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THE

925

CANADA FARMER.

A MONTHLY JOURNAL

OF

AGRICULTURE, HORTICULTURE,

AND

RURAL AFFAIRS.

VOLUME III.

(NEW SERIES,)

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THE CANADA FARMER

VOL. III. No. 1.

TORONTO, CANADA, JANUARY 16, 1871.

NEW SERIES.

The Field.

Winter Work on the Farm.

The principal work of the farmer during the long, and comparatively leisure season of winter, should mainly be directed towards accumulating a supply of plant food for the next season's crops. Everything that can possibly be done in the way of adding to the manure heap the progressive farmer will aim to accomplish. Swamp muck should be dug out wherever it can be had, and drawn to some place near the barnyard where it can be readily available to use as an absorbent and retainer of the salts contained in the liquefied portions of the manure. If muck be dug and exposed to the air for a year before being added to the manure heap, it will become much more valuable from being dried and partly decomposed. Where it can be had in sufficient quantity, muck often proves a valuable top-dressing to meadows. It can be spread over them any time during the winter, and, though no immediate benefit may result to the hay crop that year, yet as soon as the action of atmospheric agents has so far decomposed the material contained in the muck, which is principally organic vegetable humus, and the plants can eliminate their food from it, a very great improvement will take place in the meadows top-dressed with the muck. This does not usually occur till the second season after the muck is applied, unless it is first decomposed by previous exposure for one season before being spread on the land. The amount of dressing to be applied will depend upon the state of the soil of the meadow. If it be deficient in vegetable matter, one hundred two-horse waggon-loads of muck to the acre will be none too much. Usually, however, half that quantity will be sufficient.

If leached ashes can be obtained within a reasonable distance, all that can be had

should be drawn to the farm, and applied as a top-dressing, at the rate of from thirty to fifty waggon-loads per acre, to those portions that appear to be deficient in those salts of which potash is a base. To the clover crop this dressing is especially valuable, and it may be combined with muck to advantage, and plaster afterwards sown on the land, when the clover is well forward in spring.

Every available load of stable manure that can be had from the town or village nearest, or from any hotel in the neighbourhood, should be bought up and brought to the barn-yard, where it should be properly composted before being spread on the land, in order to destroy, as much as possible, the vitality of the seeds of noxious weeds and plants that may have found their way into it. This should be well attended to, otherwise much trouble and loss may result from the too common practice of applying such manure directly to the land, to save the trouble of twice loading and unloading it. Most of the hotels and townspeople who keep horses or cows are usually glad to make an arrangement with the farmer, to give him all the manure made, in exchange for his supplying them with straw for stable bedding; and where this is done the farmer can insure the manure being tolerably free from foul seeds, by supplying only straw from clean crops.

Stock.—Every animal on the farm should be well looked after during the winter, and care taken that each gets its full allowance of the food given out. Where all are stabled, this is an easy matter, but where they run together in the yard or sheds, the weaker ones often suffer greatly for want of sufficient food, the stronger ones taking more than their share. If the animals have commenced the winter in good thriving condition, their thriftiness is the more easily kept up, but once they lose flesh during cold weather, it becomes somewhat costly and difficult to make them re-

gain it, as an animal in poor condition can rarely be induced to eat and digest more than will go towards keeping up its animal heat while the cold weather lasts.

We are inclined to think large troughs or boxes better than overhead racks for feeding out hay to stock. One great advantage they possess is that they prevent much waste, for an animal eating out of a trough or box rarely takes up more than a mouthful at a time, and eats it up before taking another, while it may often be noticed that when they feed at racks they will pull out much more than they can eat at once, drop a portion at their feet, and trample it in their effort to reach up for the next mouthful. They keep always putting their heads up to the rack, leaving untouched what has dropped before them. If racks are used they should have high boxes under them, to catch the waste and fine particles of hay, which usually constitute the most nutritious portion.

Of course, if all their feed can be cut up, so much the better, and the saving of waste alone in this case will more than repay the farmer for the extra labour of cutting. The cut hay being usually given in troughs or boxes, it is seldom a particle is lost. No pains should be spared to see that all the stock obtain a regular supply of water. If they have to obtain it at a pond or creek, enough holes must be cut in the ice, when it forms, for every animal to obtain a supply without crowding; or what is better, a boy should go with them to the water and see that the older and stronger ones do not monopolize the watering place for hours at a time, while the weaker and younger ones wander away in search of it at some other place.

Animals that are being fed up for the butcher need every care and attention. Regularity in the hours of feeding is of the greatest importance, if we wish to fatten an animal. The feed must be so regulated that they will keep constantly gaining in condition without becoming really fat, until near

the time when they can be sold to the most advantage, which is usually about Easter. A month or six weeks before that time, the process of forcing them into fatness by giving stimulating food, such as grain or oilcake, should begin. In Britain, much use is made of certain artificial compounds, called cattle foods, which are given sparingly as an addition to their ordinary feeding stuffs, in order to excite their appetite, and induce them to fatten faster, by more largely consuming of what is set before them. Every pound of food an animal can eat beyond what is required for the system goes to make fat.

Let the stables and byres be kept as clean and well aired as is compatible with the comfort of the animals. See that the cattle do not get their skins full of lice or scurf, or become hide-bound. Any animal affected in that way must be taken away from the others, and kept isolated till cured, otherwise the contagion will spread throughout the whole of the stock, and entail a heavy loss to the farmer through the rapid falling-off in condition and thrift thus produced. It is easy to prevent skin disease by keeping the animals thrifty and clean, using a curry-comb occasionally on the hide; but once they become affected, it is often exceedingly difficult to get rid of the trouble.

In feeding grain to horses or cattle it will be found by far the best plan to feed the grain crushed rather than whole. The charge made at the mills for crushing coarse grain is, however, in our opinion, altogether too high; besides the loss of time in going to and from the mill. In Britain they avoid this by using hand machines, that do not grind the grain, but simply bruise it in such a way as to make it readily acted upon by the gastric juices of the animal's stomach, and therefore easily digestible. These mills are portable, and easily worked by either horse or manual power, according to size. Such machines would prove a valuable acquisition on most farms where stock is to be fed for the butcher, or many horses or cows are kept.

PREPARING SEED GRAIN.—Every care should be taken to select the best and most profitable varieties of grain for spring seeding, whether for home use or sale. Next, the seed to be sown should be well and thoroughly cleaned, so as to be free from foul seed of every sort, and be put away where it will not be likely to be mixed with. The best way to do this is to put it in clean barrels—empty apple barrels will do—and head each down tight, writing the name of the grain or variety on each in pencil, and set them away where they will keep dry and sound. To keep the rats from eating holes in the barrels, strew some inferior loose grain on them, or keep some in an open box in the place where they are stored away.

GRASS SEEDS.—Much can be done to improve our meadows, if great care be taken

to obtain only perfectly clean samples of clover and other grass seeds. Much of the timothy seed obtained this year is very foul, and great care is needed to have what is to be used properly cleaned before sowing, which can only be done by hand sifting through fine sieves.

Beet Root and Beet Root Sugar

NO. IX.

The object of the papers which have been written on this subject has been to "popularize" the idea that beet root sugar can be produced in Canada, as well as on the continent of Europe, and on the Canadian farm as an ordinary practical industry of our yeomanry; and this object, it is gratifying to learn, has been thoroughly accomplished. Both the editor of the CANADA FARMER and the writer of these papers have received numerous enquiries which show that a firm hold has been taken by the Canadian mind on the subject. Parties at Toronto, Guelph, Elora, the county of Waterloo, and the neighbourhood of St. Thomas, and in numerous other places, are forming themselves into incipient Beet Root Sugar Companies, all eagerly looking for information on the subject, and prepared to act as soon as they are sufficiently informed concerning it, and can obtain skilled labour, or chemical assistance to carry their proposed works into effect. To all such we say, avoid all those, except practical chemists of first-rate standing, who have been used to the old-fashioned, cumbrous, continental system—those who talk of requiring from sixty to one hundred thousand dollars' worth of machinery to begin with; and above all, avoid all "mystery men," who nod and wink and "talk cunning," who say what they can do, but will not tell how they do it, and who claim a sort of divine right over the manufacture, whether in growing the root, or making the sugar. Depend on it, any man who is fit to be trusted with the manufacture will tell his employers not only what he can do, but how he does it. Superior skill will in this, as in all other businesses, command ample remuneration, without the necessity, on the part of the practical manager, of hiding from his employers his processes, and pretending that no one can master them but himself.

The latest discoveries in the art of the growth and manufacture of beet root sugar have wonderfully simplified the process, and these have finally resolved themselves into the best mode of manufacturing, from the juice of the beet root, "Sucrate of Lime."

This, according to the latest English work, is prepared as follows: It has been a fact long known to chemists, that all the alkalies have a special facility, under certain circumstances, of combining with sugar; and of the alkalies, lime, from its cheapness and convenience, is the one best adapted for the use of the manufacture of sugar, whether produced from the beet, the sorghum, or the

sugar cane. When a syrup of from 30° to 32° Baume (about as thick as medium maple molasses) containing either sugar or sugary substances, is kept in motion, and carefully slaked and powdered quick lime is scattered over its surface, in such a manner as by motion to be easily mixed through the solution, it unites with the sugar of the liquid, and forms a mass more or less insoluble, which, on rest being given, falls to the bottom of the vessel, and is the "sucrate of lime." The lime being dispersed through the syrup containing sugar and other matters, searches for and takes up the sugar of the liquid, and unites with it; but it does not unite with the other matters in the fluid, or, at all events, not in a degree to be mischievous. All the mischievous elements in the beet juice—for instance, such as common salt, potash, the strong taste of the beet root, which consists of a chemical element called "betain," the earthy bitter matters, and in fact, everything but the sugar—remains in the liquid which deposits the sucrate of lime, and which liquid, after the sugar is all extracted, may be fermented for spirit, or run off to the manure heap, to which it forms a most valuable addition, and the resulting sucrate of lime remains in a state more or less pure, according to the process which has been made use of, and the skill and care with which the substance has been formed. This sucrate of lime (we condense from the same work) is always made in syrup which is either cold or only slightly warmed. When formed, it is unalterable, either by time, fermentation, insects, mildew, or the action of the atmosphere. It may be shovelled out on a floor, and allowed to drain dry, or it may be dried by artificial heat. As you make it, so it remains unchanged and unchangeable, except by the "carbonatation" process, which will be hereafter fully described, and which again separates the sugar and the lime.

Sucrate of lime is absolutely insoluble in boiling water, although partially soluble in warm or hot water; therefore it can by washing be brought to a state of great purity, and one that, on carbonatation, as hereinafter described, will produce pure refined sugar at once. This cleansing process is attained by the sucrate being washed in boiling water; thus, after it is first obtained, and the dirty liquor run off, more water should again be added, again boiled, and again run off, until it comes off colourless. Or the sucrate may be washed on a filter until cleansed, but the washing process must always be conducted whilst the water is within a very few degrees of boiling heat, and it always ought to be done at 210 to 212 degrees by the thermometer—Fahrenheit.

For the same reason, the resulting liquor in which the sucrate of lime was formed should always be boiled, and allowed to settle before it is run away, because you in this manner obtain a considera-

ble portion of the sucrate which was either dissolved in the original liquor or else was floating in it in an unsuspected shape, for any part of it which may be dissolved at a lower temperature is again rendered insoluble by a boiling heat. As soon as the liquid, however, reaches the boiling point, the whole of the sucrate is deposited, and the liquor only contains the impurities.

Sucrate of lime thus made contains in its first wet state from 37 to 40 per cent. in weight of water. Of this water 27 to 30 per cent. drains away or dries out by the action of the air, and the dried residue consists of 68 per cent. of sugar, 20 per cent. of lime, and ten per cent. of water, which being a water of hydration, it does not part with at ordinary temperatures. Recollect that this is *pure sugar*. There is no molasses or other uncrystallizable matter in it. If you find such, on finally reducing it to sugar, you have made them by imperfect manipulation; they did not exist before.

This sucrate of lime may be stored in bins, barrels, or bags. It can be put by with safety until the season of the year, leisure time, or other circumstances enable the farmer to reduce it to sugar; or it may be carried to the refinery or exported abroad. It is an article (when well and carefully prepared) containing a fixed and certain amount of pure sugar, and is of a fixed and certain mercantile value. It is not destructible either by the influence of time or climate. It is simple in its preparation and the process is easily understood, not being so difficult as the manufacture of butter, cheese, soap, or other home productions of a like nature. All its results are of use: the mother-waters contain and carry all the mineral matters, and with the result of the feeding pulp will, when properly applied, keep up the fertility of the farm unimpaired, and indeed add to it most profitably in the assistance such manure will give to future crops, both of beet, grain, grass and roots.

It will thus be seen that the first thing to be studied is the manufacture of sucrate of lime; that well understood, gives the key to success in the manufacture of beet root sugar on the farm. Anyone may, and all who intend to go into the manufacture of beet root sugar must, make themselves master of the best mode of manipulating this article. It signifies little whether, for practice, it is made out of beet root, or from coarse or fine cane sugar, molasses, or maple sugar, anything that contains crystallizable sugar will, when properly mixed with quick lime, yield sucrate of lime, and sucrate of lime when reduced by carbonatation will yield pure sugar. The carbonatation process will be the subject of a future article.

In the mean time, let every one who feels an interest in the matter get beet root, or even mangel wurzel if they cannot

get beet. Reduce it to a pulp, and get out the juice, or, if they have no means of doing this, slice the roots into the thinnest possible shavings, soak these shavings in water at about 160 degrees of heat; this will extract the sugar and other soluble matters; as soon as the resulting liquor has been sufficiently boiled down and gets cold or cool, add powdered quick lime until the sucrate is formed. When this process is completed, take the resulting sucrate away, and boil the liquor in which it was made, let the sucrate subside, and draw off the liquor; then add (but always at a boiling temperature) water, and wash the sucrate until it yields no more colour and becomes clean. Prepare this substance twenty times, or until the process is familiar, and all changes are noted and understood; put by the results, and finally carbonate them, and you will then get the pure sugar, or at all events the pure syrup.

You can do all this in pots or saucepans, or the ordinary kettles or boilers of the farm; when you have mastered this process, you will be fit to operate on a mercantile scale, and then you will begin to be able, at a profitable rate, to procure beet root sugar.

NO. X.

Another matter, and which, perhaps, would have come in better before the last paper, on the sucrate of lime process, is the latest discoveries and improvements in evaporation of both cane and beet juice for the manufacture of sugar. This improvement has been forced on the attention of the producers of sugar from the fact that the refiners prefer a concentrated or inspissated juice of either plant, even though it contains all the natural impurities (provided the concentrated juice is not burned or browned), to ill-made, or, indeed, to ordinary well-made browned or crystallized raw sugar. The refiners can deal with the natural impurities better than they can with the destroyed or injured sugar which has been prepared by the ordinary method of boiling down in deep evaporating or defecating vessels. The following is the plan, and it seems to have been in a great measure borrowed from the American instrument for the preparation of maple and sorghum sap, only carried out to a greater length, and made continuous in its operation. By this means all souring and fermentation of the juice is avoided, as the juice is evaporated as it runs from the mill or press.

For a large concern, capable of doing about half-a-ton per hour, or thirty hogsheads in the course of a week, of six working days of ten hours per day, the description is given in nearly the following words:—

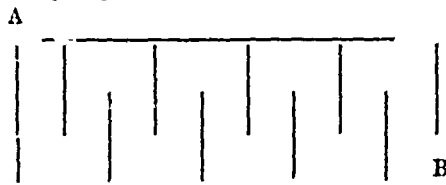
The machine is called "the concretor," and its object is to evaporate as nearly as possible to perfect dryness large masses of juice in the shortest possible time and at the least cost of fuel. A simple illustration of

the way in which this is accomplished may be seen in the effect of throwing a pint of water upon a stone pavement, or even on boards exposed to wind and sunshine; every drop of the water will be dried up long before the same quantity could be boiled away in a small deep pan, even on a very hot fire, and yet no particle of the water would at any time have been hotter than the warmed flags or boards.

The machine consists of three principal parts—the tray, the cylinder and the drum.

1st. The tray is placed as close as possible to the grinder and press, and receives the juice direct from the latter. The tray is of cast iron, 30 feet long and 6 feet wide, and about 6 inches deep. It is crossed by ribs or ledges, which run from one side nearly to the other, the vacant space being on alternate sides of the tray. It is not cast in one piece, but in several, which are joined together. They can, of course, all be made from one pattern, and made to join with screw-bolts and nuts, so that it can be lengthened if required, or any part broken can be replaced.

The accompanying figure may serve to give a notion of it. It can be made of greater or less length to suit the size of the purposed works, although we think the length in all must be the same, and the capacity be governed by the width.



This tray is set up at a gentle slope, so that the juice received in its upper end at A flows in a continuous stream of not more than about half an inch deep, backwards and forwards from side to side, to the lower end B. The whole length of the passage in the machine, reckoning it in the length of the course of the liquor, is 140 yards.

This tray is set flat upon two walls of brickwork, and the firing takes place under the tray at A, while the flame and smoke of the fire pass to the other end, and are carried off by the chimney. (In the American plan the entire tray and fireplace and chimney are constructed of sheet iron, and the whole stands on two rockers, so that by raising either end the attendant can hasten or retard the flow of the liquor as he may think necessary.) The flame of the furnace spreads evenly along the bottom of the tray, being confined by the brick walls, and the draught is perfectly clear and uninterrupted. The time occupied by the passage of the juice through the tray, in its serpentine course, is about five minutes, in which short period eleven-sixteenths of the water are driven off, and the juice has become *sling*. It will thus be seen that the first rash heat of the fire is applied to the thin juice,

whilst in rapid motion, and while it is so thin and liquid that there is no fear of burning, and as it becomes thicker and more liable to burn, it is removed farther and farther from the fire.

By means of this tray alone, the juice can be so concentrated as to render it safe from decay or fermentation, and where the "sucrate of lime" process is to be used, by making the tray long enough, the juice can by these simple means be rendered ready for conversion into pure sugar by the sucrate of lime process; but where the operator wishes to reduce the juice still further, and finally into a perfectly hard and dry mass, which would not be necessary in ordinary cases, the following continuation of the machine is added:—

2nd. This continuation of the machine is called "the cylinder." It runs on an axis, is open at both ends, is twenty feet long and three feet six inches in diameter. (This size is for the large works before mentioned). In England it is made of copper, but here it would be made of sheet iron or boiler plate, and would be like a steamboat chimney laid on its flat, with a spindle through it fastened by arms to the outside or shell. It must be made to revolve slowly (about six times in a minute) by machinery. It is also set on such a slope that the liquor will gradually work forward to the far end of it, although each end is open, so as to receive the thick juice at one end, and deliver it still further evaporated at the other, yet the ends are so turned in by a ledge projecting towards the axis, that the cylinder will hold a considerable amount of fluid. The liquor sufficiently evaporated in the tray is delivered into the end of the cylinder, which is then set revolving. As it does so, it carries the stuff up on its inside skin, and as soon as it reaches the top it drops off. Through this cylinder a blast of hot air is forced with a fan. The air may be heated by an outside skin being put to the iron chimney of the steam engine, and being forced in at the top of the skin, and allowed to pass out at the bottom, is strongly heated by the waste heat of the iron chimney. This hot blast is conducted through the cylinder, and although so hot, never burns its contents, as the particles of water carry off the heat. Where hot enough, it should be continued over the tray. The outside of the cylinder is also heated by the waste heat from the tray, or by a fire made on purpose, the cylinder being set in an arch of either brickwork or sheet iron. The action of the heat outside, and of the heated air passing through the inside, evaporates the water in the syrup most completely, and the stuff is delivered from the far end of the cylinder in a state which, when it becomes cold, is almost solid. But it may be further dried, when required, by a similar process, only the stuff now called concrete is then exposed to heat and hot blast on the outside of a drum, and scraped off by a fixed scraper.

In Canada, for many a year to come, we shall not require anything further than the tray and cylinder. It will be seen that this work proceeds rapidly and surely without hands, and with very little attendance, and by the time the liquid has run its course from the first end of the tray to the last end of the cylinder, it is reduced from thin water to thick syrup, which is in a state fit for keeping and storing, and for the operations of the refiner. The duration of the process of a portion of the liquid passing from one end to the other of the machine is less than fifteen minutes, and during that interval no part of it is burned into molasses or sugar that will not crystallize, or as it is called by sugar manufacturers in England and on the Continent, "Fructose."

The colour of the concrete from cane juice is a pale greenish yellow, and when mixed with water becomes cane juice again, as pure as when expressed from the cane. This shows how little the process burns it.

The concrete from the beet juice will, of course, contain all the salts, potash, &c., and these must be got rid of by the sucrate of lime or other processes; but for the ordinary farmer, the juice will be reduced to a rough impure syrup, strong enough to keep, and will then be casked up and command a ready sale, or it can be purified at a leisure time.

