
"Trust in God, and do the right."

Let the road be rough and dreary,  
And its end far out of sight,  
Foot it bravely; strong or weary,  
"Trust in God, and do the right"

Some will hate thee, some will love thee,  
Some will flatter, some will slight  
Cease from men, and look above thee:  
"Trust in God, and do the right."

## Apiary.

### How the Bees [have] Wintered.

At last the warm weather has come, and we have put out our bees. We have lost several stocks more than usual. This, however we fully expected. Our colonies were very populous, and last fall the weather was very unfavourable, in fact cold weather set in early and has continued late this spring, and their stores have been exhausted.

We are also receiving reports from all parts of the country of a great loss of bees, many losing their entire stocks, especially those who wintered on their summer stands.

Our long cold winters are a great drawback to bee keeping, and in order to overcome it we must pay much attention to the state of the bees in the fall. Stocks should be well supplied with winter stores and then housed in some proper place. The bees are too often neglected until everything else has been cared for, and then they are indifferently stowed away to run their chance. This was

quite too much the case with ourselves last fall, having much business to attend to, our bees were neglected somewhat, and were put into winter quarters without proper care, and hence we have lost a greater per cent than usual.

We would say to those who have lost, that the hives containing combs will be of great service to put swarms into this season. The combs should be removed and all the dead bees taken out of the hives, and the hives well scraped, the combs returned and the hives closed up and set away in some dry place, and examined occasionally to guard against the moth getting in and destroying the combs.

J. H. THOMAS.

### Queries.

(To the Editor.)

SIR,—1. In case a drone comb is put in the honey boxes will the bees be likely to fill it with drone brood?

2. Won't the empty queen cells found in a hive that has been abandoned by the bees be used by them for raising queens if the cards of comb contain'g them were returned to a hive?

3. Do you endorse Hosmer's views as published in the *GLOBE* recently referring to weakening stocks in the fall?

4. In case a stock is scant of honey and need feeding in the spring, when can feeding safely cease?

5. In case honey and brood were both in a card, would the Extractor take the honey only and leave the brood unhurt?

BEE-KEEPER.

REPLY.

1. In some cases the queen will deposit eggs in the honey box; they may be either drone or worker eggs; but she seldom does so, and is no more likely to do so where the comb is drone comb.

2. No; bees never use old queen cells, preferring to construct new.

3. We cannot fully endorse Hosmer's view; if the bees were all young bees, and the queen a young prolific queen, it would doubtless work well; but under other conditions the results would probably be anything but desirable.

4. Feeding may safely cease after fruit blossoms appear, if the weather is at all favourable to honey gathering; but if not, feeding should, in some cases, be continued till white clover appears; a small quantity every day or every other day is all that is required.

5. If the brood is capped over it will not be affected, but when it is in the larva state it will be thrown out, unless much care is taken in turning the machine not to turn too rapidly; it is better not to empty cards containing larva, though it may be done with care.

J. H. THOMAS.

## Agricultural Intelligence.

### The Exportation of Short-horns to Australia

The exportation of short horns to Australia, a trade which, during the past few years had given indications of great promise, has received a sudden and untimely check. We learn from the *Banffshire Journal* that the circumstances connected with the last lot of stock forwarded to Sidney have caused a reaction in the demand for English and Scotch bred short-horns, and numerous orders which would have been received have in consequence been withheld. The lot of cattle to which we refer were six valuable short-horns, shipped in the "Paramatta," which sailed from London on the 21st August 1871. The stock were Rosedale, a four-year-old cow, bred by Lord Walsingham; Dame Rodgers, cow, bred by Mr. R. Jefferson, Whitehaven; Industry, a cow, and Isabella, a heifer, both bred by M. Aylmer, Norfolk; Lady Audley, a heifer, bred by Mr. Durham, Middlesex; and Earl Fitz Windsor, a bull bred by Mr. W. Carr, late of Stackhouse. The cattle enjoyed excellent health during the voyage, and the vessel arrived at Sydney in December. According to the regulations of the port, the ship had to be in quarantine, and very curiously, during the time it was so lying, foot-and-mouth disease broke out among the short-horns. By the New South Wales law, the animals ought, on the appearance of this disease, to have been put on board a hulk and sunk in the bay; but some difference of opinion as to the nature of the disease led to their being sent to a small island off the mainland, where they all recovered. There is no doubt that the animals laboured under foot-and-mouth disease, and not less doubt that the germs of the disease had been carried across the ocean in hay shipped along with and for the use of the cattle. The circumstances we have related have very naturally excited great attention in the colony. The introduction of foot-and-mouth disease into the colony would be a most serious misfortune, as its outbreak could not fail to cause the death of many thousands of cattle. In the summer season, in that quarter of the world, cattle have frequently to be removed distances of 6 to 8 miles for water, and their removal such a distance, while affected with foot-and-mouth disease, would be nothing short of an impossibility. The introduction of the malady into the Australian flocks would also be attended with incalculable loss, as the colonists appear to fully realize. The risk of having valuable animals rendered useless at the close of a very hazardous journey is so great, and the fear of introducing contagious diseases yet unknown in the country is so lively, that orders for purchases in England are for this season at least countermanded.