The great difficulty in all beet root sugar works has always been the alteration of the juice by fermentation and souring. Like all juices, the beet juice contains within itself the elements of fermentation, and where it was necessary to express into vessels that would form a store of the liquid until the defecating kettles were ready, fermentation to a greater or less extent was certain to ensue.

Souring also took place at every stage and in every corner. The large beet root sugar factories on the Continent have floors made of marble, with close joints, and every angle and chink so arranged that they can be easily and thoroughly cleansed; and notwithstanding all precautions, souring in some parts, and fermentation in others, will occur, and the only cure is a temporary stoppage of the works, and every instrument and vessel which comes in contact with the juice being thoroughly limed and scrubbed with lime water. All this trouble and risk is got rid of by the tray and cylinder. The work, of course, continues night and day; and if it does not, both tray and cylinder must be thoroughly cleansed, before allowing them to stand.

The foregoing is the plan as set forth in the latest English books. The American system of rockers on the tray is, no doubt, a good one; and if not used, provision ought to be made in setting up the tray for altering the level as required. This may be easily done by allowing the brick walls which confine the fire to extend up the sides of the tray,

and the tray itself to be supported on iron rods crossing from wall to wall. These rods should be capable of being raised and lowered by a screw, so that the attendant may be able to meet the wants of the juice as it gets thicker in its progress along the tray to the cylinder. There are several other points in which the process might be improved, and the risk of burning lessened; but it is always safest to try known and proved plans in the first instance, and afterwards to attempt improvements gradually.

Our Roads.

BY ALAN MACDOUGALL, C. E.

I.

The study of the histories of any of the countries of the world, whether from the very earliest historical records, or those of the times of the Roman Empire, down to the daily reports of the progress of enterprise and civilization in the New World, tell us that the first thing man does when he begins to wage war on the elements of nature, and, bringing the earth under his subjection, makes it obey the great law, "Be thou fruitful!" is to make a means of communication with his fellow men, and these ordinary means of intercourse or communication are commonly termed roads.

Formerly, people were satisfied with a mere track over hills, through swamps, or by the sides of them, as best suited their convenience, so long as they were able merely to get a horse carrying a pack on its back to go along them. But as their countries increased in wealth and importance, these tracks were formed into magnificent roads, many of which are to this day living memorials of the greatness of nations that have passed away.

In many parts of the civilized portions of the Old World are there to be seen roads that are to-day marvels of engineering talent as great as our own, and may be more lasting than many New World enterprises. The patient industry of the Chinese, the ambitious and solid wealth of the Roman Empire, the bold and daring design of the great Napoleon, in taking a road across the Alps, as well as many instances that could be quoted from the history of the island home whence many of us have sprung, and others familiar, I doubt not, to many of my readers, are matters of history, and are noted, and remarked upon, by all travellers to the present day; matters they can never tire of, as no one can ever lightly esteem the works of a race that have lived in what we now-a-days term barbarity, yet were able to put up structures that have for hundreds of years battled more successfully against the great enemy Time than the designers and constructors of them were able to do. These grand and lasting memorials to the greatness of bygone ages are not lessons to be lost upon us, and although it is not intended to draw

any comparison with them for the purposes of these papers, reference may occasionally be made to some of them.

Like everything in this world, a road must have a beginning. Started from a mere bridle track or a bush road, many of the finest roads of the world have, by the labour of succeeding generations, been brought to their present state of perfection. Considering the ages in which they were made, and what we now call the want of civilization, these roads progressed slowly as the wants of the age required. Doubtless the people who lived in the "good old times" considered themselves what is now called "very fast," and thought stage coaches and macadamized roads wonderful inventions. But in these days of steam, electricity, and ocean cables, the wants of the day are far more keenly felt than many of my readers can remember to have felt them thirty years ago.

We can read with astonishment of travellers deploring, about the end of the last century, the agonies of the road from London to Birmingham—roads that were on a par with some of our back country roads, full of ruts and bad bridges; but are, and have been, probably in the memory of this generation, marvels of skill and perfection.

In the opening up of a country the first thing necessary is the way of communication, and the sooner one man is able at all times to get to his neighbour, and to do so easily, the sooner will that particular district, township or county, advance. In the prosperity of a district, every one in it is individually concerned, quite as much as in the improvement of his own personal property, therefore it is the more necessary that everybody put his shoulder to the wheel and help the roads forward.

Every district, or let us say county, is not in the same condition with regard to improvements, just as every man is not as well able to spend money as his neighbour; yet a man who cannot spend money at once on his property can, by his industry and toil, expend, over a number of years, a sum corresponding to the sum laid out by his richer neighbour. His property is thereby benefited, and he does not grudge his outlay. So with a county; it may not be able all at once to spend \$10,000 on making good roads, but by every one in it doing something every year, probably in ten years it reaps the same benefits that it would, had it been able to expend the \$10,000 before, and also, having no debt, is now, perhaps, in a condition to spend that sum of money.

In the countries of the Old World, there were always found men of large means and fortune, or possessed of great political power, who were able to command large sums of money for various purposes. We all know of the large tracts of land in Britain and elsewhere, owned by single individuals, which have been in their possession probably for hundreds of years. These men were

able to spend a large sum of money at once; but in counties where every man has only got a small portion, and came only with the fortune of a robust constitution and strong pair of arms, as he progresses in the world so everything around him must progress. Step by step he goes on, learning as he goes the value of improvements in implements of husbandry, but too seldom learning the benefits of improved roads or too callous, if he knows, to do anything whereby he, as well as his neighbour, is to be benefited, and the progress of his county and country promoted.

Arrangement of Farm Buildings.

Convenience and simplicity should be more studied in the arrangement of farm buildings than symmetry.

Neatness, compactness and warmth are the great points always to be kept in view by the farmer in laying out or adding to his cattle houses or barns.

"Time is money," and any arrangement which will render the work of feeding and attending on cattle easier, and to be performed in less time, should be carefully carried out, especially in Canada, where seasons are short and wages high. Besides, if men perceive a neatness and compactness in the internal fitness of the buildings, and a desire to make their work less onerous, they will generally take a pride in the superiority of their employer's arrangements over those of the neighbours, and will attend more carefully to and carry out more thoroughly the operations of winter feeding.

Such buildings as are erected should be upon the north-east and west sides of the yard, leaving the latter open to the full benefit of the morning and mid-day sun.

In Canada the bank barn is undoubtedly the most convenient, giving a great capacity in room on a comparatively small area.

Homesteads, however, vary with farms, and it would be as inconsistent to dictate the plan of the farm buildings as of the farms. There are, however, certain points or general rules which the farmer will do well to bear in mind ere he commence either building new accommodation or adding to former barns or outhouses.

Convenience and economy of space are almost synonymous terms, and these are the great points to be kept in view. Good ventilation is as essential to the well-being of stock as of man.

Cattle should be kept in a warmer stable than horses and sheep, should be sheltered from all damp, but confined in open and cool steadings.

It is a great mistake to stable working horses under a bank barn, for such stables are always very warm and usually dark. When horses thus stabled are taken out, they feel the change of temperature most keenly, and unless treated with far more

caution than is usually accorded to teams upon the road, are sure to take cold. The rapid transit also from comparative darkness to the glaring light of a bright winter's day is most injurious to the eye, and very frequently produces weakness in that organ, and in many cases lays the foundation for periodical blindness or ophthalmia, too often the forerunner of total loss of the eyesight.

A thorough ventilation of all stock houses is necessary to carry off the ammonia and other noxious odours which emanate from animal dung.

To return to the main barn. Such should be built strongly and capacious, for a large barn is put up comparatively more cheaply than one in which the farmer may be pinched for room. Barns should not be battened, to allow of the grain and hay receiving as much air as possible upon all sides. No barn should be built without one or more shuttered ventilators upon the roof, to allow of the passing of a thorough draught from sill to rafter.

The position of the granary is, I think, too little thought of in Canada. The granary is usually built in under a swing beam, "cabined, cribbed, confined," very hot in the warm weather, ill ventilated, ill lighted, and with no circulation of air.

Not only are all these conditions very injurious to large bodies of grain, but much valuable space in the barn is wasted during the harvest, when we require all our barn room for the unthreshed grain, and usually have our granaries almost empty.

I should advise the grain room being built in the shape of a lean-to to the barn, or better still, as a detached building, allowing the access of air between it and the barn, if it be only in the space of a few inches.

Every granary should be thoroughly lighted, and have a ventilator in the roof. It should be divided into suitable bins, leaving a good gangway between, with sliding boards to take out in the side bordering this gangway. Each bin should be raised an inch or two above the main floor, to allow of a thorough circulation of air; and it is well worth the expense to build the bottom of our bins by laying fine wire netting upon narrow and deep joists about two inches apart, running from the gangway to the opposite wall, thus promoting a draught between each joist through the netting, and up into the heap of grain.

This will help to keep out the rats, and keep grain which may have a tendency to heat quite cool.

These fixings will no doubt be set down by many farmers as creating "too much bother," but the saving of a very few bushels of grain will well repay both the time and money expended in their arrangement.

I went into a farmer's granary the other day, and found that he had the walls and

the floor covered with tin, to prevent, he said, the access of rats. I was almost stifled, and yet he was surprised to find a lot of barley, which he had cleaned and put away, heating and discolouring rapidly. Which would do the more harm? The rats (who, by the way, might be kept down by other means) eating and carrying away their small quantum of grain, or the heat, which will destroy in a few days hundreds of bushels?

The detached granary may easily be kept free of rats. Raise it upon cast iron stands; or, easier still, upon posts, encircled by large glazed tiles cut in two, such as your correspondent, W. H. Mills, uses to protect his fruit trees from mice. There will then be only the door from the barn to watch.

This question of providing constant access of air to grain in heaps, good ventilation, and plenty of light, is one of very great importance to the farmer, and unless he attend to and provide for these conditions, he will assuredly lose as much produce as would, if converted into cash, build him a dozen granaries.

C. E. W.

How to Obtain Ammonia.

It has been demonstrated in experiments carefully conducted over a series of years, in England, that the wheat plant, during the course of its growth between seed-time and harvest, *destroys ammonia*. That is, a larger quantity of ammonia is required to perfect a crop of wheat than the entire crop, both straw and grain, contains when matured. It was found that to ensure a successful crop of wheat required the plant consumption of five times as much ammonia as the crop grown will yield. Now, the wheat plant is dependent almost entirely for its supply of ammonia upon what it can eliminate of it from the soil in which it grows.

Further experiments showed that clover, peas, beans and turnips do not destroy ammonia during their growth, but obtain what they need from the atmosphere, and retain it in their tissues. Hence it comes that one of the chief means of supplying any deficiency of ammonia in the soil for the production of wheat is to be found in turning under green crops of clover or peas, or burying the tops of turnips, beans, &c., left on the land. On a farm, therefore, where wheat or barley is grown extensively, the soil soon becomes exhausted of ammonia, unless that is supplied by artificial means, either through the feeding of stock in order to supply manure to the soil, or the rotation of crops that, not destroying, but rather attracting ammonia from the atmosphere and retaining it, help to add it to the soil. An average acre of clover or peas contains in roots and tops about 50 pounds of ammonia, equal in value for a wheat crop to twelve dollars.

Whether this clover crop be ploughed under as a green crop, or cut and fed to animals, and afterwards returned in the shape of manure to the soil, it would result in giving precisely the same amount of ammonia. But the roots contain the largest proportion of the ammonia, and these could not be used as food for stock. Still, if we grow clover as a renovating crop, cut for two years, and feed out the tops to stock and afterwards return the manure so made to the land, and together with it plough up, and so destroy and subject to decomposition the roots of the clover, we shall obtain a sufficient amount of ammonia in the soil to mature a heavy crop of wheat or barley. Hence it is evident that the success of the grain-grower (for barley, oats and corn require nearly as much ammonia in the same way as wheat) will be mainly dependent upon two things—either his ability to make or procure sufficient manure to make amends for the loss of the ammonia destroyed by the grain crops; or to grow alternately, crops of clover or peas, turnips, &c., in order to furnish the ammonia partly through their attraction of it from the atmosphere to the soil, or the turning them under as a renovating crop.

A farmer of Springfield, Ohio, recently picked 400 bushels of cranberries from three acres, and sold the lot for \$1,520.

The estimated area in hops in England is now 65,600 acres, and is gradually increasing.

One marked difference in English and American farming is forcibly presented by a correspondent of the *Country Gentleman* in the statement that an English tenant farmer, liable to be dispossessed of his place on six months' notice, buys corn brought 3,000 miles with which to fatten animals, doing this chiefly for the sake of the manure, while an American farmer owning the land he works, will sell even his hay, and feed no animals for the purpose of enriching his own land.

TOP DRESSING ON GRASS LANDS.—We have frequently called the attention of our readers to this method of sustaining the fertility of meadows. The compost should be fine, so as to be spread evenly on the surface, and find its way readily to the ground in small particles ready to be dissolved and carried down to the hungry mouths below that are reaching out in every direction for food. Manure or compost applied in lumps is of very little value in enriching the soil. The surface manuring should be done early, in order to have the best effect on the crop of next season. If the manure is reduced to the proper condition of fineness, and is not already exhaling its valuable properties in the process of fermentation, there is no occasion to fear loss by evaporation. Its nutritive properties will be drawn downward to meet the requirements of the growing grass.—*Vt. Record and Farmer*.

Stock Department.

Report of Judges on Live Stock at the Royal Agricultural Show, 1870.

An official report on the exhibition of live stock and the trial of implements at the Royal English Agricultural Society's Show, held at Oxford, last July, has just been published in the second part of the Society's journal, from which we propose making a few gleanings for the information of our readers. The report is exceedingly elaborate, and abounds in matter of the highest interest to the inquiring practical agriculturist. We propose in the present paper to confine our remarks and extracts to the department of live stock.

It is noteworthy that the first exhibition of the Society was held in the classic city of Oxford, thirty years ago, when seven acres of ground more than sufficed for its requirements, whilst on the late occasion ten times that area was fully occupied with many miles of shedding. One feature of the Society's annual show is deserving of special notice and commendation: as one Sunday at least occurs during its proceedings, arrangements are made on the grounds for the reverent conducting of Divine worship. On the last occasion two services were conducted by the Bishop of Oxford and one of the Canons of the Cathedral, when at least 600 persons, consisting principally of servants and others in charge of stock, &c., formed the congregation, morning and afternoon. The preachers made themselves clearly understood by the least educated of their audience, leading us to believe that these services are as effective as they are interesting.

It would appear that the late Oxford meeting was peculiarly distinguished for the very large amount of sales that were made on the grounds, both in stock and in implements. The report speaks, in reference to the former:—"Probably at no previous exhibition have buyer and seller been brought together so frequently with success, and the prices realized for many of the animals at once bespeak their superiority, and indicate the liberal spirit of the purchasers, of whom there were some of the most enterprising present from the United States, Canada, and Australia. Shorthorns and Herefords seemed most to take their favour, and our choicest specimens in form and blood—Bates as well as Booth, and other kinds—were purchased for the above colonies. They are surely entitled to possess them, with our best wishes for their success in distant climes, for the weighty considerations left in exchange. The enormous or almost fabulous prices realized of late for Shorthorns are beyond all precedent. Two thousand guineas for a seven year old cow was offered and declined; the writer has it from the best authority. This priceless treasure is Lady Fragrant,

(Extract of Gold, or The Nugget, would have been equally appropriate names) owned by that well-known breeder, Mr. T. C. Booth, of Warlaby. Selections were made from the same herd at 1,500 and 1,000 guineas each. Duchess bleo 1, too, now so rare, has not escaped the compass of these spirited visitors, as Mr. Cochrane, of Montreal, has charmed away two of Captain Gunter's gems, both yearling heifers—Duchess 101st and Duchess 103rd—the consideration being no less a sum than 2,500 guineas! The first and second prize yearling heifers at Oxford also found buyers at 500 guineas each. The first, an undeniably good one, owned and bred by Mr. D. McIntosh, of Havering Park, Essex, goes to Australia, and her second competitor, bred by Mr. Dudding, follows suit to America. All this, and much more that cannot be given in detail, should be highly encouraging to breeders, and in the absence of Continental buyers, the vast amount of business done is the more astonishing."

The Live Stock department of the Oxford show comprised 441 cattle, 203 horses, 550 sheep, and 192 pigs. All classes, except horses, of which there was a considerable diminution, were in excess of the Manchester meeting the year previous, at which unusual attractions in the way of hunters, hackneys, &c., were offered by liberal prizes of the local committee.

The Royal, for some cause or other, has never been very highly distinguished in the department of horses, the Yorkshire Society's show frequently excelling it both in number and quality. One of the judges writes as follows of the Clydesdales:—"We have always looked upon these animals as good on the land, and superior to most for heavy work on the road, but if the specimens brought before us are a fair sample of the breed, their reputation is not likely to be increased by this exhibition. At any rate, I must express my disappointment at finding so many inferior animals in the short entries which composed this class." If the writer had attended any of the Highland Society's shows, where the Clydesdales often form 90 per cent. of all the breeds on exhibition, he would most probably have seen enough to modify very largely his opinion. "Years ago the feet of the Suffolk horses were considered their weak place; they will now bear comparison with any other breed exhibited, and certainly the Clydesdales and 'shire-breds' at this meeting were far worse in this respect than the Suffolks. My notebook shows many marked as having indifferent fore-legs, light in substance, and with a retreating cannon-bone—a formation weak and unsightly. This appears to be a prevailing fault. Some few others had bent hind-legs and coarse hocks."

Of the Suffolk horses the report goes on to speak as follows:—"The Suffolk has long been a recognized and distinct breed, and, perhaps, with the exception of race-horses,

none have been bred with more care and attention. Every distinguishing point for which the breed has long been valued has been preserved and cultivated, and the prevailing characteristics of colour, quality, and compactness of form, with activity and strength, have never been lost sight of. Distinctive feature at first sight gives the breed a great advantage in attracting the attention of a casual admirer, but has little or no weight with those accustomed to sift the merits and balance advantages in individual specimens of various breeds. Competition beyond their immediate district has brought about vast improvement in this breed. Want of action, bad feet, and bent hind legs, are no longer noticeable in the Suffolk entries, and no meeting has given better proof of this than the one just held. We hear breeders of Clydesdales, Shirebreds, and Suffolk, holding to their own with unflinching pertinacity; as agricultural horses each are subject to criticism from the best of judges at their meetings; and, unless the listener is bigoted to his favourite breed, he will quickly throw aside his prejudice and admit that no one kind of horse is suited for every locality, and he will probably begin to notice the fact that where distinct breeds have for ages been associated with certain duties or certain districts, they have not been selected for the work without a substantial reason. Of what use would the immense weight of a slow, heavy action of the Shirebred be on the soils of Suffolk? and no one would recommend the farmer, whose soil is of the stiffest clay, and who breeds for the railway, the dock, or the brewer's dray, to hire a "Harwich Emperor" for his mares, or purchase a "Bury Empress" to fill a vacant stall in his plough stable; and the very weight of the Shirebred would distance him with the quick action of the Suffolk in his own county; while the Midland counties man would talk of the tenacious toil, and ask if the Suffolk horse, hardy and active as he is, could stand the work required for such a district? The Clydesdale breeder would point to the quays and streets of Glasgow, and call for an animal better suited for the work he would there find. These are questions safer left to those whose experience should teach them what their own requirements are. As breeders our business is to eradicate unsoundness, perfect the form, and preserve the characteristics which should denote the breed we adopt; as judges we felt our duty was to point out the individual specimens which give the best evidence of the breeder's success, as tested by such a principle."

The Channel Island Cattle classes made a great and interesting display, and are said to have much exceeded in importance any recent exhibition. These beautiful and useful animals appear to be winning increased admiration every year, and they are highly prized in private dairies, yielding large supplies of milk, exceedingly rich in cream and butter. These cattle are scarcely known in

Canada, but they have of late been making progress in some sections of the United States, where, as in Europe, they are much esteemed for their dairy qualities. At the Oxford show some Alderney heifers were sold for 70 guineas each, a sum indicating the high repute in which the breed is held by practical men. It appears that the Society has been in the habit of arranging the Jersey and Guernsey cattle in the same classes, whereas there are very distinctive points of difference between them. The judges respectfully submit to the Council, the advisability of making a thorough distinction for the future in the classes hitherto denominated "Channel Islands Cattle," inasmuch as the Jersey and the Guernsey breeds, for which the classes are intended, are entirely distinct, and have not the slightest degree of affinity.

The sheep department was of a very high order; the display a wondrous one with few exceptions; the various classes have never been equalled in number or quality. The local or "Shire" breeders certainly surpassed themselves, and did battle in tremendous force on their native soil. The fine old standard breed of Leicesters, going back to the days of Bakewell, is always pleasant to look on. Leicesters unmistakably show pure breeding and high quality, in a degree to make their "landmark," whereby to correct the deformities resulting from injudicious crossing in other directions. Indeed, the owners of pure-bred flocks, of whatever kind, should, in this respect, be regarded as public benefactors, without whose care and help all would become chaos and confusion.

The Report goes on to state that "The Downs" one and all presented a most imposing sight, for in them lay the strength of the sheep department. It was not without reason that the efforts of the Oxford Down breeders should be looked to here, on their own ground, with special interest; nor can any impartial critic deny the meed of praise due to them for such a display, both as regards numbers and quality. Next in order came the beautiful Southdowns, the perfect type in form and character, at once arresting the attention of every lover of beauty. Throughout this high-bred class could be observed a uniformity so much wanting in the kindred classes of Oxford Downs, the breeders of which may well take example here for their edification.

The Shropshire Downs have been steadily rising in public estimation of late years; they are not wholly unknown in Canada. The subjoined remarks will not be without interest on this side of the Atlantic:—"This very useful class of sheep is gaining in popularity, and it is not surprising that is so, for in outline they dimly resemble the more aristocratic Southdown. They are hardy, sound, and prolific, and appear to flourish in all districts where they have been introduced. Numerically they were superior to any class exhibited, and this position they

have held for some years at the Society's shows. Their value will, however, be much enhanced in public estimation when their breeders shall have accomplished the removal of that stain which has been so frequently and so forcibly pointed out of late years, viz., the want of uniformity in type and character; for black, light and speckled faces and legs are seen side by side, with close and open fleeces; thus marring their otherwise good appearance. This should not be, and if their breeders, as a class, desire to hold, as they may do, a foremost position, a "local parliament" of the most intelligent breeders should be called, to determine among themselves some standard or true type to aim at, and once agreed, let no other be recognized; then, and not until then, will the Shropshire Down hold its proper place as a distinctive and high-bred sheep." The report concludes by suggesting to the breeders of Shropshire sheep the extreme importance of endeavouring to establish more uniformity of character, by aiming each at the production of animals possessing the *same qualities*, which all should endeavour to perpetuate, viz:—

1st.—That a Shropshire sheep should possess great depth of firm flesh, indicated by a good muscular neck, straight and wide back, with ribs well sprung, and a heavy leg of mutton.

2nd.—That the face and legs should be of a uniformly dark colour and well covered head; the fleece thick set and free from grey.

Winter Feeding of Farm Stock.

There are two principles involved in the matter of feeding stock in winter. One of them is that sufficient carbon should be supplied to keep up the animal heat of their bodies. Those substances which supply this carbon are principally vegetable, and are known to chemists as carbonaceous compounds. Among them are starch, sugar, and gum, which compose the chief part of the grasses, roots, and some kinds of grain, in conjunction with the elements of water to a greater or less extent.

If we take carbon, which is only a scientific name for vegetable charcoal, and burn it in a stove, it gives out an amount of heat proportionate to the quantity burned. Now, on a cold day, as is well known, more fuel is required to keep the stove at a given heat than on a warm day, and in proportion as the cold is greater so is the consumption of fuel to radiate out such an amount of heat as will counteract the effects of that cold on the animal system. The carbon contained in the food consumed by animals is burned in their bodies in a manner analogous to the burning of fuel in a stove, and gives out heat in the same proportion.

The temperature required in the bodies of all warm-blooded animals is the same at the

equator as at the pole, namely, 98 degrees, that being the normal condition of heat required to keep their circulatory system of blood in a healthy state.

Now, as we cannot well supply artificial heat to their bodies from without, we must keep them supplied with sufficient carbon to generate heat by decomposition within their bodies. This can only be done through the food they consume, and the colder the external air, the more food they will require in order to produce sufficient heat within. This heat is generated through the agency of the process of respiration. Hence they require more food of a carbonaceous character, and will consume more of it during cold weather than in warm.

To keep up the animal system, therefore, in a healthy and thrifty state, they require sufficient carbonaceous food to maintain the animal heat of their bodies to a certain degree of temperature, namely, blood heat.

Now, if the animal system is well nourished, healthy, and full of muscles and flesh, whatever carbonaceous food is consumed beyond the requirements of the animal to maintain the heat of its body, will be stored up in the system in the form of fat.

But the system requires somewhat more than carbon to keep up its functions of vitality. It also requires nitrogen, which is an organized substance in vegetables, analogous to flesh and muscle in animals. It is believed by many chemists that vegetable nitrogen is converted into flesh in the animals without first undergoing the process of decomposition. From this it has been maintained that the nutritive or flesh-forming quality of the food consumed by animals is in direct proportion to the amount of nitrogen it contains. The leguminous tribes of plants are rich in nitrogen. Clover contains more flesh-forming elements than any of the grasses proper. Peas contain three times as much nitrogen, in proportion to their amount of carbon, as Indian corn. Bran contains more of it than fine wheat flour. Hence it comes that in feeding young animals, or those in poor condition, when we desire all excess of food to go towards forming flesh and muscle, and add to the size and weight of the animal before it attains maturity, we must give a due proportion of nitrogenous food along with the carbonaceous, otherwise any excess consumed beyond what is required to maintain the animal heat of their bodies will go towards laying on fat, without there being a fair proportion of muscle to form the lean.

But in animals already full fleshed, arrived at maturity, and therefore in high condition for feeding for the butcher, we must endeavour to lay on fat by feeding an excess of carbonaceous food, of which corn probably contains the largest amount in proportion of any grain we grow.

When we put up young pigs to fatten they need peas in order to supply substance

for their growing muscles; but if we put up a full-fleshed grown hog to fatten we shall find most profit in feeding Indian corn. So if we want our horses or oxen to be able to do hard work, we must give them such a proportion of nitrogenous food as will enable them to replace the constant wear and tear of their muscles, but if we want to feed them up for show or sale we can give them softness of feel and a glossy coat by feeding Indian corn.

In order to enable farmers to make their calculations as to the proportionate value of some of the leading crops they grow, as regards the feeding of stock, we give a table showing the relative proportion of carbon and nitrogen in such as we can find chemical analyses of, premising that they are not to be looked upon as more than an approximation, as different authors give varying results as regards their analyses:—

PROPORTION OF CARBON TO NITROGEN.

	CARBON.	NITROGEN
Wheat	59	10 to 15
Barley	69	6
Oats	50	15
Rye.....	69	16
Indian Corn ..	84	15
Buckwheat	50	14
Peas	49	28
Beans	44	23
Corn Fodder ..	50	3
Meadow Hay..	40	7½
Clover Hay....	40	9½
Pea Straw.....	45	12
Wheat Straw..	35	2
Wheat Bran....	69	18
Potatoes	12	2½
Turnips	10	1
Carrots	10	2

Where there is a large proportion of starch in the food, as, for instance, in potatoes or Indian Corn, there is a great advantage in cooking the food before feeding, for the reason that the heat of the stomach is insufficient to burst the feculent grain of which starch is composed, and unless that is done, much of it passes through the animal in an undigested state.

Black Noses in Shorthorns—Are they a Proof of Impurity of Blood?

Sir,—As short-horned cattle are yearly becoming more and more popular with the farmers of Canada, and the remark is occasionally made that "no pure Shorthorn should have a black nose," I copy an extract from the Shorthorn correspondent of the *English Farmers' Magazine*, remarking ere I do so, that 2nd Lord Oxford, exported to England by Mr. Sheldon, had a very dark nose; also that one of the Duchess cows, bought at Earl Ducie's sale for a very high figure—Duchess 64th, I believe—had a spotted nose; and it is in discussing this question that the correspondent says: "The black nose upon a pedigree Shorthorn is a blemish at present in the eyes of the breeding world. That it should be so thanks to the Yankee, who objected of old to any but

the 'raw nose,' else what harm could that be which is simply a relic of ancestral inheritance from the celebrated Galloway heifer and Chillingham herd, which were used so freely in Cunningham's alloy, and which is continually reappearing in the oldest and best strains—some great Royal prize-takers—of the pedigree stock, as every reader knows? Names I will not give, as I have no wish to depreciate any gentleman's herd. I will only remark that Belvedere had the defect latent in his composition, and that the Chilton cows abounded with it. The oldest breeders in private converse make no secret of this objectionable nasal tint, cropping up occasionally under most unlikely circumstances. From a scientific knowledge of the dip of strata, Sir R. Murchison, amidst the Ural Mountains, predicted the finding of the Australian gold fields. By an analogous acquaintance with the elements that underlie the famous Thorndale bulls, it was long ago predicted by a celebrated living Shorthorn authority, that an occasional black nose must crop out in that stock. I was not myself at the Havering Park sale, but have certainly been repeatedly told by competent authorities that Baron Oxford had undoubtedly a smutty nose. Mr. Eastwood did well to have an inquest in the matter, and we will devoutly hope that the shadowy dim spot which is allowed to disfigure the luminary may not spread nor reappear in his progeny. But as America started the fuss by objecting to black noses, let it now make the *amende honorable* and confess itself hypercritical in the first instance. The emancipation of the blacks has been of late their praiseworthy mission. As regards Mr. Eastwood's herd, be they all tainted in this terrible manner, still they would fetch by auction, I do not hesitate to say, the highest average that has ever been obtained. The gentleman who founded the first Townley herd, and who never meddles with stock of any sort without gilding it, will not suffer from what really is only a vulgar prejudice. I do not mean to say that it would not be better if we could eliminate the dark stain from our herds; but seeing how deeply it impregnates them, I do not hesitate to state that I, for one, should not decline to breed from an animal of excellent points and fine quality, even though he may appear to have carried printers' ink in his scent-bottle. But to settle the matter more immediately and thoroughly—Messrs. Eastwood and Culshaw, are they not in the Shorthorn world of authority to set fashion even equal to that of the Empress Eugenie? 'Let there be golden hair,' and there was golden hair. The Empress had only to ordain and the thing was done. Let our leaders be as resolute, and declare that, at least, the quadron tint shall not condemn a bovine beauty. And as we are upon the subject, let them issue an edict further that the *white* colour shall be equally costly with the red and roan, for have they not proved in the course of their victories

that the white heifer is usually pre-eminent in loveliness of shape, in grace, in wealthiest quality? Again, are not the very richest roans often the offspring of a white cow? Such, at least, has been my own experience. To say that the white are more delicate, is simply not fact, as any one who likes may prove for himself, and as the most experienced breeders and feeders readily allow. To depreciate the cream hue only serves the purpose of a few far-sighted buyers. That Mr. Eastwood is superior to this prejudice is proved by his using that grand white bull, the Hero."

Such, Mr. Editor, is the opinion of a celebrated English Shorthorn authority, and I quote it for the consolation of any of our breeders who may have had a dark nose "crop out" among his thoroughbreds. And I had recently a conversation upon this subject with the manager of one of the largest Shorthorn herds on this continent, who had lately returned from England. He said that it was not considered of such importance there as it is here, though it was, of course, a blemish, but not any evidence of impurity of blood.

EMANCIPATION.

December, 1870.

Wintering Calves.

It is a common belief among herdsmen that it is as much a task to carry a calf through the first winter as it is the second. It has been a fancy of ours to handle calves for three-score years. About the first hard work we tried to do was to yoke up the calves and teach them to go at the word of command. In our boyhood it was the practice to feed them nubbins of corn or a few oats besides their hay, and when we began on our own hook we fed carrots, apples, turnips and potatoes. Forty years' experience has convinced us that there is little trouble in getting through the first winter, if the calf is in fair condition to begin with. We prefer one or all the articles above named to grain.

Calves should have a place by themselves, where they can enjoy their food undisturbed by older animals. A good shed is indispensable; good early cut hay, and free access to good water, are equally important. Straw or leaves for bedding should not be overlooked. Now if you will visit them once or twice a day, always with regularity, with a quart apiece if twice a day, of finely chopped carrots, you will be pretty sure to find them glad to see you, and ready for their rations. We give the carrot preference because experience has shown us that for a calf it has no equal. Regularity is more important with a calf than older animals, though it pays on all. With these provisions, we have scarcely failed in keeping our number as good in the spring as in the fall. We have used a stable, but prefer a good yard and shed with a place where they cannot get on the food with their feet.

Teeth as a Test of Age.

To the Editor.

SIR,—I noticed in your answer to a "subscriber," respecting teeth as a test of age, that while regarding the teeth as amongst the surest marks of the age of any animal, still you admit that high-kept and rapidly-growing sheep may acquire their second teeth much earlier, and according to one authority, by several months or a year.

The usual order in which the temporary incisor teeth are succeeded by the permanent is as follows: When the animal is about twelve months old, the two centre teeth are replaced by two broad ones. The following year, the next two lateral teeth are succeeded by two others, giving the animal, when two years old, four broad teeth side by side; in the third year six, and the fourth eight, when the change is completed.

I carried the "crook and plaid" for many years in the old country, and was in charge of many sheep which were specially fed for the English market; and where those of a certain age were sold in lots, the teeth were the only guide taken to indicate the age, and no instance ever came before me where a year-old animal showed four broad teeth, or a two-year old six; and my experience of sheep in this country is the same, and in fact I never heard of any instance in which sheep, however well-fed or of any breed, which had the teeth usually found in those a year older, till within the past few years, and those were in animals exhibited at agricultural shows, and first at the Provincial exhibition.

In fact, I have noticed when there is a variation from that usually seen, even in the best fed animals, that the permanent teeth in coming are more apt to be quite a time later in making their appearance, but never before, so that when four broad teeth are seen, I am positive that the animal is two years old, and may be several months more, but never less than the two years.

I would not trouble you by writing this, concerning the particular importance I lay on the teeth as the only indication we have of the age of the animal, were it not for the imposition we yearly find at our annual shows, both provincial and local, where animals of a certain age are classed with those of a younger; besides, many farmers wishing to improve their stock are taken in by unscrupulous sellers, even among the *respectable* stock-breeders of Ontario, in substituting two-year olds for yearlings and three-year olds for two year olds, and when challenged by those who have regarded the appearance of the teeth as a mark to denote the age, fall back on the doctrine you wish to inculcate, that high-fed animals *may* cut their second teeth a year before that which occurs in the majority of animals—a doctrine which, in my opinion, must be received with caution.

In order that you may have some idea of the number of such precocious articles which appear at our Provincial Exhibitions, I will give you the following, which came under my own observation, in this section of the country, and I might add to the number. Besides, the fraud was increased by the animals carrying nearly two years' wool on their backs, or at least the past year's and the present summer's, from defective shearing.

In a neighbouring township a farmer bought a ram from a respectable Ontario breeder, for which he paid \$80, with four broad teeth, which was entered both at Montreal and Kingston as a yearling, taking first prizes in both cities. On his attention being drawn to the teeth, he wrote to the seller, who fell back on the high-keeping as the cause; but at the same time sending him, I presume as a *solatium*, two splendid yearling ewes.

This occurred a few years ago, but this fall, a gentleman belonging to this township purchased at the Exhibition in Montreal a ram, which took a first prize, and was guaranteed to be but two years old, which has six broad teeth.

In some of our township shows, sheep to which prizes had been awarded at Provincial Exhibitions have been prevented from competing by being but partly sheared the preceding spring. The old wool adheres together more than the new, is of a darker colour, and by being combed stands out, giving the animal the appearance of having a greater quantity of wool than it really has.

M. MCGREGOR.

Roxborough, Nov. 23, 1870.

NOTE BY EDITOR.—While we can give no other answer than that already published to the question of the reliability of the teeth as a test of age—namely, that this index is the best, but not absolute and without exception—we are glad that our correspondent should call attention to the frequent frauds attempted on the score of the exceptional possibility. That these deviations, however rare, do occur, is attested by the most eminent authorities. Facts of the kind have come under our own observation, and we know from analogous instances in the human subject, as well as among the lower animals, that precocity and abnormal development of the teeth occasionally present themselves. The subject has frequently given rise to dispute, and at one of the recent shows of the Royal Society good evidence was adduced to prove that certain animals which the judges had disqualified from this teeth test, as having been wrongly entered, were really of the age represented, and younger than the teeth indicated. We believe, however, that these irregular cases arise rather from natural precocity than high keep, and are quite sure that authentic instances of the kind are so rare that anything like a frequent representation of such precocity on the part of exhibitors or flockmasters should be received with the gravest suspicion.

Acorns Poisonous to Cattle.

A disease which the London *Field* believes to be caused by the animals eating acorns, has broken out among cattle in England. In 1868, many cattle died in England of a disease, the immediate cause of which was the consumption of acorns. Young cattle were the principal victims, but the older animals did not escape.

In some of the animals which were examined after death, in the autumn of 1868, the roof of the mouth was found to be extensively excoriated; the papillæ in the first stomach (rumen,) were blanched on their apices, and cracked, as if they had been exposed to the action of some powerful corrosive; the leaves of the third stomach (omasum) were commonly much congested, and in many cases hard masses of partly digested acorns were found between them.

The present outbreak of the "acorn disease" happens under precisely similar conditions to those which obtained in 1868—a long drouth, scanty crops of grass, and an abundant supply of acorns, which have been plentifully scattered over the pastures by prevalent gales. In 1868, the first cases of disease were detected at the end of September; this year the affection appeared a fortnight later, but in each instance as soon as sufficient acorns had been blown to cover the lands on which the cattle were feeding.

A Model Stable Keeper.

An exchange in giving an account of one of the best Livery stables in New York, says the proprietor of the establishment is extremely particular as to the men he employs, and the following are among his rules:—

"First—No man will be employed who drinks intoxicating liquor. His men, like his horses, must drink water—cold water only.

"Second—No man must speak loud to any of the horses, or in the stable where they are. Horses of good blood are nervous; and loud, excited conversation is felt by every horse in the stable, who hears it. Excited words addressed to one horse are felt by every other horse who hears them, and keeps them all nervous and uneasy.

"Third—No man may use profane language in the hearing of the horses. They are gentleman's horses, and understand what profane language and the excited tones which accompany it mean."

The last is no doubt an excellent regulation, though the reason assigned is somewhat ambiguous, and rather hard on the "gentlemen."

It is best to handle calves and colts as much as possible, and pet them, lead them with a halter, and caress them in various ways. Young stock managed in this way will always be docile and suffer themselves to be approached and handled, both in the pastures and in the barn.

Veterinary Department.

Tetanus in Horses.

Some time ago, in a former number, we alluded to this alarming and terrible affection, and we have been induced to do so again, as we have had several cases lately in our own practice, and have also been informed of its occurrence in various parts of the country.

Tetanus is a nervous disease, producing a permanent contracted condition of the whole or part of the voluntary muscles. The name usually applied to this disease is "lockjaw," from the circumstance of the muscle which opens and closes the jaw being rigidly contracted. The proper designation of such cases is *Trismus*, signifying that the muscles of the head and neck are principally affected. When the muscles that raise the head and neck are violently affected, producing a crouching of the back, with the head carried stiffly erect, the term *opisthotonos* is applied.

This disease is usually described as of two kinds—*traumatic* and *idiopathic*. Under the former term are included those cases which supervene upon some visible injury, as pricks or punctures to the foot, injuries to any of the joints, or in fact any part of the body. By idiopathic is understood that kind occurring where no visible lesion can be noticed, and possibly resulting from some disordered condition of the digestive organs.

Tetanus occasionally occurs as a result of castration, in instances where the horse has been exposed to cold. It is recorded by a French veterinarian that twenty-four horses were castrated on the same day and by the same method, and afterwards the animals were four times a day bathed in water derived from a very cold spring, and as a consequence, sixteen out of the twenty-four died from tetanus between the tenth and fourteenth day after the operation.

The symptoms of tetanus vary according to the intensity of the attack. One of the earliest symptoms is a peculiar anxious expression of countenance, with a general nervousness and tendency to excitement, causing the horse to tremble slightly, and giving rise to jerking of the tail; and the *membrana nictitans*, or law of the eye, is ejected quickly over the eyeball, and will remain, partially covering the eyeball, as long as the excitement is kept up. This action of the *membrana nictitans* is produced from the increased contraction of the retractor muscle. (By empirics this prominent symptom of tetanus is often mistaken for a local affection, and the unoffending body is barbarously removed.)

There is difficulty in swallowing, and the head is carried stiffly; the muscles of the neck and head are unnaturally prominent, and hard and tense; the jaws are partially

closed, and when in this condition, the tongue is frequently injured in the animal's efforts to swallow. These symptoms increase, and the whole muscular system becomes involved. The patient stands with outstretched limbs and anxious look, and the least excitement produces a paroxysm frightful to behold. The respiratory organs are affected from the impaired action of the muscles of respiration, and a common cause of death is congestion of the lungs resulting from that condition. The pulse is but little affected, except after a paroxysm; the jaws become completely closed; the skin in many instances becomes covered with perspiration; there is frequently great thirst; and the alarming symptoms are greatly increased by the ineffectual attempts at deglutition. The animal becomes gradually exhausted, and death may take place in from four to twelve days.

Treatment of Tetanus

Tetanus is a very fatal disease, and many are the remedies that have been tried without alleviating the painful and distressing symptoms. We only intend to allude to the general course of treatment which should be adopted, without referring to the use of many powerful drugs, which should only be used when their action can be closely watched by professional men.