### Hope Agricultural Society.

During the past winter this Society formed a Farmers' Club, and held a series of meetings in different parts of the Township for the discussion of agricultural subjects. New life has been infused into the Society, and the number of members is larger this year than ever before. As a result of their very interesting meetings, there was an exhibition of seed grain at Canton on the 9th of April, when forty entries were made. The samples were excellent, and nearly all were exchanged. The prizes paid amounted to \$45.

On the 18th of April the Society held a Ploughing Match on the farm of Aaron Choate, Esq., Perrytown. Sixteen entries were made, and prizes to the amount of \$40 were paid.

On the 25th April the Spring Exhibition of Stallions took place in Port Hope. There were three classes, and ten entries. The prizes were as follows:—

**BLOOD HORSES.**—1st prize, Touchstone, owner, John Foote: diploma and \$15. 2nd prize, Young Touchstone; owner, Captam Foster: \$10.

**ROADSTERS.**—1st prize, Reformer; owner, Ezra Hall: diploma and \$15. Second prize, Dominion; owner, Charles Powers: \$10.

**DRAUGHT.**—1st prize, Mosstrooper; owner, Asa Choate: diploma and \$15. Second prize, Exhibition; owner, Thos. Vickers, \$10.

It is thus seen that by a few earnest members taking an active interest in the Society, much good may be accomplished.

**SWINE BREEDERS' CONVENTION.**—The Farmers' Club of the American Institute, New York City, has originated a movement in regard to establishing a standard of characteristics and scale of points applicable to each of the recognized breeds of swine. To perfect this movement a convention of the swine breeders of the United States and Canada has been called at the rooms of the Club, Cooper Union, New York City, to be held on the 14th of May. The meeting will no doubt be productive of benefit to breeders of this class of farm stock.

**A NEW CHEESE FACTORY.**—A number of farmers around the village of Baltimore, thinking it would be for their interest and the benefit of the community to have a cheese factory erected there, after holding several meetings to discuss the profits, direct and indirect, to be derived from the factory system, resolved to form a company and erect a cheese factory immediately. The following gentlemen have been elected Directors:—J. T. Sables, Henry Lapp, Shem Parson, John Baptist, and Adam Jaynes. They built an ice house and saved a sufficient quantity of ice before the winter broke up, and gave out tenders for building the factory, which they expected to have ready early in the season.

The average price of a sheep not less than a year old has advanced from £2.75 to \$1.56, in Vermont, since one year ago.

Four new grain elevators are being built in Chicago, with a joint capacity for storing 3,300,000 bushels.

The wheat crop of California has been estimated at 21,000,000 bushels in excess of what is wanted for home consumption. Two months will tell.

Farmers in the State of Connecticut say that the prospects of a fruit crop next Summer are very bad. The raspberry and blackberry crop is about destroyed by the continued cold of March, while the strawberry crop will be very slim.

During the month of March nearly 600,000 pounds of grain were shipped from Marysville, Cal., to points over the mountains in Utah and Nevada.

Messrs. John Snell & Sons, Edmonton, have sold to the West Elgin (Ont.) Agricultural Society, the roan yearling Short-Horn bull Marquis of Lorne, by Loudon Duke 10396, dam Mary Gray by Baron Solway 6432.