The patient should be placed in a roomy box, and kept as quiet as possible, the farther from any noise the better. He should be approached carefully and quietly, as the least noise or irritation has an injurious effect. In traumatic cases, the wound or injured parts should be diligently fomented with warm water, or poultices applied when it can be conveniently done. A full dose of purgative medicine may also be given, as eight or nine drachms of Barbadoes aloes.

The extract of belladonna, in doses of one drachm three times a day, appears to be useful in this disease. The horse must be allowed plenty of sloppy food, and if the jaws become completely closed, the strength may be supported by nutrient enemata. Blisters are occasionally applied along the spine, but we consider that they are attended with bad results, and therefore cannot recommend their use.

Mange in Cattle.

The cause of mange is the presence of a minute insect (or *acarus*), which has its habitation in the skin, and burrows its way from the surface underneath the cuticle. Mange in the horse and ox, and scab in the sheep, are one and the same affection, although the *acarus* in each differs somewhat in form and size—each animal having its own peculiar insect, which cannot be transferred to the skin of a different species.

The symptoms of mange are a constant rubbing and itchiness of the animal, which,

when examined, will be found to have the skin denuded of hair in places, and having a sort of dry scurf. When this is removed by the finger, we find small raw-looking pimples, discharging a yellowish serous fluid. On examining the scab under a microscope, the *acari* may be distinctly seen. In long continued and chronic cases, the skin becomes thickened and thrown into wrinkles and folds. The parts more especially affected are the skin about the neck, breast, and thighs, where it hangs loose and in folds.

In the treatment of mange we have to accomplish two things—destroy the insect and ova, and restore the healthy action of the skin. For the former purpose almost all the various poisonous compounds of the *Pharmacopœa* have been recommended and employed, and often to the destruction of the animal. Arsenical compounds, although destructive to the *acari*, are too often destructive to the animal too, and should never be used. Mercurial compounds are equally effective, but should be used with extreme caution, as ptyalism (or salivation) will often ensue; when these compounds are used, especial care should be taken to keep the animal from cold and wet. The following form will be found efficacious:

Soft soap, one pound; Mercurial ointment, four ounces. Well incorporate, rub into the affected places, and let it remain for a day or two, when it should be removed by means of warm water and a brush. Oils of all descriptions, especially animal oils, are destructive to insect life, and having the recommendation of being safe, they may be used in all cases when the disease has not got too firm a hold on the system. Sulphur is also a very valuable medicine in the treatment of skin diseases, and like the former has the recommendation of safety. It may be used in the form of an ointment, but as greasy applications are objectionable, probably the best form of employing sulphur is that of the sulphuret of potassium, or liver of sulphur, dissolved in water. Take liver of sulphur, one ounce; water, eight ounces, to form a lotion to be applied twice a day.

In old-standing and chronic cases, the skin will require more *stimulating* treatment than any of the forms recommended above, and for this purpose the following liniment may be applied: Oil of tar; oil of turpentine; linseed oil—equal parts. Rub well into the skin with a brush every other day. It must be borne in mind, in making choice of a remedy, that no one agent can be deemed a *specific*, and that, to insure success, a change is often requisite, as after a certain number of applications even the most potent remedy will appear to lose its effect. In all cases, however, constant cleanliness is requisite, and the skin should be well washed with soft soap and water after each dressing. A mild laxative may now and then be given, and small doses of flowers of sulphur as an alterative.—*Prairie Farmer*.

Tumour after Abscess.

George McCallum, Tiverton, writes:—"I wish to know how to remove a lump on a valuable colt. The swelling is above the knee joint on the outside of the fore leg. Two months ago the colt was troubled with the flies, and swelled up about the part now affected. The swelling was considerable, but on applying remedies, was reduced. A fluid discharge continued from the part for some weeks, but at length ceased. The opening closed up, leaving a lump as already stated." Enlargements on horses' legs, situated as referred to, are frequently very difficult to remove. When they are of a callous or hardened nature, it is necessary to apply repeated blisters. In the above case, we recommend that the hair be removed from the skin over the enlargement, and an application of biniodide of mercury be used in the proportion of one drachm of the biniodide to an ounce of lard. Apply about two drachms of this ointment every sixth day, rubbing it well in.

Loss of Power in the Hind-quarters.

Paralysis either partial or complete may be produced from chronic disease of the spinal cord, or from direct injury to it, as in cases of fracture of the vertebral column. It also frequently occurs in animals in a plethoric condition, and suddenly put to rapid exercise, which is a frequent cause amongst Canadian horses. In this complaint the parts primarily affected are the coverings of the cord in the region of the loins, the kidneys, and the muscles in relation with these organs, and also the muscles clothing the loins. They become hard and tense, and the parts mentioned are in a congestive state, which, if not speedily relieved, soon terminates in acute inflammatory action.

The predisposing cause is a plethoric state of the system, induced by high feeding, without regular or sufficient exercise. In the winter season farmers' horses frequently stand in their stables for days, are largely fed, and as a consequence, the vascular organs become overloaded, and more susceptible of disease when exposed to any exciting cause, as rapid exercise and exposure.

The symptoms of this alarming affection are very quickly developed. The horse will commence his journey in apparently good health and spirits. After going perhaps for two or three miles, he begins to falter in his pace, and may exhibit lameness in one or other hind leg. He will break into a profuse sweat, which will roll off his body in streams. The stiffness of his loins increases, the breathing is greatly disturbed, causing him to heave at the flanks; the nostrils are distended and the mucous membranes reddened; the pulse is weak, and very indistinctly felt at the jaw; the ears are cold, and when the poor sufferer is forced to move, it occasions him the most excruciating pain,

which he evinces by his moans and woful looks towards the affected region. The muscles of the quarters are swollen, hard, and tense, and in severe cases these symptoms increase until the horse falls and is unable to rise.

When the congestive stage passes over and inflammation is established in the parts, the pain increases, and the pulse, instead of being weak, is full and bounding. The bowels are usually costive, and the urine is very dark; the mouth becomes hot and sticky; the redness of the eyes and lining membranes of the nostrils increase. The animal knocks his head violently on the ground and frequently makes ineffectual attempts to rise. He will raise his fore parts, but the hind are completely powerless.

Shoeing.

If the shoe does not sit perfectly level all around, and if it extends so far outside the hoof that the nails are prevented from entering the crust in the exact spot, and in the very direction, which they should, there will be a constant straining on the nails, which is injurious to the foot, and will be liable to chip pieces off the hoof. The shoe ought to be made wide across the foot at the point where the two front nails are situated. The greatest mistake frequently lies here. In place of turning the shoe, at the toe, very carefully on the horn of the anvil, the smith generally sets it up on its side and then strikes it with the hammer. The consequence is it yields at the centre of the arch, and instead of being nicely and regularly rounded in front, whilst the breadth from side to side is preserved, the nail holes on each side are brought nearer to the centre of the shoe than they ought to be. As a necessary result, the shoe at the front nail holes is too narrow for the hoof, and when it is nailed on, the crust presses on injuriously the internal sensible parts of the foot. It is difficult to convince the smiths of the possibility of laming a horse, by having the shoe too narrow in front. They generally think that the whole difficulty lies about the heel.

In putting on the shoe the nails should be driven with a gentle hand, and they ought not by any means to be clenched very tight. Hard driving and tight clenching will bend the hoof at the place where the clenches are turned inwards and downwards towards the shoe in such a manner as to injure the tender parts contained within the cavity of the foot. Besides, it is not necessary for a man to forget that he is working with the foot of a living animal. The shoe will remain on a sufficient length of time with gentle driving and clenching, provided it is properly fitted to the foot. If it have a thoroughly even bearing, there will be little stress on the nails. The nails are often made so coarse that they split the hoof, and thus keep it constantly broken. A fine nail will answer

all the purposes required if it be made of the right sort of material.

We know of no worse fashion in connection with the application of the shoe, than the one which the smith has, of hammering the shoe on the one side, or the other after three or four nails have been driven, for the purpose of putting it straight on the foot. This is a speedy method of making up for his total want of accuracy in placing it at first, but it should never be suffered to be practised. It strains all the nails which have already been driven, and is thus calculated to do serious damage to the foot.

Shoeing has been regarded by some as a necessary evil; still we are certain it is an evil in the horse or man only when it is improperly performed. We are confident that in both cases it would be advantageous, rather than the reverse, if the artisan could always be made acquainted with the theory of his profession, and had hands, or rather a head, for its due performing.—*Prairie Farmer.*

Cramp.

To the Editor.

SIR,—I have a colt about eighteen months old, who was taken about a week ago with cramp in his right hind leg. It was so severe that he could not move it forward or backward enough to walk for some time. I rubbed his leg well, and he recovered so that he could step as well as usual; but when he stopped walking, on starting again his leg would cramp stiff and straighten out for a moment, and then it seemed relieved, and he could walk again. After about a quarter of an hour he could walk, but was still somewhat stiff. The cramp left for that day and the next, but the third day the other hind leg was attacked in the same way, and sometimes he would step as if he had the string-halt for one or two steps. He has been out to pasture since spring, day and night, until within about ten days, since which he has been in the stables at night and out through the day.

Can this cramp be cured, and what is the best course to pursue? R. H. S.

Fonthill P.O.

Ans.—Cramp, or spasm of the muscles of the limbs in the horse, is not often met with, and may possibly be produced from a derangement of the digestive organs. In your case, we recommend the colt to be kept in a comfortable loose box, and given a couple of quarts of boiled oats three times a day, and the limb, whenever attacked, should be well rubbed with about one ounce of the tincture of camphor. The peculiar action referred to is occasionally produced from a partial dislocation of the patella, through a weakness of the ligaments.

The Horse's Foot.

The majority of people are fond of a very large foot, but we are certain that it is a great mistake. Leaving the diseases to which it is exposed out of the question, we look upon it as an indication that all the bones of the animal are soft and porous. A moderate-

sized, neatly proportioned foot is just as good a sign in the horse as in the man. If we were choosing a man for walking, running, leaping or wrestling, we would never think of selecting a fellow with clock-clicking platters of feet. He would no sooner make his appearance than he would be rejected as totally unfit for the work. Why, then, should we prefer a similar development in the horse? Does he not require a wear-and-tear sort of foot as much as the man? He surely does; and one, too, that he can lift and lay in a lighter manner than if it were a fifty-six pound weight he had attached to his leg. The horse is not intended for passing over a moving sand or a quagmire, and therefore he does not require an enormous foot. In this instance, as in many others, the medium size is far the best. In fact, it is the only safe one. A foot which is either very large or very small, is liable to a variety of diseases, which will be sure to impair its usefulness. The one extreme is nearly as bad as the other. The bones of the foot should bear a reasonable proportion in size to the bones of the leg: and the hoof should be just so large and so strong as to afford perfect accommodation and protection to all the bones, ligaments, vessels and nerves which are contained within its walls. Any deviation from these proportions must be looked upon as a radical defect.—*Prairie Farmer.*

ONTARIO VETERINARY COLLEGE.—The fall term of this valuable institution has just been brought to a close. Four of the senior students passed a most creditable final examination and obtained their diplomas. The test of proficiency was very thorough, and the successful candidates won the highest compliments from the examiners for the satisfactory manner in which they acquitted themselves. The names of the passed students are A. Harthill, jun., of Toronto; — Mayhew, and Charles Elliott, of Sandhill; and John Boyce, Mount Pleasant. Mr. John Elliott, of Sandhill, passed his primary examination on the same occasion. The examinations were conducted by Drs. Thornburn and Rowell, of Toronto; Messrs. E. T. Haggard, V.S., Campbell's Cross; — Wilson, V.S., London; and — Cowan, V.S., Galt.

NASAL GLEET IN SHEEP.—In reply to a "Carder subscriber," we would say that the discharge from the nose is probably due to chronic inflammation of the cavities of the head communicating with the nostrils and nasal chamber, resulting from catarrh or cold in the head. We advise that the sheep be well fed, and the nostrils cleansed once a day with tepid water, taking care to thoroughly dry the parts; and give one scruple of the iodide of potassium in two ounces of water, morning and night, to be continued for eight days. Occasionally, parasites infest the nasal chambers, producing an irritation, followed by a discharge of matter from the nostrils.

The Dairy.

Dairying in California.

Having travelled over the dairy districts of Great Britain, France and Switzerland; with an intimate acquaintance of the dairy lands of the Eastern and Middle States, of the Canadas and several of the Western States, we found, upon the Pacific slope, conditions different from anything seen before. The climate, the soil, and the grasses are different, and, indeed, as compared with other dairy sections, so unlike, that we found it often difficult to draw satisfactory conclusions.

Up to the present time, stock has been kept upon extensive ranges. The soil is wonderfully productive in cultivated crops, but whether any of our artificial grasses can be introduced to take the place of those natural to the soil; whether, indeed, the bunch grass, under close cropping and long continued dairying, will prove enduring, are questions not satisfactorily solved.

While the climate of the coast range is low and uniform in temperature, some of the valleys further in the interior are intensely hot in summer. In the Sacramento Valley the heat is sweltering, and of course, dairying in such portions of the State could not profitably be carried on. The absence of meadows and the sowing of oats or barley for hay is a feature that at first would not strike an Eastern dairyman favourably. Yet when it is taken into account that stock run out all winter in the fields, and comparatively little fodder is required, meadows, it would seem, are of little account and can well be dispensed with. Looking over the country, as we did, at its worst season, when everything is dry and parched, one would not be likely to be misled with impressions too favourable. And yet, from what we saw and heard, we were favourably impressed with Californian dairy lands. We found stock universally in fine, thrifty condition.

It was plainly evident that much less labour was required in the care and feeding of stock here than at the East; that under ordinary management there must be a much less percentage of loss in stock from disease and accident, on account of the more favourable climate; that fancy goods could be easily made, and that with proper skill in manufacture, poor stuff ought to be the exception rather than the rule; that with the same prices for dairy products as at the East, large profits could be realized, because dairies could be managed at less expense, to say nothing of the difference in the price of lands. These, with other advantages, could not be ignored. And in saying this, we do not wish it to be inferred that we advise Eastern people with good farms, eligibly located, and who are doing well, to pull up stakes and go to Cali-

fornia, for we believe something in the old adage, to "let well enough alone." Still, to young men seeking homes at the West, who are active and energetic, and have skill in dairy management, California, in our opinion, offers inducements which cannot be readily found elsewhere.—X. A. Willard, in *Rural New Yorker*.

The American Dairymen's Association.

The Sixth Annual Convention of the American Dairymen's Association was to be held in Utica, N. Y., on Tuesday, Wednesday and Thursday, Jan. 10th, 11th & 12th, 1871.

The full programme for this meeting was not settled on, but the following would, we were informed, constitute the main features of the Convention:

Addresses to be delivered by

Donald G. Mitchell, Editor of *Hearth and Home*, on the question: "How far and in what way the practical farmer or dairyman can best avail himself of the teachings of Science."

Professor George C. Caldwell, of Cornell University, on: "The manufacture of cheese in Germany, France, Switzerland, &c."

Joseph Harris, of the *American Agriculturist*, on: "Fattening cows on Dairy Farms."

The following topics would also come before the Convention,

Is there a gradual decline in the amount of dairy products in all our oldest dairy regions? If so, what is the cause and what the remedy? The subject to be introduced by X. A. Willard, A. M.

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

Should not every dairyman practice soiling his cows in connection with pasturage, and what crop or crops are best for the purpose?

What shall be done with the cream which rises upon the milk during the night, in cases where the Agitator is not used?

Grinding Curds—is it advantageous or otherwise?

Management of a good Butter Dairy.

Would the consumption of cheese be promoted in any considerable degree by the more general manufacture of small cheeses?

Condensed milk manufacture.

What is the best method for maintaining an even temperature in cheese-curing rooms?

Proper construction of cheese factories bearing upon the quality of the product, as also with reference to convenience and durability.

Causes of tainted milk, and the remedies.

What have been the lessons of the past year?

Winter Milk.

Thomas Whitaker, of Needham, Mass., gives his method of treating stock in winter, and its results as follows: In winter I go to the barn at half-past five o'clock in the morning, rather sooner, perhaps, than a good many men would like to go. I give each cow a small handful of hay, and then go to grooming them just the same as I should a horse—first, the curry comb, then the corn broom brush, and then the hair brush—keeping them supplied with hay, a small quantity at a time, for about an hour. Then the boy milks. At night we fill a pork barrel with cut hay with which we mix half a peck of cotton seed meal, and half a peck of shorts. Upon this mixture we pour hot water, and cover with an air-tight lid. In the morning we pour on more hot water, and after milking this is given to the cows; at eight o'clock they are turned out to water; at noon, when the boys come from school, they are fed with hay, and at four o'clock a little more hay; they are then turned out to water. After which they are fed each a pailful of mangolds, rutabagas and carrots cut fine; then cleaned and milked, they each have about two quarts of cotton seed meal, corn meal and shorts—equal quantities of each; upon this boiling water is poured, to which cold water is added enough to fill a pail, with a little salt; after this a little more hay, and they are left for the night.

And now for the result. We sell one hundred and thirty-six quarts of milk a month; in November we sold fifty-seven pounds of butter, in December we shall sell about the same quantity, besides what we have for family use. This is from two cows and a heifer that was two years old last April, and calved the first of May, the other last September. We made butter all last winter, and shall make it all this winter. It pays better to make butter in winter than summer. Churning has never exceeded half an hour, and generally inside of that time. The milk is not scalded, but the cream before churning is brought to a temperature of about sixty degrees.

Selecting Milch Cows.

Hon. Charles L. Flint, Secretary of the Massachusetts Agricultural Society, delivered a lecture on the Principles of Breeding, at the Agricultural Convention at the Massachusetts Agricultural College, from which address we take the following extract:

I will not stop to discuss the indications of milking qualities, but simply to mention some of the most prominent. First, the milk-mirror, or escutcheon. Guenon, a Frenchman, whose life was passed among cows and dairy cattle, and who was a careful observer, discovered certain marks on the udder and its surroundings, which he called the escutcheon, and deemed an infallible sign of milking qualities. It consists in certain perceptible spots, rising up from the udder in different directions, forms and sizes, on which the hair grows upward, while the hair on the

other parts of the body grows downward. This turning up of the hair is an indication of the structure and tissues beneath, and if the mirror is strongly marked, by placing the hand upon it the veins and net-work may be felt.

The milk-mirror is one of the best signs of a good milker, but sometimes this mirror is possessed by cows of inferior quality. In such cases, the other signs of the quality will be wanting. We should find whether the cow possesses such marks as a large udder in proportion to the size of the animal, and soft, thin skin, with loose folds extending well back, of great extension when filled, but shrinking to a small compass when empty; large well-developed milk veins, especially the large ones under the belly, which should extend well forward to the navel, and apparently lose themselves in a cavity in the flesh, into which the end of the finger can be inserted. If the cow possesses these in connection with the mirror, she may be taken as a good milker. The escutcheon is found in young calves, and when found well developed, the calf should be preserved for the dairy.

There are a great number of external signs, which judges consider indications of milk, most of which are found to fail in individual cases; but a good cow should always have a strong constitution, as indicated by large lungs, which are in a deep, broad and prominent chest, broad and well-spread ribs, a respiration somewhat slow and regular, a good appetite, and if in milk, a strong inclination to drink, which a large secretion of milk almost invariably stimulates. In such cows the digestive organs are active and energetic, and they make an abundance of good blood, which, in turn, stimulates the activity of the nervous system, and furnishes the milky glands with the means of abundant secretion.

A bright, sparkling eye, but of peculiar placidness of expressions, with no indication of wildness, but a mild, feminine look; small tapering, yellowish horns; small, thin neck, tapering towards the head; fore-quarters small, compared with the hind-quarters, and a thin, yellow, flexible skin throughout, are pretty sure indications of milk.

Butter Making in Kentucky.

In a late number of the *Rural New Yorker* we find the following statement of the views and practices of Mr. W. W. Ingram, who has been managing a butter factory at Winchester, Ky., for two years past: Presuming that the feed of the cows is of the best character, and that the milk is all right and has been kept at the proper temperature for getting the cream, the first thing to be attended to is

STRAINING THE CREAM—for the churn. The cream should be of uniform consistency when it goes into the churn, as it is difficult to make a fancy product when thin, thick and lumpy particles of cream are placed altogether in the churn. The proper way is to strain the cream into the churn by passing it through a strainer, so as to reduce it to an even or uniform consistency. For this purpose a pan, the bottom perforated with holes, is employed, and by thoroughly mixing the cream and passing it through this strainer, the cream is made all alike. Then, unless the cream is quite thin, water is added, in proportion of one-fourth the bulk of cream. The temperature is raised or lowered until the thermometer is from 60° to 62°. Then, when the churns are ready to be started, two quarts of

warm water, having a temperature of 90° to 100°—but not above 100°—are added for every 16 gallons of cream. Now we are ready for starting the churns, and the dashers should not be made to go too fast nor too slow. Mr. Ingram thinks there is no churn yet invented (that he has seen) that will do so good work as the old-fashioned barrel dash-churn. He prefers this style of churn, and in churning, the stroke of dash should be regulated so as to make fifty strokes per minute. This is another point of importance in making a fancy grade of butter. A great many butter makers spoil their butter in churning, and have no definite idea how the churning should be done. From repeated and long continued experiments, it has been demonstrated that the stroke of dash should not be oftener than fifty per minute, in order to produce the best results. It is desirable that all the cream make butter at the same time. If it come unevenly, or particles of cream get mixed up with the butter when it is ready to work, the butter will be injured and will not keep. After the butter begins to come, add cold water freely, rinsing down the sides of the churn. Then when the churning is finished take out the butter from the churn and merely rinse off the buttermilk with cold water, using the ladle, and not allowing the hands to come in contact with the butter, even though they be "clean as clean can be." Of course it is understood that no one with dirty hands should have anything to do in the manufacture of butter. We do not want a dirty hand or a dirty foot within ten rods of our "golden bale" of butter. Now the rinsing having been attended to, the butter may be salted at the rate of an ounce of salt to the pound of butter, and be particular that your salt is pure. The factory filled salt, when obtained of the Syracuse Salt Company, or their accredited agents, is as good as the best. Work the salt in thoroughly and evenly, and do the working of your butter at this time. Then set aside in a cool place, and let it stand twenty-four hours, when it may be taken up, merely working out "the loose brine," and it is ready to pack.

At the Winchester factory the milk is set in pails surrounded by cold spring water so that an uniform temperature of from 50° to 60° is maintained. It stands in the pool of water for twenty-four hours, when the cream is removed. The cream is deposited in pails, which go to the pools, standing another twenty-four hours, or until it acquires a pleasant acid taste. It is then ready to be churned.

The Strippings

The last drawn milk, every dairyman knows, is the richest. It is important, therefore, to secure this by abstracting all the milk.

Besides losing some of the best and richest milk, there is another loss in not milking clean, as it has a tendency to dry up the cow, or lessen the secretion of milk from day to day. It is very difficult to impress milkers with the importance of drawing the strippings from the udder. Many milkers are in the habit of finishing their work just as soon as the free flow of milk ceases. Such milkers, it is needless to say, entail a heavy loss on the dairyman, in the course of the year, and if they milk many cows, they waste more than their wages. At this season of the year particular attention should be given

to the strippings, especially in those cows which are not immediately to be dried off. The strippings make a very nice quality of butter, and some butter-makers think it pays well to keep them separate from the first drawn milk, setting in pans separately for choice butter. It is a little more trouble to the milker, perhaps, to separate the strippings, as it necessitates having a "stripping pail," but there is no doubt that it educates milkers to milk clean, if of no other advantage.

In conclusion, we say, be careful and secure the strippings; and as the subject seems naturally connected with butter-making, perhaps the following method of preserving butter, recommended by Mr. E. P. Wright, of Green County, N. Y., may be useful to butter makers:—

"Procure good white oak firkins that are perfectly brine-tight; take out the head (first making a small hole, say a quarter of an inch in size), then fill it with cold water; let it stand twenty-four hours before you are ready to use it; then rub, while wet, thoroughly with fine salt; fill your firkin as soon as possible. Your firkin should be of such a size that one can readily be filled in a week or ten days with sweet butter to within half an inch of the head; then place over it a clean cloth, and fill space with coarse salt; put in the head; then fill with strong brine, previously made of coarse salt, and stop it up."

Mr. Wright says that butter packed in this way, and kept in a cool place, will be as sweet in one year as when first made.

—X. A. Willard, in *Western Rural*

WASHING MILK CANS BY STEAM.—Homer A. Kidd, of Walden, Orange county, N. Y., writes to the *Utica Herald* that in order to get good, pure, sweet milk at his factory, he washes with steam all the farmers' cans, both night and morning. Forty quart cans are used, the same as are used on railroads to send milk to the city. He thinks this extra work pays fourfold, for he finds that he cannot trust the farmers to keep their cans sweet and clean. He has learned the importance of having good milk in making a prime article of cheese. With this washing of the cans, and the farmers having tin pails to milk the cows in, he gets the milk in much better condition.—*Prairie Farmer*.

MAN'S inhumanity to cows is often illustrated by abuse of the animal for restlessness caused by the pain inflicted in milking, by sharp finger nails. Mr. J. F. Furnam, Segel, Iowa, writes to the *New York Farmers' Club*, that one of his cows had always been very sensitive; but that after he commenced milking by clasping his fingers clean around her teats, so that his nails could not hurt her, she became gentle. Some cows will bear the pressure of the finger nail, and not resent it; while others will flare up on the first grasp, and knock the pail across the yard; then come pounding and kicking. Let us be careful with our cows, and not act without thinking.—*Prairie Farmer*.

Entomology.

The Codling Moth.

After a series of experiments, instituted the past summer, we have proved that, after all, the hay-band around the trunk of the tree is a more effectual trap for the Apple-worm than the rags placed in the fork of the tree. There is no superiority in the rags over the hay-band, unless the former are made to encircle the tree as thoroughly as the latter. Where rags are placed simply in the forks, many of the worms pass down the tree from the outside of the branches. If the rag is tied around the trunk, it will impede almost every worm that crawls down the tree from the fruit which hangs on, or that crawls up the trunk from the fruit which falls; and it then has a decided advantage over the hay-band, because it can either be passed through a roller or scalded, and used again.

It has been very generally accepted in this country that the Codling Moth is double-brooded, and in all our writings on the subject we have stated it to be so, though none, so far as we are aware, ever proved such to be the case beyond a doubt. Mr. P. C. Zeller, of Stettin, Prussia, informed us last winter that it is only single-brooded in that part of the world, and Harris gives it as his opinion that it is mostly so. Now, such may not improbably be the case in northern Prussia, and the more northern of the United States, though we are inclined to believe otherwise. At all events, this insect is invariably double-brooded in the latitude of St. Louis, and its natural history may be briefly told as follows:—The first moths appear, and begin to lay their eggs, soon after the young apples begin to form. The great bulk of the worms which hatch from these eggs leave the fruit from the middle of May to the middle of June. These spin up, and in from two to three weeks produce moths, which pair and in their turn commence, in a few days, to lay eggs again. The worms (second brood) from these eggs leave the fruit, some of them as early as the first of September, others as late as Christmas. In either case they spin their cocoons as soon as they have left the apples, but do not assume the pupa state till towards spring, the moths from the late matured worms appearing almost as early as those from the earlier matured ones. The two broods interlock, so that in July worms of both may be found in the fruit of one and the same tree. We have repeatedly taken worms of the first brood, bred the moths from them, and obtained from these moths the second brood of worms, and we have done this both on enclosed fruit hanging on the tree in the open air, and on plucked fruit in-doors. In the latter experiments the moths would often cover an apple with eggs, so that when the

worms hatched they would enter from all sides, and soon so thoroughly perforate and devour the fruit as to die of starvation. This is a clear case of misdirected instinct in the parent, caused doubtless by confinement.

From the foregoing facts it becomes obvious that the rags or the hay-band should be kept around the tree, say from the first of May till the fruit is all off; and to be thoroughly effectual, the insects collected in or under them should be destroyed regularly every fortnight during that time.

Destructive Grain Insects.

After a man has fought insects all summer and succeeded in saving his crops, it seems to be no more than a just reward for his labours that he should rest in peace during winter. Usually our pestiferous insects remain quiet during cool weather. There are, however, a few rascals who occasionally creep in among stored grain, and do considerable damage. Farmers in the extreme Northern States suffer less from grain-eating insects than those farther South; and this should console them for the long winters and severe cold weather. Every locality has its advantages and disadvantages, and we doubt if there is really much difference; blessings are showered upon us wherever we go, although it is not human nature to see things in such a favourable light.

We have at the North injurious insects in abundance; but at the South they are far more plentiful, and their season of rest is of very short duration. Insects injurious to stored grain are seldom very destructive in cold climates, unless brought from a warm locality and then placed in a favourable position for continuing their depredations during winter. The common Pea Weevil (*Bruchus pisi*) is probably the most destructive and wide spread of any of this class of insects; but to this there is a northern limit, which, luckily, is south of the highest latitude where peas will grow; hence, we do receive clean, unaffected seed from Canada and the northern countries of Europe.

Until within a few years past, beans have been almost entirely exempt from the attacks of insects, particularly in the Middle and Northern States; but that time is past, and our farmers will have to look sharply and fight vigorously, for an enemy has appeared that will make sad work among beans in favourable localities. This Bean Weevil is not a new insect, for it was described many years ago by that eminent American Entomologist, Thomas Say, and it is known as *Bruchus obsoletus*. It is a very small beetle, not as large as the pea weevil, but similar in form. They do not appear to have much choice of kinds, as they attack the Lima, Black Wax, and all of the choice sorts, a half dozen weevils being often found in a single specimen. We are informed that in Philadelphia, and cities farther South, it is almost impossible to find beans raised in the locality that are not affected by this pest. If the beans are stored in a warm place, the weevils come out during autumn and winter; and we have seen bushels of various sorts of beans within the last few weeks that were entirely destroyed by this pest.

In white varieties, like the Lima, the weevil can be seen through the outer skin before they make their appearance, and affected specimens may be rejected; but with the dark-skinned sorts this cannot be done, and a close and careful examination is necessary.

We would advise every one who purchases seed beans to examine them closely, and if a weevil is found, reject the whole lot, or place them in a barrel or tight box, and keep them there until the insects begin to come out, and then fumigate with sulphur, or pour a little kerosene among the beans and close up the vessel tightly until all the bugs are dead. Many thousands of dollars' worth of beans have already been destroyed this season by the bean weevil; and it is the duty of every man to aid in preventing their increase and dissemination.

THE CORN OR ANGOUMOIS MOTIL.

This very destructive insect is known in Europe as the "Angoumois Moth," receiving its common name from the French province of Angoumois. It is known to Entomologists as *butalia cerealella*, of Olivier, and was described in a work published in Paris in 1762. This pest has now become very abundant in many localities in this country; at least we judge that to be the case, from specimens of grain infected with it received from various sections. It appears to prefer Indian corn, although it will attack wheat, rye, barley, and in fact all of our common cereals. Sweet corn appears to be its favourite food, and our seedsmen are already suffering severe losses from its ravages, although we suppose few of them would be willing to admit that such a great pest could be found in their establishments.

We know, however, that this grain moth is wonderfully abundant, and our object in mentioning the fact is to put the farmer on his guard against such a formidable pest. Harris says of this moth:—"The Angoumois grain insect, in its perfected state, is a little moth of pale, cinnamon-brown colour above, having the lustre of satin, with narrow, broadly fringed hind wings of an ashen or leaden colour; two thread-like antennae, consisting of numerous beaded joints. It lays from sixty to ninety eggs, placing them on a single grain; from these are hatched, in from four to six days, little worm-like caterpillars not thicker than a hair. These immediately disperse, and each one selects for itself a single grain and burrows therein."

Knowing the habits of this insect, we can readily destroy it by fumigation when first discovered, and thereby prevent its increase.

ANOTHER GRAIN PEST.

The true grain weevil of Europe (*Sitophilus granarius*) has become fully acclimated in this country, and destroys hundreds of bushels of grain annually. It is a very small, slender-snouted beetle, not more than an eighth of an inch long and about one-twentieth broad. To the naked eye it looks black; but when placed under a glass its colour appears to be dark brown, with a slightly punctured thorax. This little pest, both in its larva and perfect state, destroys grain of various kinds; and a few days since we found millions of these beetles feeding upon a quantity of corn stored in this city.

Harris states that the female deposits her eggs upon the grain after it is housed, and the young grubs hatched therefrom immediately burrow in the grain, the substance of which they devour. These grubs undergo their transformation in the grain, and do not leave it until the beetle has come to maturity. This is one of the greatest pests that has appeared in this country, and it will be one of the most difficult to get rid of, for it keeps buried in the grain during nearly its whole period of existence. It is said that kiln-drying the grain will destroy the weevil, but this would also be very likely to destroy, or very much injure, the vitality; and for grain kept for seed, the practice could not be recommended.—*R. New Yorker.*

Architecture.

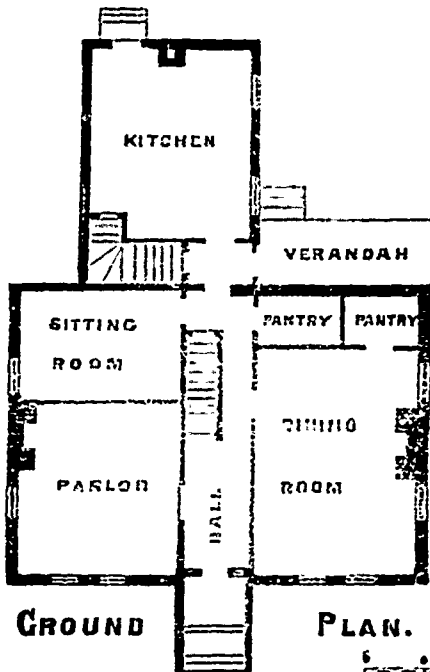
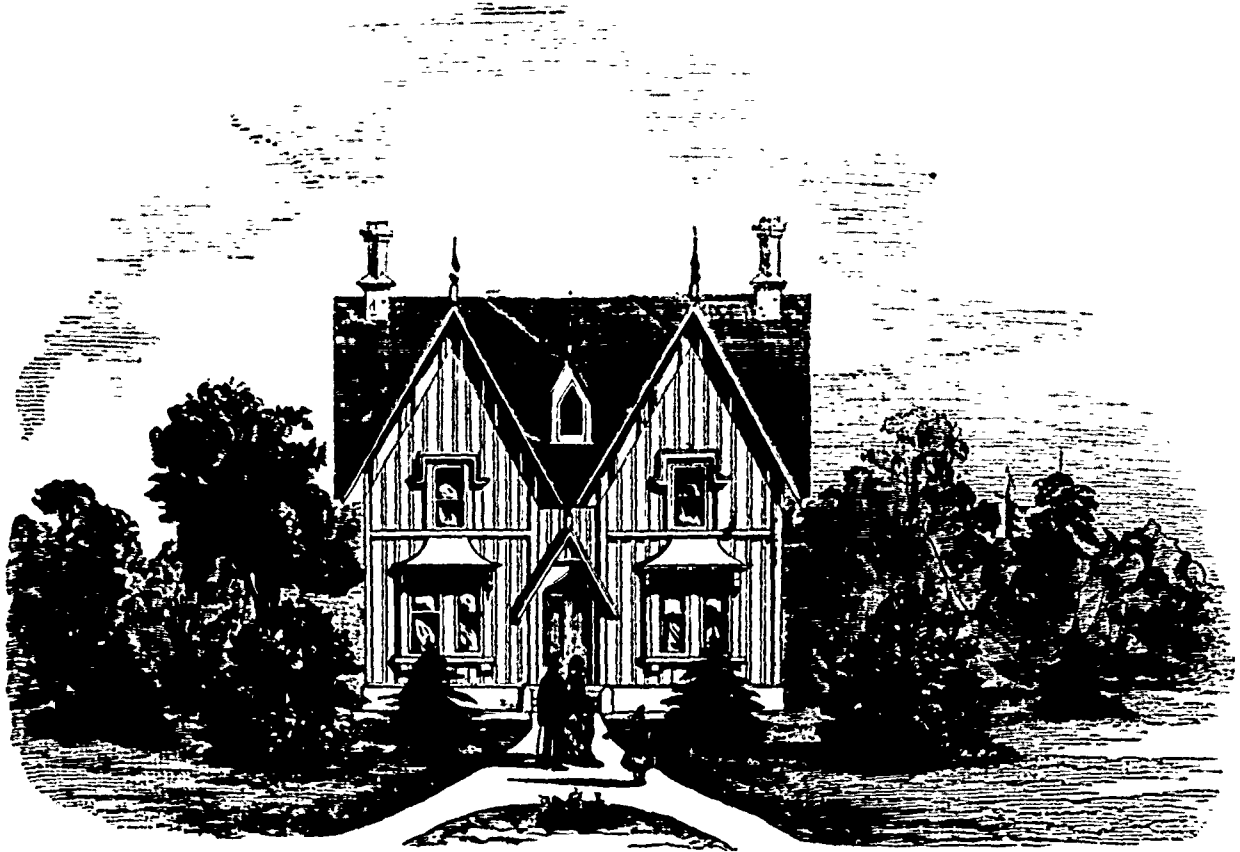
Design of a Small Farm Dwelling.

Once more we present our readers with the plan of a small picturesque frame house, simple in design and capable of being carried out at a comparatively small cost. The ground

of the house, communicating with a lobby in the rear. Connecting with the kitchen, on the right side of the main hall, is a dining or family room, fourteen feet wide by seventeen feet long, having a pantry opening out of it at the end. On the left side of the hall is a parlour and sitting-room, which, if necessary, might be used for a bed-room. The parlour is fourteen feet square, and the sit-

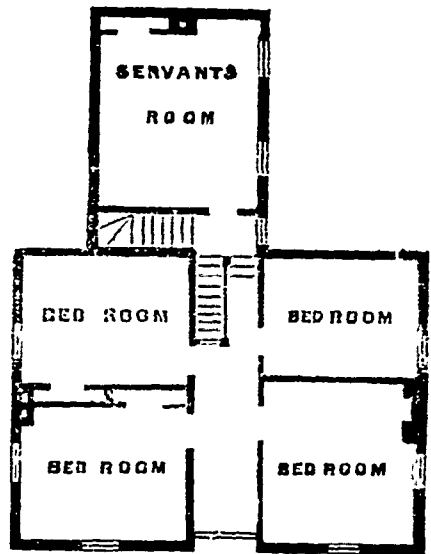
There are fireplaces in the dining room, parlour, and best bed-room upstairs.

On account of the steep pitch of the roof, there will be room for four good bed-rooms, which could be fitted up at some future time if not required at first. The building is to be framed in the usual way, but instead of supporting the sills on cedar posts, either brick or stone piers are recommended, or



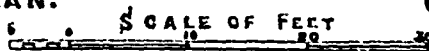
GROUND PLAN.

PLAN.



CHAMBER PLAN.

PLAN.



plan consists of an oblong, with an addition in the rear for a kitchen, with a bed-room over it, having a back stairs leading from the kitchen, meeting on the landing of the main stairs.

The ground floor is laid out as follows: A hall, six feet wide, runs through the centre

ting-room is fourteen feet long by ten feet wide. The store pantry is at the end of the hall, and near the kitchen. The ground floor ceiling will be ten feet high, and the first floor nine feet six inches high. The first floor is divided into four good large bed-rooms, and two wardrobes.

what is better still, a good stone or brick wall foundation. A frame set on a stone or brick foundation will be sound and good when one set on posts would be cracked and twisted, and nearly used up. There will be a cellar under the kitchen, the walls of which are to be of stone. A concrete floor,

when good drainage can be obtained, is preferable to planking.

The exterior of the frame is to be sheathed with 1½ inch tongued and grooved upright boards, and the joints covered with a 1½ inch chamfered batten. In order to make the house warm, the inside of the frame might be sheathed with common rough tongued boards, and then strapped and lathed and plastered. The plastering in all cases should be carried down to the floors. The roof is to be shingled with good shingles laid in hair mortar.

The exterior of the building should be painted some nice fawn or light buff colour, with anti-corrosive paint, as it will last four times as long as the common lead paints. It is now used in all the Government buildings in Great Britain. It can be had in any tint except pure white.

No description of the exterior is needed, as the drawings speak for themselves.

The interior finish of this house can be either plain or ornamental, at the option of the builder. The woodwork, if neatly executed with clear dry lumber, might be simply varnished with good effect. There are many beautifully grained pieces of pine, which, if well selected, and put in the panels of the doors, would look as well as many of the expensive hardwoods. The mouldings might be variegated with butternuts or walnuts with very little additional cost. But these matters, though small in themselves, give elegance and style to a house, and proclaim the man of taste. We advise any of our readers, who contemplate building, to try this, and we are sure their architects will heartily aid them in carrying out their ideas in an artistic manner.

This house, if completed in the ordinary style of finish, could be built for about \$1,200.

How to Avoid Wet Cellars

An excess of water, or too much dampness, in some instances, arises from surface water, and in others, from spring veins that crop out in the cellar. In many instances, when the excavation is being made for a cellar, in a heavy, springy ground, water-veins are cut off two or three feet below the surface of the ground. When such is the case, the water in these veins will be discharged behind the cellar wall, and will settle down and pass along on the surface of the cellar bottom. Sometimes, however, the veins of water are not reached till the excavation is about completed. Then, when the water veins, which pass through the earth like the blood veins through the body of a living animal, are filled with water, the bottom of the cellar will often be covered with water, even when a good underdrain has been provided to convey it away as soon as it has accumulated in sufficient quantities to flow out through the underdrain.