Mr. Frederick Wm. Stone, of Moreton Lodge, Guelph, reports the following recent sales:—To Thos. Lumsdon, Toronto, Ont., for Manitoba, the imported Short-horn bull, *Amadeus 1st*, rich roan, bred by J. J. Stone, Esq., Seyborwen, Monmouthshire got by Merrimac (26897), out of Genivieve by Barleycorn the Younger (21209); and the heifers *Sanspareil 18th*, white, calved Nov. 14, 1870, got by 12th Duke of Northumberland 4744, out of *Sanspareil 10th* by Windsor 4484; *Diadem*, roan, calved Feb. 23, 1871, got by 3d Duke of Geneva (21552), out of *Dimorah 2d* by Barleycorn the Younger (21209); *Isabella 21st*, roan, calved March 31st, 1871, got by Knight of Canada 6243, out of *Isabella 10th* by Windsor 4484; *Isabella 22d*, red, calved April 10, 1871, got by Knight of Canada 6243, out of *Isabella 8th*, by Windsor 4484. Also, to H. M. Reynolds, York-Neck, Adams Co., Ills, the yearling bull *4th Duke of Clarence*, red, calved Dec. 27, 1870, got by Knight of Canada 6243, out of *Sanspareil 6th* by 3d Grand Duke (17993). Also, to D. K. Shaw, Westfield, N. Y., the Hereford bull *Charley the Baronet*, red, with white face, calved Feb. 8, 1871, got by Sir Charles (3434), out of imp. Baroness, by Carlisle 921.

Mr. Stone also sold recently to Messrs. Tolton & Stirton of Washington Territory, 38 full blooded Cotswold rams, viz., 7 two shear and 31 yearlings, the latter got by prize imported rams. The purchasers were to start, May 1st, for their distant home, by way of Chicago, San Francisco and Oregon. Mr. Stone adds: "I am informed that the sheep sent last fall from my flock to Colorado and Washington Territory have done exceedingly well."

At Grand Rapids, Mich., where there are immense deposits of gypsum, it requires ten railroad cars a day to convey from that place the quantity required by farmers as a fertilizer.

Recent experiments in England have shown a net profit of \$105 per acre upon land that was systematically irrigated; whereas, upon similar land of the same tract, when the irrigation was omitted, the net profit was only \$15 per acre. The "Great American Desert," that once occupied so large a space on the maps of Western Territories, will nearly all be made productive by irrigation.

The manufacture of beet sugar promises to become a very large interest in California, where the yield of the beet is enormous, and the climate highly favorable to its abundant yield of saccharine matter. Two large sugaries are in successful operation; one at Alvarado, the other at Sacramento. A third is mentioned as about to be organized on one of the Tule Islands (Sherman) where forty tons of beets per acre are expected to be raised. An average crop on the uplands is about twelve tons per acre, worth at the sugary \$5 per ton.

During the last few years experiments in growing and curing raisins have been made in various localities; in Sacramento, Santa Cruz, Tulare, Napa, and other counties; all of which have been entirely successful. The raisins produced have been repeatedly and thoroughly tested, side by side with foreign varieties, and have been found fully up to the standard of the best imported. Quite a number of cultivators are preparing to go extensively into this business, and it is probable that California will soon be a large producer and exporter of this article of commerce.

The orange grows and matures by outdoor culture in California without requiring greater attention, care or labor than peach or apricot. This has been satisfactorily demonstrated by numerous experiments in various localities. Major Holden, of Stockton, found his trees, even at six years old from the seed, to bear fine crops of fruit. And wherever the orange flourishes the lemon will do as well. Very few crops are as profitable as the orange, and a large production of this fruit in California may confidently be expected.

The vast quantities of figs that annually reach the markets of the United States, chiefly from the countries that border the Mediterranean, cannot be imported at less than about twenty-two cents per pound in bulk, and California may, and probably soon will, in a great measure, supply this demand. In that favored section the fig tree, at ten years old, is found to yield on an average 150 to 200 pounds of dried figs per year, and 200 trees can be grown on an acre, making for the acre 30,000 pounds, which, at ten cents per pound, gives \$3,000.

## Miscellaneous.

"Excuse haste and a bad pen," as the pig said when he broke out.

By the use of machinery invented within the past twenty years the farmer's boy can often do the work of ten men.

The Ontario Car Company, of London, have received a contract for the supply of six hundred cattle, flat and box cars for the Canada Southern Railway.

The barn and outbuildings, belonging to Mr. Wm Kennedy, Verulam, was destroyed by fire, on Thursday night last. Loss about \$2,000. Insured for \$1,000. Suppose to be the act of an incendiary.

Mr T. W. Cooper, Provincial Land Surveyor, of Geolph, left on Monday morning with a large party of men, on an extensive survey for the Dominion Government in Manitoba, and we understand will be absent for six months.

High cultivation means deep and thorough working of the soil, thorough pulverization, liberal manuring, clean culture, and bountiful crops of all kinds, and, coupled with good judgment seldom disappoints the expectations of the farmer.

The N. Y. Times says:—The rain which fell on Saturday night and Sunday was an event of far greater importance than usually attaches to the occurrence of May showers. In this immediate neighbourhood it saved crops of many millions of dollars aggregate value. How much it was needed could hardly be imagined by one who had not seen the extreme backwardness, especially of the smaller crops, such as strawberries and peas. Even more signal than the benefit to these, however, was the putting an end to several of the devastating forest fires in this State and Pennsylvania.

The Messrs. Graham, of Aidsborough, started for Manitoba last Friday. It will be remembered, says the St. Thomas Home Journal, that they were sufferers during the Riel troubles and were obliged for their personal safety, to leave the territory. They were so well satisfied with the country, however, that they now return to it with the intention of making it their future home. Mr. Donald Sinclair of North Yarmouth, with three sons and a daughter, left for the new province last Monday. Mr. Sinclair's sons a few years ago bought farms in Michigan, but hearing such glowing accounts of the North-west they concluded to sell out and seek new homes in the better country. They are the right sort of men to settle in Manitoba.

A farmers' club has been established at Pleasant Ridge. After adopting a constitution and bye-laws the following officers were elected. Mr. G. Terhune, President; R. A. Chatterton, Vice-President; D. Brunton, Secretary; S. Fairchild, Treasurer. Committee—Mr. S. Chatterton, Mr. J. McDermond, Mr. C. Cox. After the election of officers, the Club proceeded to discuss the question:—"Does summer fallowing pay?" As the time for adjournment arrived before the question was anything like exhausted, it was decided to resume the discussion at the next meeting, which will be held on the evening of June 1st, at 8 p.m.

Oshawa is one of a large number of places where laborers are exceedingly scarce. In referring to the matter the *Indicator* says:—The corporation sometimes cannot get a single man to work on the sidewalks and drains, and the brick yards are not half full. Carpenters and bricklayers are in almost as great demand. One bulker alone, Mr. Dingle, would employ twenty five more if they could be obtained. There is we are glad to say, a prospect of obtaining emigrants. The town authorities have written to Quebec and Toronto for emigrants, and have received a promise from the former place. It is the intention, we believe, upon being notified of their arrival, to send up Mr. Burke to make a selection of the men we want so that we shall not be troubled with helpless sots as has been the case.

A correspondent of the Rochester (N. Y.) Union, writing from Batavia, N. Y., on way of growing, says, that a gentleman in that vicinity, named Lusk, has a flock of pure Vermont blooded sheep that was sheared on May 10th. Fleeces were eleven months and seven days growth. Sixty breeding ewes, from which fifty lambs have been raised this season, sheared 720 pounds—12 lbs. per acre.

One yearling ewe gave a 17½ lb. fleece—weight of sheep after shearing, 62 lbs.

Additionally, six year old buck, sheared 27½ lbs. Weight of carcass 142 lbs.

Peerless, one year old, sheared 23 12-16 lbs. Weight 115 lbs.

Adrian 2d, one year old, sheared 20 1-16 lbs. Weight 102 lbs.

An Eastern exchange says that New Orleans is contending for the Western trade in earnest. The Illinois Central Railroad has an elevator at Cairo, and persons connected with that company own a large elevator on the levee at New Orleans, and a floating elevator for transfer direct from barges to the European steamers. Thus corn in bulk is handled as readily as at Buffalo or Chicago. About two hundred and seventy thousand bushels of corn, carried to New Orleans in barges, were transferred to steamers for Liverpool within ten days. The total freight and charges from Cairo to Liverpool amounts to less than the charges from Chicago to New York. An English company has contracted to furnish a fleet of iron barges for the river trade, and has subscribed one hundred thousand pounds capital to the enterprise.