Now for the remedy. The correct way to avoid a wet cellar, is to lay a tile drain entirely around the outside of the excavation, nearly a foot lower than the bottom of the cellar, before the foundation walls are laid. But after an edifice has already been erected, and water appears on the cellar bottom, the most satisfactory way to render the bottom dry is to sink the channel nearly a foot deep entirely around the cellar close to the wall, and lay a course of drain-tiles in the bottom, which will cut off all water-veins, and thus render the cellar quite satisfactorily dry, by conducting the water into the tiles before it can work along toward the middle of the cellar.—*Scientific American*

Repairing Buildings.

An advantage is always gained by the farmer who is fully prepared for cold weather when it comes, and economy is not only exercised in properly securing fall crops, but in putting his buildings in such condition that they shall give full protection against the strong winds and driving storms of winter. Hardly any building is so good that no attention in a mechanical line is needed. An absent shingle upon the roof should be replaced as soon as its absence is discovered, for if not, leakage and decay are sure to follow. Where a shingle has been removed by wind, it may be known that those immediately above and below are not securely nailed, and soon a breach of considerable magnitude will be made—a nail in time will save nine.

Another important thing to notice in connection with the roof is the condition of the ridge-boards. In travelling through the country, hundreds of outbuildings and many residences may be seen with these entirely or in part gone. The opening not being large, but little snow or rain falls through, and does not attract particular attention, but yet the moisture so completely penetrates here that the ridge-pole, ends of the rafters, and roof-boards decay. One hour's work a year will keep everything as it should be.

When the weather-boarding of buildings gets to clattering, it should be nailed up at once. The best way is to take a hammer and pocket-full of nails and give each building a looking over, twice a year, say fall and spring. When a board is allowed to drop off, it soon warps up, or splits in such a way as to be unfit to replace, and new timber has to be used to make the repair.

If stable floors, feeding racks, and mangers need repairing or making new, the time to do the work is before wanted for use. If neglected until the season for stabling stock, the cold weather and press of business will very likely prevent further outlay than patching up so as to do for the present, resulting in inconvenience to the flockmaster, loss of feed by waste, and discomfort to the stock all winter.

During the pleasant weather of October, a good time is afforded to paint buildings. At this season of the year, flies, dust, and the scorching heat of a summer's sun, are not to be contended with. Our experience has been that paint applied in dry and not over hot weather is much more durable than that put on in and exposed to the hot sunshine.

Poplar is of little use until thoroughly seasoned, as it shrinks greatly.

Size of Building Timber.

Many years ago, when good timber was so abundant that a large sill or beam would cost no more than a small one, builders were apt to estimate the strength and firmness of a frame structure by the size of the timbers. If a barn or dwelling, for example, were constructed of large and heavy timbers, it was thought safe to assume that the edifice must be a strong one. But as builders came to study the strength of building materials, they found that the stiffness of a framed structure was dependent on something else than the size of the timber. To illustrate by a practical example, we will suppose that the sills, one foot square, are allowed to rest on the top of a strong foundation wall. Gains for the ends of the joists are usually cut in the sills, so that the timber beneath the joists is simply equivalent to a thick plank, so that there is nothing gained, but much loss sustained, by employing a very large sill, and divesting it of a large proportion of its strength by making numerous gains in one side. The strong foundation wall does not require the additional strength of a large sill. If, instead of a large stick of timber, a joist or plank, say two to four inches in thickness, be employed, having the joists extend entirely across its upper surface, so that the ends will be flush with the face of the wall, the construction will be better in every respect.

1. There will be a saving in the expense for lumber. 2. The timber can be carted and handled more economically. 3. The expense will be reduced more than one-half. 4. The structure will be generally as strong and just as satisfactory, as if large timbers were employed. When the ends of large joists enter a gain only two to four inches, any considerable thrust of one or two of the joists against the sills will start the ends of all the joists out of the gains, as there will be nothing to hold them except friction, since nails are not usually used when joists are let into gains in the sills. But, when the joists extend over the surface of the sills to the face of the foundation wall, and are secured with nails to the sills, it will be almost impossible for a superstructure to spread.

Another consideration of no minor importance is, regarding the proper depth of joists proportionate to their length. When joists sixteen or twenty feet long are required, builders seldom enter into any calculation as to how deep they should be. As a rule, joists eight or ten inches deep are provided, whether a room is ten, fifteen or twenty feet broad, while there may be much economy exercised in the size of the joists, by careful attention to the strength of the materials employed, and the strains to which they are exposed. The rule for determining the proper and economical depth for joists is that the depth must increase as the square of the distance from the point of support on the wall. If a joist sixteen feet long, for example, were eight inches deep, the chief point to be considered in the strength of the materials is, whether a timber of that depth, eight feet from the point of support, will have sufficient strength to resist the superincumbent pressure.

A joist eight inches deep, of a given length, may sustain a ton without any deflection. But let the length be increased to sixteen feet, and the same weight, unless the joist were of superior timber, would crush it at once. Want of attention to these points has led to the construction of buildings in which, when the walls were far apart, the joists were quite inadequate to the superincumbent pressure.—*Technologist*.

Poultry Bard.

Birmingham Poultry Show.

The annual show of poultry at Birmingham, which takes place simultaneously with the cattle show at Bingley Hall, came off this year with its usual *eclat*, and though not quite equal in the number of its entries to those of 1867 and 1868, the largest on record, it surpassed by more than a hundred pens that of last year. The total number of entries was 2,578. There was a slight falling off numerically in Dorkings, as compared with last year, while in Cochins, Brahmas, and Game there was a considerable increase. The Game and white Cochins were remarkably good class; the Buff Cochins were good, though not up to the Birmingham standard, and we are sorry to note the existence of the most reprehensible practices which too often disgrace poultry shows, as indicated by such criticisms as the following from the *London Field*:—"If the Judges had disqualified all the cocks with their tails pulled there would have been a great alteration in the prize list." Anything like trickery should always be a disqualification for the time being and ever after, we should say. Of the light Brahmas, the *Field* says:—"They were remarkable. In the first place the arrival of the specimens from America caused a flutter of excitement, as English breeders wished to see the standard there in vogue. Mr. Simpson's specimens were very large fine birds, necessarily suffering from the voyage, which told on them in the matter of condition. Their defects, judged by our standard, were that they were too creamy in colour, somewhat too leggy, and a little deficient in pencilling on the hackle; but they held their own most creditably, and deservedly found their place in the prize list in despite of the drawbacks of the voyage. The gem of the light Brahmas were Mr. Crook's pullets; one, if we dare use the term, was absolutely perfect." The French fowls were "magnificent." The largest class was that of Game, numbering 374 pens. The specimens of Dominique from America excited considerable attention. The following are the weights of some of the principal pens:—Ducks, white, Aylesbury, drake and duck, first, 18 lbs. 9 oz.; second, 18 lbs.; third, 17 lbs. 16 oz.; fourth, 18 lbs. 4 oz. Rouen, drake and duck, first, 9 lbs. 4 oz.; second, 10 lbs. 6 oz.; third, 18 lbs. 2 oz.; fourth, 17 lbs. 4 oz. Geese, white, exceeding one year, gander and goose, first, 58 lbs. 12 oz.; second, 56 lbs. 5 oz.; ditto birds of 1870, first, 49 lbs. 4 oz.; second, 49 lbs. Gray and mottled gander and goose, exceeding one year, first, 62 lbs. 6 oz.; second, 54 lbs. 6 oz.; ditto, birds of 1870; first, 53 lbs. 6 oz.; second, 49 lbs. 1 oz. Turkeys, cocks, over one year, first, 36 lbs. 4 oz.; second, 35 lbs. 2 oz.; ditto hatched 1870, first, 24 lbs. 6 oz.; second, 23 lbs. 12 oz.; hens, exceeding one year, first, 31 lbs. 4 oz.; second, 29 lbs.

Correspondence.

Farming as a Profession.

To the Editor.

SIR,—It is frequently the subject of remark that the sons of Canadian farmers abandon the calling of their fathers for modes of life less laborious, and, in their opinion, more respectable. Perhaps, as the subject is important, you will allow space for a comparison between the practice of agriculture and some of these very much more dignified pursuits.

Commencing with the three learned professions—Law, Medicine, and Divinity—we may notice that in none of them, judging by the successful, can the hope of rising above mediocrity be indulged, unless some years be devoted to earnest, toilsome, and expensive studies, and, these past, what is the prospect?

In Law. Were the object of law and of lawyers always the impartial administration of justice, a worthy ambition might well inspire the novice with hope to excel in such a noble profession. But will he never find the court of law an arena where subtlety—craftiness—chicanery—are recognized weapons and armour, which he must adopt, or combat at disadvantage? Will he not be expected to use every means to persuade judges, cajole juries, and browbeat witnesses? Can he always choose between brief and brief, and refuse to advocate the cause which his heart suspects to be unjust? Will he not be surrounded with temptations, environed with inducements to become a mere legal mercenary—a purchased free lance—ready, if gold be also ready, to fight the battle of might against right, assist the powerful to bear down the helpless, and aid the criminal to evade punishment? And at the best, supposing all these degradations avoided, he must expect his health impaired by the confinement of offices and the contaminations of court-rooms, his temper soured by the opposition of rivals, and his mind warped by a lifetime passed in petty and vexatious disputation.

In Medicine. The practitioner may expect—nay, must even hope—his slumbers disturbed, his meals interrupted. Day and night, in all seasons and in all weathers, he must, in caring for the health of his patients, be careless of his own. And though he be skilful, laborious, and charitable, how frequently are his abilities decried, his good faith questioned, and his most humane actions ascribed to mere greed of reward. Master the resources of science as he may, how often must he endure the mortification of finding the ignorant empiric preferred to himself? He may—often does—after many years of toil, attain wealth and position; but, as in all overcrowded professions, the blanks are many, the prizes few, and those

few scarce worth the labour necessary to secure them.

In Divinity. In this field there are not—there cannot be—too many labourers; but as none should, so none need, enter it with the hope of obtaining ease, or the view of amassing wealth. He whose talents can secure him these in this employment, could, in others, have obtained more. Of all men of education and refinement, the clergyman is, perhaps, the hardest worked and the worst paid.

I might speak of the merchant, steadily pursuing the phantom of wealth, bending over his books, and spending his life in the dusty counting-house—of the manufacturer, living amid the smoke of coal and the din of engines—and ask whether these lives are preferable to that of the farmer. Why, they themselves, if asked, frequently answer that they hope one day to retire, and spend the evening of life amid rural scenes, amusing themselves in the cultivation of a farm. For the farmer to leave his occupation for theirs, then, would, not improbably, be to return to it when vigour and strength are gone, and he can no longer enjoy it, or, at most, only experience the poor satisfaction of hiring others to do that which he once had pleasure in performing himself.

And, leaving these, let us ask what is the present, and the probable future position, of the Canadian farmer? In the past, he suffered great disadvantage. Raising little but wheat, which had first, with great difficulty, to reach, and then to cross the ocean before finding the market, he exhausted his land, and invited the attacks of insects by the yearly increasing weakness of the growing plant, in endeavouring to raise that which alone he could sell, and which he must sell, to live. But now, all that his dairy can produce or his fields grow, and every head of cattle he can fatten, find ready sale in Canadian, American, or European markets. He will soon carry produce thither much more cheaply, by the network of railways, either now built, building, or projected, which will intersect the whole country; and by canals, which on the completion of their intended enlargement, will allow the transport of freight in unbroken bulk from Superior to tidewater, and to Europe itself. He has paid over-high wages; the tide of emigration set to the States. It has now turned, is flowing to Canada, and will soon give him cheaper labour, and a broader home market. He formerly sent to Europe and to the States for his clothing and his tools. Now, Canadian looms weave fabrics little inferior to those of France or Scotland; and Canadian artisans form, from English iron, tools far superior in shape and temper to those they imported from England, and will soon make yet better ones, when Canadian iron (far better than average English) is available. When we remember, also, that scientific farming here is in its in-

fancy—a mine of wealth which the farmer has never explored; that he has yet to practise and benefit by the methods adopted in other countries—the management and removal of surplus moisture from the soil—the admixture of different earths—the employment of waste substances as manures—the obtainment of shelter and climatic advantages by plantations of trees—it is not too much to expect that the average position of Canadian farmers, if not approaching affluence, will be, at least, one of complete independence.

The Canadian farmer now holds the very position in which the sages of Greece and Rome strove to maintain their rural populations. While those populations held that position, they preserved their liberties, for its occupancy rendered impossible the existence of the luxury, effeminaey, and corruption, which destroyed those great nations. That safeguard is formed by such division of land as, giving many a liberal portion, gives few a very large one. The freehold tenure of this land secures the farmer from the political pressure often exercised by landlords elsewhere, and supports, perhaps, the most free and independent constituencies in the world, consisting of bodies of electors too deeply interested to be careless; too wealthy to be bribed, and who may be, if they wish, too well-informed to be deceived, by unscrupulous politicians. In a country destined to be principally agricultural, the votes of these constituencies will always outweigh the less pure suffrages of the towns, given by men less interested, and more accessible to pecuniary influence. In these words is expressed a great fact—that the Canadian farmer, if he choose, may govern, as he chooses, the country wherein he dwells. In so doing, no man makes him afraid. He is not, as in Continental Europe, awed by governments and dynasties; nor, as in the British Isles, influenced by powerful individuals; nor, as in the United States, outvoted by those who possess neither property nor education. This power is no slight one. His country is one of great resources and vast possibilities, and, well directed, may become, socially, commercially, and politically, one of the first in the world.

There is neither profession nor calling more dignified than that of the agriculturist; and if, in any respect, others are his superiors, it is simply in point of education. To rival, or to surpass them in this, it is not necessary that he adopt their mode of life. Surely, the book of knowledge is not closed to the farmer. Comparing his manner of life with that of the non-farming community, the health and comfort he generally enjoys—the pleasures enjoyed by those of his avocation alone—the delights of a life passed amid the beauties of nature, in the pure air and bright sunshine—will suggest themselves to all. And it may be remarked that the farmer appears under the peculiar care of the Almighty. Of other callings the Scriptures say comparatively little; of that

of the farmer they speak everywhere, and everywhere encouragingly. To him is given the earth, as a manufacturer with whom to deal—one who asks but the refuse, and gives in return the most beautiful and the most valuable. He is surrounded with guides, with assistants, with warnings. Mighty and powerful agencies are his servants. The sweet influences of the seasons—the refreshing showers, the ripening sun—all elements of air and water, earth and sky—labour incessantly for him. His calling is the most important, because the most useful—the most noble, because the least dependent. Luxury and weakness are the offspring of cities; but the fields and the woods are the birthplace and cradle of strength and manhood. From the flock God called David—from the plough Elisha. From the plough, to save his country from foreign thralldom, came Cincinnatus; and to it, his task accomplished, he returned, despising, compared with his rural life, all the wealth Rome could give, and all the honours her senate could bestow.

The Canadian farmer comes of a nation unrivalled for perseverance and determination. There are those of his race who have, generation after generation, farmed in the same name the same lands for eight hundred years. Successful agriculture is the basis of all national greatness. Spaniard and Portuguese, Frenchman and Hollander, have in turn overrun and claimed sovereignty in all the vast domains of Australasia—the immense regions of North America; but their places know them no more, for the Anglo-Saxon has subdued and holds the land by the force of the plough. By it the farmer of Canada has subdued broad and fertile regions. He has yet broader, yet richer, to possess. Were it not better that he continue to pursue his own occupation, rather than exchange it for others more ignoble, or less agreeable, in which he may secure greater wealth, but in which he will find less pleasure—in which he may obtain more consideration from the ignorant, but not greater esteem from the wise? May he not obtain greater happiness, perhaps greater prosperity and higher distinction, if he remain on the land God has given him, cultivating it with the perseverance and success of his forefathers, doing, as they did, his duty by the land, and determining, with sturdy honesty of heart and purpose, to leave it to his successor better than he himself found it?

R. W. PHIPPS.

Toronto, Jan. 2, 1871.

TO CORRESPONDENTS.—We would once more repeat one or two hints to our correspondents—write briefly, legibly, and on one side of the paper only. In making enquiries, do not mix up a variety of subjects. Do not, for instance, send a string of queries in horticulture, entomology, cattle diseases, &c. Write each question separately.

Encourage the Boys and Girls.

To the Editor.

SIR,—We farmers in Canada are too prone to consider our own claims on our children, rather than deal with them as we would probably like to be dealt by. Our sons are expected to remain contented on the farm, working for bare food and clothes until they are twenty-one, and then they are allowed to begin for themselves. They naturally feel that, up to that age, all they have ever got by working on the farm is entirely deficient in encouragement, so far as it is likely to reconcile them to the same course of life; and they also feel they are fit for nothing else. They have not education or business knowledge to enable them to go to some other avocation, and consequently are dissatisfied with the past and quite undecided for the future; and this feeling applies not only so far as their prospects of ultimately possessing a farm of their own goes, but causes them also to be quite undecided as to the advisability of following agricultural pursuits at all. The consequence is that we continually hear the parents say, "Our boys are going away to the States, and cannot content themselves on the farm in Canada." The father has never done anything to make them contented here or on the farm. The boys rarely have any good clothes, and still more rarely any money, and what clothes or money they have had has (with the exception of the most ordinary clothing supplied at home) been the result of working out for some one else, who has paid them for their labour the same as they would have paid any other hired man. This course is bad in every way.

Young men, about the time of what is called coming of age, naturally wish to marry and have a home of their own; and experience has shown that all such ought to marry and settle in life if healthy and inclined to do so; but at the same time they must have something more than the wife—which certainly usually can be obtained for nothing. Such is not the case, however, with farm stock or furniture; all this must be bought and paid for, or obtained on credit, and these very debts so contracted generally cause a sour, unpleasant, and often regretful feeling at ever having married at all, and a wish that they also, like some other neighbour's son, had moved away to some other country or locality, where no thought of marrying or home could from circumstances have been entertained, and where all their earnings could have been expended on themselves. These instances of leaving home and obtaining employment elsewhere, rarely ever end well. They never, or very seldom, do result in anything like a home far away; but the young man moves from place to place, usually with plenty of money for absolute necessaries, but with expenses naturally much increased; and he generally ends after 10 or 15 years' absence, with a return visit to the old home—

stead; having accumulated much knowledge of the evils of such a kind of vagabondish life, and any quantity of insight of taverns, tobacco, drinking, and generally gambling experiences. If he now marries and settles at home, as he often does, he is a pest; and usually demoralizes all the young men who are, like himself in former years, unsettled in their future prospects. In the relation of his fifteen years' absence, of course, there will be much to amuse and interest such hearers in these recitals. In these tales he rarely relates the pains and difficulties he had encountered, or if he does, they afford only the more interest and excitement to the audience.

Now this is true, and thousands know it to be true, and regret when too late that they did not cause the boy, when yet young, to have an interest direct in all that was done on the farm, or at least in something that was continually being raised or provided for him, to be appropriated to his use when the time comes for him to require them. To do this will absolutely pay the father well; for every young man of, say 18 to 23, is worth \$120 to \$140 a year and his board, and five years of this saving would accumulate \$600; and any lad would consider himself rich with such a sum, and, in fact, would not desire to have so much laid by for him; and to avoid temptations this amount need not be in money, but can be paid in cattle, teams, beds, bedding, and a variety of necessaries, all of which can be raised on the farm, and to which for the most part the son's own exertions have mainly contributed. The same principle applies to girls. They must have nice dresses; others do, and they must, or they will at once hire out to those who will not require them to work any harder, and who will pay them sufficient to obtain them. We all know that sometimes on a farm there is little enough to sell to make both ends meet, even where all is sold that can be sold; but we also know that under such circumstances, all grown up children who are able and willing to work, see just as well as we older people—that there must be something wrong somewhere or their labour must be unprofitably applied; for if they hire with some other person they can get plenty of necessaries, and whilst they remain at home their labour is absorbed and they cannot do so.

Crops in Sidney—Fall Ploughing, &c.

To the Editor.

SIR,—It is rare that we can plough so late in the season as now, Dec. 10. We have had scarcely any winter weather. To-day the weather is as fine and warm as in early September. There has not been much interruption to Fall work, and therefore a great deal has been done, especially in ploughing. The value of this operation at this season depends, I think, upon the character, situation, and condition of the soil. Heavy, te-

nacious clays are benefited, because the alternate freezing and thawing tend to pulverise and set loose the constituents of the soil, and they are in a condition to receive and retain moisture, so much needed in such soils. Early fall ploughing is of value to all soils, when the intention is to plough them again in the Spring, unless on hill sides or in places exposed to the action of the Spring freshets; for in that case, much of the valuable surface soil would be carried away and lost. Clover soil I would prefer to plough as late in the Spring as I could, allowing the grass to start, and thus add to the fertility of the soil. If land could be ploughed early in Fall, and sown to field turnips or rye, it would be better, thus affording pasturage at a season when it begins to fail.

Crops in this vicinity were not so good as we anticipated, the yield being light. Clover for hay was almost a total failure, although the second growth will afford some seed and fodder. Experience proves that a varied husbandry is better than depending exclusively upon one crop. What little fall wheat was grown has yielded well.