From a New York city paper we learn that Mr. Seward, speaking of the great wall of China, which he examined during his late trip to the East, says:—"The Chinese have been for at least two or three thousand years a wall-making people. It would bankrupt New York or Paris to build the walls of the city of Pekin. The great wall of China is the wall of the world. It is forty feet high. The lowest thirty feet is of heavy limestone or granite. Two modern carriages may pass each other on the summit. It has a parapet throughout its whole length, with convenient staircases, buttresses, and garrison houses at every quarter of a mile, and it runs not by cutting down hills and raising valleys, but over the uneven crests of the mountains and down through their gorges, a distance of a thousand miles. Admiral Rogers and I calculated that it would cost more now to build the great wall of China through its extent of one thousand miles, than it has cost to build the fifty-five thousand miles of railroad in the United States. What a commentary it is upon the ephemeral range of the human intellect to see this great utilitarian enterprise, so necessary and effective two thousand years ago, now not merely useless, but an incumbrance and an obstruction!"

**CAT BROODING CHICKENS.**—A hen that had a brood of chickens was accidentally killed last summer. A cat belonging to the owner of the chickens took charge of them, and slept with them for about a fortnight, when she deserted them.

The Three-shire Oak, which has received this name because it overshadows portions of three counties in York, Nottingham, and Derby, covers a greater expanse than that of any other oak in England, for its branches extend over an area of 767 square yards.

The Ottawa Free Press is responsible for the following "pig fish" story:—Mr. John Rooney speared a monster maskinonge a few days ago at the foot of the Decheane rapids, near Mrs. Conroy's mill. It is almost incredible, but it is never the less true, that it weighed 45 lbs.

As an example of enterprising effort to describe a narrow escape and fright, we commend the following, taken from the Whitley Gazette:—Chased by a bear, chased by a wolf; by an elephant; by a sheriff; by a spook? Yes, that had occurred, but did you ever hear of being chased by a saw-log, as it chanced to a French Canadian out in Curtis's woods last week? It happened thus wise:—They were cutting timber from the brow of the hill in these famous woods, and rolling it to the bottom, where a steam saw mill is to be erected. The Frenchman was one of the lumbermen, and was attempting to manipulate a huge log for a safe descent, when he discovered that it was getting the better of him. He was on the under side, and it would not do to "let it slide," so he screamed for help. But no help came. His strength was surely and rapidly failing, and there was nothing to do but to run for it, and run he did—a fearful race. The natural philosopher says that a log gains speed as rapidly as it descends. It is otherwise with human legs on a run even when in this case the descent is steep and icy. There is no turning out and the log gained with terrible rapidity on the frightened Cannuck, and was now just on his heels, when luckily he spied a hollow in his path into which he popped with a bound; but had barely time to huddle himself in his hole when crash! crash! the log thundered over him, and left him safe, but about the most badly scared man that ever halooed in Curtis's woods, if his nerves are no stronger than our claim to be. And that is how a saw-log chased a Frenchman.

**Advertisements.**

**CHEESE VATS AND HEATERS**

Of a superior quality; also

**Cans, Hoops, Presses,**  
AND

**ALL KINDS OF CHEESE FACTORY UTENSILS**

Manufactured and sold by

**HATCH & COMPANY,**  
Oshawa, Ontario.

REFERENCES: Hon. George Brown, Bow Park, Brantford; Hon. David Reesor, Markham; Gideon Striker, Esq., Picton; Bronk Cheese Factory Company, Belleville; James Elliott, Esq., Peterborough; Messrs. Phillips Bros., Newmarket.

Send for Circular and Price List. v4-3-3t

**IMPORTANT SALE**  
OF  
**SHORT-HORN CATTLE,**  
AND  
**BERKSHIRE PIGS.**

THE subscribers will sell at Public Auction, at WILLOW LODGE farm, 4 miles from Brampton, O. I. R., 20 miles west of Toronto,

**ON THURSDAY, JUNE 27th, 1872.**

15 Pure bred Short-horn Cows and Heifers.  
4 Young Short-horn Bulls, from 2 to 15 months old.

20 Berkshire Pigs, bred from Imported Stock. Eleven of the cows and heifers have been bred to the fine Imported Bull, British Baron

Sale to commence at 1-30, Lunch at 12-30

Send for catalogue with pedigrees.

**John Snell & Sons,**  
EDMONTON, Ont.

**FIRST PRIZE BEE HIVES.**

**BUY THE BEST.**

**J. H. THOMAS'**

**Moveable Comb or Frame Hives**

ARE all that can be desired for a bee-hive. They were awarded the first prize at all the Provincial Fairs for seven years. They possess more advantage than any other hive in the market, yet are more simple in construction and easier to operate with, which we are prepared to demonstrate at any time. In fact, they are the best and cheapest frame hive now before the public. For full particulars send for circular.

**PRICE LIST FOR 1872.**

Single boarded Hive.....	\$2 50
Double-boarded Hive.....	3 50
Individual right to make.....	3 00
Single-boarded Hive and right together.....	5 00
Double-boarded Hive and right together.....	6 00
Large Gauge or New Entrance, each.....	15
Small or old Gauge, each.....	10
Bee Protector.....	75
Honey Kufe.....	50
Honey Extractor—the best in the market.....	10 00
Italian "tocks in the single-boarded hive.....	18 00
Italian Queens, from latest importations.....	5 00
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Township and county rights for sale at great bargains. Send for circular.

All orders must be accompanied with the cash, and addressed to

**J. H. THOMAS,**  
Brooklin, Ont.

**THOROUGH-BRED**  
**SHORT HORN BULLS**

**FOR SALE.**

"MATCHEM"—RED—3 YEARS OLD—Won First Prize two years in succession. "Oxford Earl"—Red and White—3 years old—won the Second Prize. "Butterfly"—ROAN—1 year old—won last fall the silver cup. Apply to RICHARD ADAMS, Woodstock, Ont. v4-4-2t.



For fattening and bringing into condition, Horses, Cows, Calves, Sheep and Pigs. It fattens in one-fourth the usual time; good for horses, saves one-third the grain; milch cows produce more milk and butter. **3 DOLLAR BOX CONTAINS TWO HUNDRED FEEDS.**

**HUGH MILLER & CO.,**

Agricultural Chemists, 167 King St. East, Toronto.

Sold Everywhere. v4-3-3t.

Office of the Appleton  
Knitting Machine Company, }

Hamilton, June 1, 1872.

**THE APPLETON**  
**KNITTING MACHINE COY,**

ARE now prepared to exhibit their invention to the public. They claim for it a superiority over every other Knitting Machine.

It is perfect in its action, working smoothly and accurately, and will not get out of order.

It will knit close or open, plain or ribbed work. Knits in any shape, with single, double or triple thread,

**WITH A PERFECT SELVAGE.**

It will make a long, or short stitch, without stopping, and will knit backwards and forwards without tens on the machine. In short, it has none of the defects of the other machines, and is an improvement on them all.

The standard of excellence of all knitted goods is that made by hand, therefore, it is required of a first-class Knitting Machine, that it produces Stockings, Socks, Shirts, Drawers, Mitts, Scarfs, and all other knitted goods, as perfect as the hand made article.

The Machine is constructed in the most substantial manner, finished in first-class style, and will last for years. It does perfect work; simple in construction; there is nothing about the machine but what may be understood at sight, and the most inexperienced may in a few hours acquire a knowledge of working it.

The Appleton Knitting Machine Company are prepared to submit their invention to any test or comparison with any other, and they desire no higher recommendation than that they feel assured will be accorded it by the Public.

A Book of Instruction is provided.

**AGENTS WANTED**

Terms liberal, and made known on application to the Company, Hamilton.

Hamilton, June 1, 1872. 5-tf.

**NEVER USE THE KNIFE.**

DRS. KLINE and LINBLEY, at 931 Arch St., Philadelphia, Pa., and Dr. McMICHAEL, 84 Niagara St., Buffalo, N. Y., are making unparalleled cures of **CANCERS, TUMORS and ULCERS.**

**No Knife, No Caustic, No Blood, Little Pain.**

**GREAT CANCER ANTIDOTES.**

For particulars address either of the above. 5-3 t.