There is a kind of mania for barley raising at the expense of other cereals. It is surprising that men can expect all kinds of soil, in all sorts of conditions, to raise this crop. From a little more than six bushels sown I had 103 bushels, while many had far less from double the quantity. It was grown, after clover, growing peas first, then barley. My rotation would be, when possible—1st, clover; 2nd, peas; 3rd, barley; 4th, corn, potatoes, or roots with all the manure applied to them, or a crop of buckwheat ploughed under and another sown, succeeded by summer fallowing for fall wheat, seeded to clover. By this course, the soil would be kept in health.

Fall wheat has attained a very rank growth on this Trenton limestone soil, being upwards of a foot high? Some say that pasturing it is an injury. Is this so? I know I would rather have meadows unpastured late in the Fall.

The errors of much Canadian agriculture seem to me to be, 1st. Too little thought for the future, like a traveller starting on a journey, who makes his horse do all he can at the outset, to be exhausted before the journey's end. Borrowing of the future to pay the present, and every loan principal. 2nd. Want of proper rotation; and a better tenants system. 3rd. Want of community in farming. Every neighbourhood should be a sort of agricultural bank, in which each farmer should be a share-holder. Machines, stock, and grain of the best quality should be had at some one place. If each farmer were given his share to do in this way, all would be benefited, and a man could find a good stock animal in his own neighbourhood. The club system would pay. 4th. The education of farmers' sons does not, in general, fit them for the discharge of their future em-

ployments. To many the book of nature is a sealed book, while they may know everything about other books. 5th. That false idea of wealth, which is not contented with a substantial sufficiency, but asks for more acres, instead of in principle doubling the acreage of fertility they already possess. 6th. Hoarding and loaning surplus capital, instead of expending it in useful improvements, affording employment to labourers. Upon the whole, however, farmers are progressing. When they see it to be their interest to invite immigrants to comfortable dwellings and conveniences upon their farms, thus insuring permanent and reliable help, one great step in advance will be taken.

The circulation of practical agricultural information by papers and otherwise, the settling amongst us of immigrants of the true stamp, the introduction of labour-saving machinery, the dairy system, the building up of our cities and towns in manufactures, &c., and the work of the true teacher and minister are doing much for the weal of the farmer, and tending to elevate him and his profession.

The immigration of boys and girls, with the proper safeguards, will do much for the country; but if more from the agricultural districts could be brought out, it would be better; or give those who do come a preparatory training. There are too many false ideas about the country in their heads; they have to be educated over again in many cases. They need to be taught self-reliance, and not dependence upon those who employ them or bring them out; however, they soon learn and become useful.

H. LE BOUTILIER.

Sidney, Hastings.

Leached Ashes for Sugar Beets.

To the Editor.

SIR,—I have recently purchased a farm of 300 acres, the land of which is well adapted to raising roots of the ordinary kind, and in the spring I intend putting in a few acres of sugar beet, provided I can obtain the seed, and would be greatly obliged if you would give me your opinion as to whether leached ashes, of which I have a great quantity, mixed with barn-yard manure, would make a good dressing, and if so, in what proportion. People here tell me that ashes will prove injurious, unless the quantity be very limited.

O. C. H.

REPLY.—We would not advise the use of ashes for this crop, as the presence of potash even under ordinary circumstances, is injurious, and it is one of the constituents to be avoided and dealt with individually in the manufacture of beet sugar. The seed of the most reliable sorts can be obtained here, provided orders with reference or cash be forwarded at once to the wholesale seedsmen of this city—James Fleming, Charles Dawbarn,

or J. A. Simmers, all in the wholesale importing seed trade. Your best course will be to use good deeply cultivated rich loamy land, without manure, as a trial. The great object being to produce *sugar in the beet*, not by any means the largest roots, nothing but absolute practical trial with various kinds of the sugar beet seed, and an absolute test of the different sorts in producing sugar, will enable you to act with safety. This course has been found advisable again and again; and small beets, sometimes, with the best kind of soil, will produce double the sugar that large roots will, under adverse circumstances of soil and seed.

Land and Farms for Lease.

"An English Yeoman's Son" wants full particulars on the subject of the value of wild land, and also of cleared farms, west of Toronto; also whether farms can be rented, and at what rents.

Wild land, near any of the present lines of railroad, except those built last year, is worth from \$15 to \$20 an acre, if of the best quality. If otherwise, and the land is wet or poor, from \$6 to \$10 an acre.

Cleared or partially cleared farms are worth from \$20 to \$30 and \$40 an acre, according to buildings and situation. The cost of clearing land is usually about \$16 an acre, and includes fencing.

There are farms to be rented, west of Toronto, in great numbers, caused by family circumstances, death of elder members, or other casualties. The rent is from \$2 to \$3, and sometimes \$4 per acre, for the cleared—no charge for that uncleared—according to buildings. An advertisement in the *GLOBE* or *CANADA FARMER* would obtain answers, provided it were inserted a reasonable time.

It is impossible to extract green stumps. You must wait six years for them to decay out. We refer you to the back numbers of the *CANADA FARMER* and articles on "A Backwoods Farm," for further information. Every word of those articles is based on personal experience.

INFLUENCE OF FEED ON MEAT.—A "subscriber" asks "whether the quality of meat is affected by the kind of food given to the animal," and particularly if the turnip flavour, so noticeable in the milk of cows fed on this root, would impart a similar flavour to their meat? Most assuredly will the quality of the flesh be materially influenced by the kind of food that has been used, and the flavour and odour of turnips are sometimes very perceptible in the meat of animals that have been exclusively or largely fed on them, more particularly if the beast be killed soon after a meal. We once purchased from a neighbour a hind quarter of a cow that had been choked while eating turnips, and we shall never forget the strong turnip taste that persistently clung to that beef, in spite of salting, and every conceivable mode of cooking devised to overcome the obnoxious flavour.

NOTICE.—Our readers are specially requested to take notice that this number of the *CANADA FARMER* is sent free to all subscribers for the past year; but that no other number for 1871 will be sent to any one unless his subscription for the current year is paid. Intending subscribers should send in their names and remit promptly, as the paper is not now stereotyped, and the number printed will be regulated by the subscription list.

Advertisements for the "Canada Farmer" must be sent in to the office of publication early, and in order to secure their insertion in the forthcoming number, must in no case be later than the 7th of the month.

The Canada Farmer.

TORONTO, CANADA, JAN. 16, 1871.

OUR NEW VOLUME.

Once more we greet our readers on the opening of a new year, and issue the first number of another volume of the *CANADA FARMER*, under every encouragement to prosecute the work with unabated zeal and energy. We tender hearty thanks to all friends—and their numbers increase—who have in various ways evinced their appreciation of our efforts in the past, and shall study to maintain for the journal the reputation already won.

Our aim and objects have been so often set forth that it is unnecessary to reiterate them. We again solicit the co-operation of Agricultural Societies, and all interested in the progress of Canadian Agriculture, and very cordially invite the communications of farmers on all subjects connected with their calling. The pages of the *CANADA FARMER* are always open for temperate discussion, and the records of practical experience on matters coming fairly within the scope of an agricultural journal.

In accordance with our usual practice, we send this first number of the volume for 1871 to all subscribers for the past year; but no future number will be sent to any one whose subscription for the current year is not paid. Our readers will please take special note of this intimation. Letters are continually addressed to us from parties who have not paid their subscription, asking why the journal is not sent. This first number is the only one sent in advance of the subscription. The price will continue, as heretofore, \$1 per annum, including postage. The terms for clubs and societies will be found in the prospectus which accompanies this issue.

Farm Accounts.

A correspondent, over the signature H. P. W., wishes to have explicit information as to the method of keeping farm accounts. We have repeatedly urged the importance of the subject, and now, in compliance with our correspondent's request, we will give, to the best of our ability, a simple plan of farm accounts, such as can be easily adopted by the least educated of our farmers.

H. P. W. gives as a reason why at least fifty farmers keep no account of their receipts and disbursements, to one who adopts some system for this purpose, that many find they "don't know how." Now, we would supplement his very plain, matter-of-fact reason by another—that they will not see the advantage of anything new to them, or of anything approaching to what is generally termed book farming. Many say, what can be the benefit of keeping accounts to me, for I have gone all my life, and not done so badly either, with no attempt at book-keeping? This reason doubtless seems to many as not only feasible but forcible, and yet it may be well answered by the known result of certain parallel platitudes. Many a man has gone for years without a proper provision of clothing, neglecting his body, and defying the rigour of a severe and changeable climate, but in the majority of cases has he not, in his advanced years, earnestly repented of his imprudence?

To those who have never kept accounts, we say, you don't know the advantages to be obtained. Begin at once upon the first day of the new year, and be assured that if you give the attempt a fair trial, you will not relapse into your former ignorance of the state of your affairs and exchequer.

Now, let us give a few instances in which the farmer has done himself much injury by a neglect of some simple system of book-keeping—some tally of his cash and other transactions.

A neighbour ran an account at the blacksmith's shop, and the other day he came in considerable trouble, asserting that the smith had charged him for a great many jobs that he had never had done. What remedy had he? Why, positively none, but an appeal to law, which, with the scant evidence that our friend possessed (his own memory), would in all probability have resulted in an unfavourable verdict, with its accompanying addition of costs. We managed to convince him, sorely against his will, that not only had his whole trouble in this case arisen from a neglect of keeping some simple memorandum book, but that there could be no possible doubt that in his long experience he had both been cheated and had cheated himself over and over again. We showed him the simple system of accounts which will be presently submitted to the reader, and he departed assuring us that he would from that date follow out the advice given.

It is a moral impossibility for a man to retain in his mind a record of all the odd jobs that he has to have done by the blacksmith, the harness maker, the waggon maker, and all those other mechanics and tradesmen with whom he is in business brought in contact. Even allowing, for a moment, that a man should be possessed of such a wonderfully retentive memory as to be able to keep such record in his mind, this power would be found of little value when a bill or a dispute came up for decision in a court of law; there they require black and white evidence on such matters.

Again, at one season a man buys a plough, giving in payment his note of hand; he makes no entry of the transaction, and presently he buys first one thing and then another upon credit. The latter articles are perhaps not absolute necessities; and he would not have gone into debt for them, had he been able, by glancing at his accounts, to perceive how many liabilities he had already incurred.

It may be said against this that a man should do nothing but by cash transaction, and then his only account need be his balance at the bank. The principle is good, but such is not a practical possibility to the general run of Canadian farmers. Until we become, as a class, men of larger capital, the credit system must continue. Moreover, from the very nature of the farmer's business, from the fact that his returns are not quick, but come in at long intervals in large sums, much as we may regret that it must be, yet we cannot now, nor shall we ever be able to adopt the cash system between the farmer and those whom he honours with his custom.

A book might be filled with instances of the losses directly and indirectly resulting from the neglect of book-keeping, and with "awful examples" of men who have sunk deeper and deeper in a mire of debt, simply from the fact that they never did know exactly to what amount they were at any one date liable.

Strictness and accuracy in book-keeping may be arrived at without elaboration or intricacy. If, however, a farmer is able to keep such a close and minute set of books as will enable him at any given time to state the precise cost of each operation in the field, or the exact relative values of different processes of feeding, of different classes of cattle, or of different modes and rotations of cropping, so much the better, not only for the individual, but for the instruction of his brother farmers, and of those who shall come after him.

All that is absolutely necessary is such a current account as will enable a man to find out any day what he owes and is owed, what he has spent in a given time or in a given way, and what he has realized by his sales.

In this money account let him embody his general memoranda, so that he can make this book not only an account book, but also a daily record; this will be the first book, which may be called a *Day Book*.

The second book he may call his *Account Book*, or *Ledger*.

Let us now proceed to briefly illustrate the method of keeping each:—

The following is an imaginary sheet in the *Day Book*, extending over two pages as you open the book:—

DATE	MEMORANDA	ACCOUNTS	CASH RECEIVED,		CASH PAID,		TRANSACTIONS NOT CASH			
			\$	c.	\$	c.	\$	c.		
April, Wed. 1			32	00	1	50				
" "					12	10				
Friday, 10	Daisy calved to-day (bull). 4 lambs from 3 ewes.	40 bushels barley at 50c. Expenses to Toronto with barley. 2 stable pairs. For 20 bushels seed oats from J. Smith at 60c.			2	00		21	00	
" "	Engaged John Jones at \$15 a month from 21st April	Serving cow Daisy, paid Robinson.			8	00		3	00	
Mon., 21	Sent Daisy to Robinson's bull Cullinarf. Sowed 6 acres barley with 14 bushels.	Bought plough from James & Co. gave note for 6 m 12 lbs butter to Jackson at 25c, to go against acct								
October, Sat. 12	Seeded down same with 25 lbs. clover and 30 lbs timothy Threshing—Wheat, 220 bushels off 7 acres. Barley, 100 off 4	Paid three men for threshing								
Mon., 21	Had two horses shod and iron plough fixed at Jacques'	Paid off John Jones, 6 months.			80	00			120	00
Nov., Sat. 23	Put up two hogs to faten, feeding chopped peas 2 steers 3 years old—Hay, turnips, and a little chopped peas	Sold 100 bush. apples to Williams, at 75c. Sold yoke of oxen, and took Smith's note of hand for six months at 6 per cent.			75	00				

And so on.

Now, any farmer can buy a blank book, let it be a good wide one, and rule it himself, as in the above sample; or he can, by paying a little more, have it thus ruled by the bookseller. This ruling extends over both pages of the book opened. The first side is exclusively devoted to important memoranda. The second side has a place for items of accounts, a column for any actual cash the farmer receives, and a column for any actual cash he pays out. Notes of hand, either given or taken, produce given to set off against a tradesman's account, or any money matter in which *hard cash* does not actually pass from or to the farmer, should be entered in the third column.

Now, before we leave this account, it may be well to suggest a method by which the farmer can be certain of keeping the money part correct. 1st. *Enter the day's transactions every night before going to bed.* 2nd. Keep a tin box in the house, into which all your cash at home should be put. Never put any money in that box without at once entering in your day book how you got that money.

Never take any money out of the box without saying in your book what you are going to do with it, except in one case. If you take out a sum, say \$15, before you go to town, and you do not know what the price will be of the articles you are going to buy, instead of entering *then* in your book, put back in the box what is called a "due-bill," that is, a piece of paper with \$15 written on it. Thus, when you come home, you can open the box, and you will see a paper with \$15 written on it, you will then know that you took that sum out of the box. Before you take out that paper, be sure and account in your book for the \$15 taken out of the box. When the entry is made in your book, you can tear up the paper.

Last and most important, *Never trust to memory in book-keeping.*

The *Account Book* or *Ledger*:—
In this book there will be nothing new. The book is used for the purpose of putting in order, one below the other, every item entered in each column of the day book.

The ordinary merchants' ledger, kept by all booksellers, is the very book required. When you have one, divide the book in two parts. One part will be a cash account, or will be composed of the items in the first two columns of the day book, set upon their proper sides. The other will be a "transactions not cash" account, and will be composed of the items in the third column of the day book, set upon their proper sides. In both cases the account will be, as in the day book, carried on upon the two pages of the opened book.

The following examples show the manner in which the foregoing entries from the *Day Book* would be transferred to the *Ledger*:—

TRANSACTIONS NOT CASH.		PAID.	
RECEIVED.	DATE.	RECEIVED.	DATE.
April 21 12 lb. butter, to go against Jack's account against me, at 25c.	April 21	April 1 Exps. Toronto.	April 1
Nov. 29 Smith's note for yoke of oxen for six months at 6 per cent 120 00	Nov. 29	2 stable palls.	
		10 20 bush. seed oats.	
		21 Robinson, serving cow Daisy.	
		Oct. 12 3 men, threshing.	
		21 John Jones, for 6 months wages.	

CASH.		PAID.	
RECEIVED	DATE.	RECEIVED.	DATE.
April 1 40 bushels barley \$22 00	April 1	\$1 60	

And so on throughout the year.

If you require to balance your book at any time, you simply have to add up the disbursements and the receipts separately, subtract the former from the latter, and the result should be the sum that you have in hand. If you wish to know how much seed has cost during the year, you have only to run your eyes down the *Paid* column, pick out each item of seed and add together, so you can find how much you realized by your barley or your wheat, or your cattle, or any other special produce.

In the account headed, Transactions not Cash, by adding up the column on the left page, the farmer can tell at any time what is due to him, and by adding up that on the right page, knows at once how much his outstanding debts amount to.

There are other more elaborate systems of book-keeping, which might be preferred; but we have given one of the simplest, and endeavoured to make the explanation so clear that any farmer may practise the method.

Agricultural and Arts Association.

ELECTION OF MEMBERS OF COUNCIL.

By the provisions of the existing statute, the annual meetings of all the Agricultural Societies in the Province of Ontario must be held during the third week of January—that is, between the 15th and 21st days of the month, at which meetings accounts will be rendered, and the officers elected for the ensuing year. The Act also provides that four of the members composing the Council of the Agricultural and Arts Association, shall annually retire, and their places be filled by a fresh election from the districts which the retiring members respectively represent. The Secretary of the Association has accordingly issued a circular notifying the names of the members who this year retire in rotation and the districts to which they belong. The circular is addressed to the Secretaries of the Societies immediately concerned, and is as follows:—

SIR,—In accordance with the provisions of the Agricultural and Arts Act, I beg leave to state that the undermentioned members of the Council of the Agricultural and Arts Association of Ontario will retire in the month of January next, viz:

District No. 5.—Durham, Northumberland, Peterboro' and Victoria—John Walton, Esq., Peterborough.

District No. 6.—York, Ontario, Peel, Cardwell, and City of Toronto—Geo. Graham, Esq., Brampton.

District No. 7.—Wellington, Waterloo, Wentworth, Halton, and City of Hamilton—James Cowan, Esq., Galt.

District No. 8.—Lincoln, Welland, Haldimand, Monck and Niagara—J. C. Rykert, Esq., M.P.P., St. Catharines.

The retiring members are in all cases eligible for re-election.

In Section 14 of the Act it is provided that the County Agricultural Societies in the several Districts represented by Members whose term of office has expired, shall, at their annual meetings provided for by Section Thirty-Seven of the Act, each elect one person to represent it at the Council of the Association, by a majority of the votes of the members of the Society present at such meeting; and the Secretary of each Society shall, *within eight days after the election, forward to the Commissioner of Agriculture the name of the person chosen by the Society.*

In section 37 it is provided that the said Societies shall hold their annual meetings in the third week, that is to say, between the fifteenth and twenty-first days inclusive of January in each year.

I beg leave respectfully to request your attention to the above requirements of the Act.

I have the honour to be, Sir,
Your obedient servant,
HUGH C. THOMSON.
Secretary,
Agricultural and Arts Association.

It will be seen that by this elective system, the management of our Provincial Association rests with the Agricultural Societies generally, and virtually with the farmers throughout the land, for every intelligent farmer should be a member of an Agricultural Society. It is too much the fashion in some quarters to cast indiscriminate blame on the Association and the governing board. Instead of so doing, it would be far wiser for every farmer to exercise the power of franchise, and see to it that right men are deputed to represent the interests of agriculture in the Council. With well-appointed officers in our Agricultural Societies, and fit representatives on the Board of the Provincial Association, we are persuaded the present law will in the main work well, and the true interests of agriculture be promoted throughout the country.

Foot and Mouth Disease.

This annoying disease has shown itself among the cattle in the State of New York, and Mr. Harison, Secretary of the New York Agricultural Society, has made a report upon it. After stating the character of the disease and the extent of its depredations, Mr. Harison goes on to say:—

“It appears to be almost certain that the contagion was conveyed to Dutchess county by a drover, who, finding on his arrival at Albany with a lot of Canadian cattle that they were sick and unsaleable, and being afraid to go to any large market, shipped the animals to Poughkeepsie, and drove them thence across (by way of Pawling and Dover) to New Milford and Kent, in Connecticut, where the disease, as Dr. Guernsey is informed, is spreading quite extensively. Professor Law found it also in Massachusetts, in the neighbourhood (if I understand him rightly in a hurried interview on the 15th,) of Framingham, and there also the introduction of the disease is attributed to Canadian cattle. Mr. Law recommends the prohibition of the importation of cattle from Canada until the disease shall have been got rid of there; and if this is immediately ordered, and the diseased herds are rigorously secluded and the buildings disinfected properly, we shall probably be out of danger in a few weeks. It, however, we continue importing fresh contagion, there is no knowing where the end will be.”

Now, as we do not doubt Mr. Harison really believes that the disease in question went from Canada to the United States, and is honestly trying to check its inroads, it will relieve his anxiety to know that the story is totally without foundation so far as Canada is concerned. There is no foot and mouth disease in Canada—not one case—nor has there ever been an authenticated case of it known

at any time in this Province. Had such a disease appeared in any part of Upper Canada, a week would not have passed before full particulars would have been communicated to the WEEKLY GLOBE or CANADA FARMER; but nothing of the kind, has been hinted at from any quarter. But to remove all doubt as to the non-existence of any case of the kind in Canada, we applied to Dr. Smith, head of the Veterinary College of Ontario, and got from him the following reply:—

"SIR,—My attention has been called to a statement in American papers that the Foot and Mouth Disease (*Epizootic Aphtha*) has appeared in some parts of the State of New York, and that the disease was introduced into the adjoining State from Canada, where, it is said by the same journals, the malady has been some time prevailing.