**IMPORTANT TO**

**Farmers, Gardeners, Florists,**

**SEEDSMEN, &c.**

**Bone Superphosphate Manure!**

**QUALITY GUARANTEED.**

**Price, \$40 Per Ton.**

In good barrels and bags. No charge for bags or barrels. Best and cheapest fertilizer made. TRY IT, and you will always use it. Manufactured by the "Western of Canada" Superphosphate Works, London; and for sale by J. Fiske & Co., Toronto; Wm. Evans, Montreal; John Hart, Perth, Robt. Evans, Hamilton; Wm. Sanderson, Brantford; A. Stoddart, St. Marys; A. B. Weir, Port Stanley; A. J. Allworth, St. Thomas, and all seedsmen generally throughout Canada.

**JOHN WALKER Manager,**

HUNT'S BLOCK, Richmond St.

All orders addressed will secure prompt attention.

AGENTS WANTED. 4-4-2t.

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MANUFACTURERS OF

THE EASIEST THE SIMPLEST  
**"THE LOCKMAN"**  
FAMILY SHUTTLE  
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THE CHEAPEST THE BEST

HAMILTON, ONT.

v4-3-12t

IMPORTANT  
TO  
**Farmers, Gardeners, Florists**  
SEEDSMEN, &c.

**Bone Superphosphate Manure!**  
QUALITY GUARANTEED,  
Analysis by the Highest Authority.

**PRICE, \$40 PER TON,**  
In good barrels, containing 200 lbs. each,  
and in bags containing 50 lbs. each.  
**No Charge for Bags or Barrels.**  
*Best and Cheapest Fertilizer made.*

Try it, and you will always use it.  
Manufactured by the "Western of Canada"  
Superphosphate Works, London.  
**JOHN WALKER, Manager.**  
Hunt's Block, Richmond-st.  
All orders addressed as above will secure  
prompt attention. AGENTS WANTED.  
London, March 14, 1872.

**MANURES.**  
CROPS ripened from 10 to 15 days earlier and  
yield increased 100 per cent. by using  
Lamb's Super-phosphate of Lime, \$40.00 per ton,  
Fine Bone Dust, 30.00 "  
Half-inch Bone Dust, 20.00 "  
PETER R. LAMB & CO., Manufacturers,  
v4-4-2t. TORONTO.

**Markets.**

**Toronto Markets.**

"CANADA FARMER" Office, May 15, 1872.

The market for breadstuffs is somewhat dull, with little variation in prices.

In this city the wholesale prices are as follows:—

**FLOUR AND MEAL.**

Flour—Superfine, \$6 00 to \$6 10; Fancy, \$6.25 to \$6.50; Extra, \$6.50 to \$6.60.

Outmeal—\$4 75.

Cornmeal—\$3 00 to \$3.25.

Bran, in car lots, \$14.

**GRAIN.**

Wheat—Softs, \$1.55 to \$1.65; Treadwell, \$1.45 to \$1.50; Spring, \$1.44 to \$1.45.

Barley—No. 1, 60c. to 62c.; No. 2, 55c. to 58c.

Oats—40½c to 41c.

Rye—Nominal, none offering.

Peas—71c to 77c f.o.b.

**HAY AND STRAW.**

Hay, in fair supply, at \$14 to \$23.  
Straw, scarce, at \$10 to \$15.

**PROVISIONS.**

Beef, by the side, 6½c to 7½c.

Mutton, by the carcass, 7½c to 9c.

Potatoes—per bag, 50c. to 85c.

Pork—Mess, \$14 00.

Bacon—Cumberland Cut, 6½c to 7c, Canada, 6½c to 6½c.

Hams—Salted, 9c to 9½c; Smoked, 10½c to 11c.

Lard—9c to 10c.

Butter—Dairy, choice, 12½c to 14c.

Eggs—Packed, 11c to 11½c.

Cheese—12c to 13½c, Reesor's Stilton, 18c; Royal, 17c.

Dried Apples—9½c to 10c.

Salt—Goderich, \$1 15 to \$1 20;

**HIDES AND SKINS.**

Hides—No. 1, cured and inspected, per lb 9½c to 9½c; No. 1 inspected, green, 9c; No. 2, inspected, green, 7½c to 8c.

Sheepskins—1st class, green, \$2 00 to \$3 00; Dry, 50c to \$3 00.

Lambskins—\$2 00 to \$2 50.

Calfskins—Green, per lb, 12c.

Wool—Fleece, 55c.

**THE CATTLE MARKET.**

Beves (live weight) \$4 50 to \$6 00 per cwt.

Sheep—\$4 00 to \$8 00.

Calves—\$3 to \$8.

Lambs—\$2 00 to \$4 00.

**ONTARIO**—Flour—Receipts 9,120 barrels. Market inactive and definite quotations difficult to give in virtual absence of business; extras offered at \$6 95; fancy at \$6 75, and super at lato rates, holders finding it useless to make concessions, while buyers keep shy; a few hundred barrels good super sold last evening at \$6.50. Wheat—Receipts, 28,581 bushels; no reported transactions, rates nominally unchanged. Corn—nominal at 62c to 62½c. Provisions—Dull at former rates. Butter—Nominal. Ashes—Quiet but steady.

**QUEBEC**—Flour, No. 1 super, \$6 25; fall wheat \$1 45 to \$1 50; spring wheat \$1 30 to \$1 42; barley, 62c. to 6½c., pease, 60c. to 63c.; oats 41c. to 42c.; cattle (live weight), \$4 00 to \$5 00; beef, \$5 00 to \$9 00; mutton, \$7 00 to \$10; dressed hogs, \$5 to \$5 50; hides \$3 10 to \$10 00; sheepskins, \$1 50 to \$2 00; wool, 45c. to 50c.; butter, 13c to 14c.; eggs, 10c; cheese, 12c. to 15c.; hay, \$17 to \$18; potatoes, 60c. to 70c.;

**GALT**—Flour, No. 1 super, \$6 50 to \$7 00; fall wheat, \$1 40 to \$1 45, spring wheat, \$1 40, barley, 56c. to 58c. pease, 62c to 65c.; oats, 40c. to 41c.; cattle (live weight) \$4 50 to \$5 00; beef, \$5 00 to \$10 00; mutton, \$5 00 to \$10 00, dressed hogs, \$5 00; hides, \$7; sheepskins, \$2 50 to \$3 50; butter 15c. to 17c., eggs, 10c to 11c.; cheese, 10c to 11c.; hay, \$16 to \$18; potatoes, 45c. to 50c., oatmeal, \$2 60 per cwt.

**BRANTFORD**—Flour, No. 1 super, \$6 50 to \$7 00; fall wheat, \$1 40 to \$1 46, spring wheat, \$1 29 to \$1 41; barley, 55c.; pease, 65c.; oats, 38c. to 40c.; cattle, live weight, 4c. to 5c.; beef, 7½c.; mutton, 9c.; dressed hogs, 6c.; hides, 8c. to \$3 00; sheep skins, \$2 50 to \$3 00, wool, 45c. to 50c.; butter, 14c. to 15c.; eggs, 10c. to 11c.; cheese, 10c to 12c.; hay, \$12 00 to \$15 00, potatoes (per bag), 60c.; corn, 56c. to 58c.

**ST. CATHARINES**—Flour, No. 1 super, \$7 to \$7 25; fall wheat \$1 40 to \$1 50, spring wheat, \$1 40 to \$1 45; barley, 56c. to 60c.; pease, 70c. to 80c.; oats 40c. to 43c.; cattle (live weight), 5c. to 7c., beef, 8c.; mutton 9c. to \$10; dressed hogs, \$5 50 to \$6 00; hides, \$8 to \$9; sheepskins, \$2 50 to \$3 00, wool, 50c. to 55., butter, 16c. to 18c.; eggs, 12c to 14c., cheese, 13c.; hay, \$16 to \$18; potatoes, 40c. to 55c. corn, 60c to 63c.

**HAMILTON**—Flour, No 1 super, \$6 50 to \$9 50; fall wheat, \$1 52; spring wheat, 1 39; barley 58c.; pease 68c.; oats 41c. to 43c.; cattle (live weight) \$5 00 to \$5 50; beef, \$7 00 to \$8 00; mutton \$7 00; dressed hogs, \$4 00 to \$7 50; hides, \$9 00 to \$9 60; sheepskins, \$3 00 to \$3 50; wool, 53c. to 55c., pulled; butter, 10c. to 13c.; eggs, 11c. to 13c., cheese, 11c. to 12c.; hay, \$18 to \$20; potatoes, 75c. to \$1 12 per bag; corn, 59c. to 65c.

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GEORGE BROWN,  
Managing Director.