"With regard to the existence of the disorder in this country, I have no hesitation in stating my belief that it has been hitherto altogether unknown amongst us, and, as far as my observation goes, the health of stock throughout the Province is excellent, and our cattle are entirely free from any disease of a contagious nature.

"I am, &c.,

"ANDREW SMITH, V. S.

"VETERINARY COLLEGE, }
Toronto, Dec. 29, 1870." }

We trust, therefore, that Mr. Harrison will either withdraw a statement so unjustly injurious to Canadian farmers, or let us know something about that drover. Who is he? What is his name? Where does he live? In what part of Canada did he buy the cattle? From whom did he buy them? and to whom did he sell them? Let us have all the facts, were it for nothing else than the singularity of the whole story. Fancy a herd of cattle suffering under "foot and mouth disease," gathered together in Canada—carried by rail 500 miles to Albany! There so sick as to be unsaleable; but re-shipped, nevertheless, at Albany to Poughkeepsie, 75 miles farther! Driven on foot from Poughkeepsie to Pawling; thence to Dover; thence to New Milford, and thence to Kent, in the State of Connecticut! And we are to believe that the New York and Connecticut farmers bought this rascally drover's beasts covered with "blisters and ulcers," carrying disease and death into their own barn yards. We submit to Secretary Harrison that he really must have that drover hunted up.

Counting acres, taking mortgages, going over stock, and calculating interest, will not answer the question, "How rich is a man?" He is rich or poor according to what he is, not according to what he has.

Knowledge in Agriculture

Every farmer is, or should be, a *practical chemist*. By this we do not mean that he is to be obliged to go through a course of studies, but his observation of the constant changes going on in the forms of matter, and the results attained by the application of different modes of culture and inuring each crop he grows, as well as the influences of atmosphere and climatic circumstances on the growth of plants, teaches him that there is something of the workings of chemical science mingled in all his undertakings, and according as he can clearly trace and understand the tendency of cause and effect, as he may do by the study of agricultural chemistry, so will he be successful in carrying out his undertaking of making the earth teem with riches. Liebig has somewhere said, "there is no profession which can be compared in importance with that of the agricultural, as to it belongs the production of food for man, on it depend the welfare of the human species, the riches of States, and the success of commerce."

We are supposed to know that in all excrements of the live stock kept on a farm there is a substance called *nitrogen*, which by fermentation is converted into a more volatile substance, called *ammonia*, which is invisible, readily escapes into the air, and thus becomes lost, leaving only its salts behind. This substance is the most powerful fertilizer of plants we possess, as no plant can grow up to produce seed without it. There are, however, certain substances for which this ammonia has a greater attraction or affinity than for air, and which therefore can be employed to prevent its escape. These are called fixers of ammonia.

The quantity of ammonia in dung is not absolute, but proportionate, being largest in that of animals that feed exclusively on grain, and larger in proportion in that of the same class of animals, according to the quantity of grain or nitrogenous food they consume. The dung of a horse fed on hay alone is of considerably less value than that of a horse that gets a fair proportion of oats in addition. Cattle fed on grain give a more valuable manure than those that have the run of the straw-yard only.

It is only as the true principles of the nutrition of plants and the nutritive values of different foods of animals and the manures obtained by feeding them become generally known among agriculturists, that they can advance to a proper appreciation of their calling, and discover how much economy can be shown in controlling and managing nature, so as to make the most of her various resources. It is true that in the present time many excellent farmers are apt to look upon such acquired knowledge as unnecessary and superfluous, and rail at it as "book farming;" but they belong to a past generation, and as time goes on and civiliza-

tion advances, it will be considered a reproach for any intelligent farmer to be ignorant of the leading principles of his profession, as embraced in a knowledge of agricultural chemistry. A very concise, and yet thoroughly practical and suggestive work on this subject, and one that ought to be in the hands of every young farmer, is Prof. S. W. Johnson's recent book, "How Crops Grow."

Beet Root and Beet Root Sugar.

We have been inundated with enquiries on this subject, correspondents asking us for the minutest details, to give which would require the editor and all concerned to be practical sugar manufacturers and sugar refiners, which they do not pretend to be. We furnish for the most part only *general*, and not, in cases like the present, *special* information. Persons who wish to go into the depths of the manufacture must enquire and study, and post themselves fully by the perusal of far more elaborate treatises than can be afforded by newspaper periodicals. We cannot undertake to answer all the separate and private enquiries that are made of us, and of those connected with this paper. Parties must read for themselves, form their own judgment, and act on their own common sense. There is plenty of this latter article among our agricultural readers. The object in view is an important one, namely, the production of a cash crop, which, with ordinary cultivation and good farming, should produce at least forty dollars an acre, where the roots alone are raised. The sugar, when made, will produce about as much more, and the crop of sugar beets will be a crop in addition to ordinary crops now raised. People who will not strive for such a prize as this are not fit to be helped, but in this as in all cases they must bear in mind the maxim that "those whom Providence most helps are they who labour with the greatest assiduity to help themselves."

Our inquirers will therefore please not to expect individual answers to questions put by letter on the foregoing articles. The subject will be continued from time to time, and is by no means exhausted. By waiting for another issue of the paper, the very questions asked may, and most likely will, be answered.

HORACE GREELEY'S ESSAYS, "What I know of Farming," which have been published in the *Tribune* every week during 1870, are to be printed in book form, and a copy will be sent, post-paid, to each subscriber who sends \$10 for the Daily, \$4 for the Semi-Weekly, or \$2 for the Weekly *Tribune*, and requests the book at the time of subscribing. This will enable old subscribers to secure the Essays for preservation, on renewing their subscriptions, and new subscribers will, of course, be glad to obtain them, free of cost.

Agricultural Societies.

That these organizations among farmers have done much to advance the interests of agriculture, and encourage improvement in our system of husbandry, admits of no question. It is a good sign of the times that they are becoming more numerous each year, and that their attempts to awake an interest in the minds of the general public on the subject that so much concerns their well-being, namely, the production of their food and clothing, is meeting with great success. While much has already been done in the way of organizing agricultural societies throughout the country, there still remains much more to accomplish before the good work of improvement may be fairly claimed to be in more than a transitory state.

An article appeared recently in a contemporary journal on this subject, that contained many good ideas and suggestions, though at the same time it was rather severe on the management of the Provincial Association, and also desired the abolition of the township societies—a measure we are not inclined to favour, at least for the present, or until the new railways now in progress are in working order. That the township societies have been productive of much good cannot be denied. This is especially the case in the more remote townships, and in those counties that have neither railway communication nor good gravel roads running through them. But in some of the older settled and more wealthy counties it is possible that the days of usefulness of the township societies are passing, and that more advantage may be gained by maintaining only the county societies, and endeavouring to make them as attractive and efficient as may be, by giving them such a liberal support from the farmers themselves as will enable them to offer prizes of sufficient magnitude for improved farms, stock and crops to induce men of capital and large ideas to set a good example of what the country is capable of producing.

Another matter that is deserving of attention is the more general introduction of trials of implements at different points. These will necessarily require time and money, and need to be held at a time when materials can be obtained for the implements to be tried upon. As the advantages would, however, rest principally with the implement makers themselves, and the publicity given to their inventions through the reports of the trials given in the columns of the press, rather than from the attendance of the public at the trials, which is rarely large, it would be only fair that they should bear the actual expense, divided *pro rata* among themselves; or by requiring an entrance fee, as is done to some extent in Europe and the United States, the agricultural society under whose auspices it is held furnishing only the prizes and the attendance of judges and proper officers to superintend the proceedings.

Notes on the Weather.

The year just closed has been somewhat remarkable in its meteorological as well as political aspects. It has been the warmest since 1846, the mean temperature being $45^{\circ} 9$, or $1^{\circ} 8$ above the average, every month being above the average except February, March, and November. The excess of the temperature in this locality for each quarter was as follows: Winter, $0^{\circ} 10$; spring, $1^{\circ} 73$; summer $2^{\circ} 82$, and autumn, $2^{\circ} 67$. The highest temperature was $88^{\circ} 4$, which occurred on the 18th of June, and the lowest temperature $-6^{\circ} 6$, on the 21st February, giving a range for the year of 95° . The warmest day, the 28th of June, showed a mean temperature of $77^{\circ} 7$, and the coldest day, 29th of December, a mean temperature of $0^{\circ} 7$.

Rain fell on 116 days, to the amount of 33.898 inches, or 4.374 inches above the average quantity. The heaviest fall on one day occurred on the 11th June, and amounted to 2.360 inches. Snow fell on 77 days, and amounted to 122.9 inches, or 56.8 inches more than the average. This great excess is due to the heavy storms of snow which occurred in the month of March, 62 inches having fallen in that month. The heaviest falls in one day occurred on the 14th January and 27th March, when 16 inches fell on each of these days.

Thunder storms have been frequent and severe. The first occurred in April and the last in November; the most severe occurred on the 11th June. The total number for the year was 34, being the greatest number in one year since 1860.

No special feature, or deviation from the usual character of the month has distinguished the first of the winter months, and the last of the year. The average temperature has been $26^{\circ} 5$, which is, however, $2^{\circ} 2$ colder than December, 1869. The warmest day was the 5th, with a mean of $38^{\circ} 9$; the coldest the 29th, having a mean of $0^{\circ} 7$. This was also the coldest day of the year. The highest temperature occurred on the 5th, $45^{\circ} 2$; the lowest $-5^{\circ} 8$, on the 29th.

The quantity of rain was 2.430 inches, being 0.778 inches in excess of the average, and 0.160 inches less than December, 1869. The number of rainy days was six, and the heaviest fall occurred on the 5th, amounting to 1.95 inches. Snow fell on sixteen days, and amounted to 15.9 inches, being 1.8 inches in excess of the average, and 8.8 inches more than fell in December, 1869. The amount of snow throughout the Province has been considerably above that which has fallen in the immediate neighbourhood of Toronto, so that there has been good sleighing generally for the prosecution of winter farm work, as well as for the enjoyment of the pleasures of the season, and—a matter of some importance—there is a fair covering for the winter wheat.

Horticulture.

EDITOR—D. W. BEADLE,

CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

Report of the Fruit Growers' Association

We continue our extracts from the very interesting and valuable report of 1869, showing what fruits thrive and what enemies the fruit grower must contend with in the counties of Lincoln, Welland, Haldimand, Norfolk, Elgin, Kent, Essex and that part of Oxford and Middlesex lying south of the Great Western Railway.

APPLES.

The replies make it evident that this part of Ontario, extending from the Niagara River and along the north shore of Lake Erie, to Sarnia, having the Great Western Railway as its northern boundary (as near as may be), is the home of the apple in all its varieties. Here the tree, on soil not too wet, thrives in perfect vigour, and the fruit attains its highest perfection.

The following varieties are those most generally named as being profitable market sorts; they are put down in the order of priority of estimation, viz:—R. I. Greening, Baldwin, Spitzenberg, American Golden Russet, Roxbury Russet, Early Harvest, Snow Apple or Fameuse, Northern Spy, Red Astracan, Fall Pippin and Duchess of Oldenburg.

Messrs. Samuel Stoner, A. B. Moore, A. Morse and A. Francis, speak of some varieties as being too tender, naming Cayuga Red-streak, Ladies' Sweeting, Cooper's Market, Ribston Pippin, Hawley, Baldwin, Greening, Spitzenbergh, Northern Spy and Summer Rose. The committee take the liberty to suggest that the apparent want of hardihood complained of, especially in the orchard, may be due not so much to atmospheric changes as to the character of the soil. A cold wet soil is quite uncongenial to the apple, and induces a feeble and sickly condition which causes the tree to suffer from even a moderate degree of cold, and quite naturally the conclusion is drawn that the tree is tender, and the temperature is charged with that which is in reality due to unsuitable soil.

No disease of the tree is named. Insect ravages are numerous enough. The borer, both the saperda and buprestis, the tent caterpillar, the bark-louse, the aphid, the red humped caterpillar and the codlin moth, all contribute to the work of destruction.

Seventeen out of twenty-one name the spring as the best season for planting. A few prefer planting in the fall on light or gravelly soils.

Dwarf trees have been quite generally tried through this division, and the prevalent opinion seems to be that they are more orna-

mental than profitable, except in the case of pears, of which some varieties are very much finer when grown on the quince stock.

PEARS.

The following varieties of pear are evidently the most popular here, and they are put down in the order of preference, viz:—Bartlett, Flemish Beauty, Seckel, Louise Bonne de Jersey, White Doyenne, Vicar of Winkfield, Belle Lucrative, Duchesse d'Angouleme, Tyson, Winter Nells, Lawrence, Sheldon, Beurre Clairgeau, Doyenne d'Ete, Beurre Bosc, Rostiezer, Beurre Diel, Beurre d'Anjou, Swan's Orange and Brandywine.

Some varieties of pear are spoken of by one or two as tender, but the remarks made by the committee with regard to tender sorts of apple apply with equal force here. It must be that the tree suffers from some local cause, other than the ordinary fluctuations of temperature.

The following ten varieties, set down in the order of their popularity, are most thought of as market sorts, viz:—Flemish Beauty, Bartlett, Louise Bonne de Jersey, Duchesse d'Angouleme, Belle Lucrative, Seckel, White Doyenne, Beurre Clairgeau, Lawrence and Beurre d'Anjou.

The burden of testimony is to the effect that there is not sufficient variation within this division to call attention to the varieties as being particularly hardy.

There is not much complaint of diseases or insects. The fire-blight is the only disease of the tree mentioned, and the borer and slug the only insects.

PLUMS.

The following plums are most popular in the order given, viz:—Yellow Egg, Imperial Gage, Green Gage, Lombard, Smith's Orleans, Yellow Gage, Duane's Purple, Bradshaw, McLaughlin and Coe's Golden Drop.

Plum trees are all sufficiently hardy to thrive in this division.

The following sorts in the order named are esteemed the most profitable, viz:—Lombard, Yellow Egg, Imperial Gage, Blue Plum, Washington, Green Gage, Prince's Yellow Gage and Smith's Orleans.

Nearly every reply stated that the curculio was very troublesome, often destroying the whole crop.

The black-knot is mentioned by nearly two-thirds of the replies, and some of these complain that it has been very destructive.

CHERRIES.

The following cherries in the order given seem to be the favourite sorts, viz:—Kentish, Mayduke, Black Tartarian, Black Eagle, Elton, Napoleon Bigarreau, Yellow Spanish, Elkhorn, Governor Wood and Early Purple.

No variety of cherry is really too tender in this section, but the tree will not thrive in wet, cold soils.

The Kentish, Black Tartarian, Mayduke, Black Eagle and Yellow Spanish, are thought to be the most favourable for market.

The tree is remarkably free from diseases or the attacks of insects, but the fruit is often stung by the curculio, and in some seasons rots badly, especially that of the sweet varieties. In damp and heavy soils is apt to "gum."

PEACHES, &c.

The peach tree grows well throughout this division in warm, dry, sandy or gravelly soil. The fruit is often killed by severe cold in the winter or by late spring frosts. The varieties that are most frequently mentioned are the Early and Late Crawford, Early York, Red Cheek Melocoton, Yellow Alberge, Old Mixon Free and Hale's Early.

The quince succeeds well here in well drained clayey soils, and bears good crops of fruit. It is somewhat liable to a blight similar to, if not identical with the fire-blight in the pear, and to the borer. The Orange variety is the one usually cultivated.

Apricots and nectarines require a warm dry soil, and are not very generally grown because of their great liability to be attacked by the curculio.

The strawberry grows well everywhere. The Wilson is almost unanimously designated as the best for market, the one standing next to it is the Triomphe de Gand.

The raspberry thrives well here, though some varieties require to be protected in winter to ensure a crop. They have not been as generally planted as their value deserves. The favourite is the Black Cap, on account of its hardiness. Of the other sorts Brinckle's Orange leads the list in public estimation, both for the garden and market; the Franconia and Philadelphia follow.

Some speak of the English gooseberries as doing very well, but the almost unanimous expression of preference is for Houghton's seedling, on account of its exemption from mildew. The English gooseberries are very subject to mildew, with but very few exceptions, and these arising from peculiarity of soil, the strong clay being best adapted. Downing's seedling is also not very subject to mildew.

But few venture on giving any remedy or preventive of the mildew. Two say that sulphur applied early, by dusting it over the foliage and frequently repeated during the summer, will do much in the way of alleviation; another says leached ashes spread under the plants; another recommends salt and lime applied in the same way; another a thick mulch of long manure, upon which is to be sprinkled thoroughly a weak brine; and another a coating of gravel.

Not much attention given to the cultivation of the blackberry. Some have found the Lawton or New Rochelle to succeed, but more report that it is too tender for the climate. The Kittatinny and Wilson's Early have been planted in a few instances, but it is too soon to speak of their merits.

All varieties of currants thrive well, but the sawfly worm has been very destructive

during the past few years, so much so, that in many places the trees have been wholly killed. The favourite sorts are the Cherry Currant, White Grape and Black Naples.

GRAPES.

Every known variety of grape supposed to be suited to this climate, has been planted in these divisions. Nearly every one is sufficiently hardy to endure the climate with the exception of the European sorts, but there are some varieties, such as Allen's Hybrid, Isabella, &c., which are quite subject to mildew, and whenever a vine is badly affected by this parasite, the wood cannot ripen, and is killed by the winter. Indeed, the European sorts would many of them thrive well here, were it not for the mildew. Many vines have been reported to be too tender, merely because they had been ruined by the mildew in summer, and therefore died in winter.

Every variety that ripens its fruit before the Isabella may ordinarily be depended upon to ripen throughout these divisions. There are some localities where the Isabella frequently fails to ripen its fruit, but as a general thing the Isabella will ripen throughout the greater part, and those sorts that are earlier may safely be planted. The favourite sorts at present are evidently the Delaware, Concord, Isabella, Clinton, Hartford Prolific, Diana, Adirondac, Rebecca, Iona, Israella, Creveling, and Rogers Nos. 4 and 15. There are 300 acres of vineyard reported in the County of Kent, planted chiefly with Clinton and Concord. There are several also in the neighbourhood of London, probably of less extent, planted with Concord, Delaware, Hartford Prolific and Clinton, while many other varieties are being tested.

The vine is so far remarkably free from diseases. Mildew is spoken of by a few, but most replies state that there is no disease. The only insects mentioned as doing much damage are the thrips and the steel-blue beetle. The former, it is stated, may be very considerably reduced by carrying a torch at night through the vineyard and shaking the vines, when myriads of them will fly into the blaze and be burned.

There is a wide variety of soil and surface within these divisions. Some parts are flat, low and swampy, others rolling, others gently undulating, and few with steep ridges and abrupt hill sides. In the low grounds the soil is quite apt to be heavy, and from the accumulation of water, cold and unsuitable for fruit trees and grape vines, though in the alluvial deposits where there is sufficient drainage to keep the water from becoming stagnant, the raspberry and strawberry will flourish well. But on the rolling grounds, especially those of a limestone character, apple, pear, plum, and grape vine, flourish in great health and vigour, and yield fruit of great beauty, and high flavour. The plum and pear do best where there is

considerable clay, the apple yields its highest flavoured and firmest fruit where there is some clay, while the cherry and peach thrive best in the warmest sandy or gravelly soils. The returns of temperature are very meagre, and of the amount of rain-fall yet more so, hence it is quite impossible to give any average over these counties, but it is believed that the average temperature is much warmer, and the average rain-fall is much less within these limits, than in any other part of Ontario.

Our Best Fruits.

THE RED ASTRACHAN APPLE.

This is our most valuable summer apple. It was brought to England from Sweden in 1816, and from thence it has been scattered abroad throughout the apple region of America. The fruit is exceedingly handsome, the colour being a rich, deep crimson, beautifully heightened by a pale white bloom spread over the surface. In size it is above medium, very smooth and fair, and the flesh is white, crisp and juicy, with a fine, rich, acid flavour. It ripens in the month of August, and may be used as a culinary fruit, but its true place is at the dessert. It sells readily in our markets, taking precedence of every other apple. The tree has proved to be exceedingly hardy, a vigorous grower, bearing young and very abundantly. In all parts of Canada this apple flourishes, and is, if anything, of better flavour in the colder than in the warmer districts, being more juicy and not so liable to become mealy as soon as ripe. It can be safely recommended to every planter as a variety that can hardly fail to give entire satisfaction.

THE DOYENNE D'ETE PEAR.

This is a small fruit, of very good quality, ripening quite early, usually about the end of July. In form it is roundish, slightly pear-shaped; the colour is a deep, rich yellow, frequently shaded with bright red, and covered with gray dots. The flesh is melting and juicy, quite sweet, and of a very pleasant flavour. We esteem it the best of the very early pears that thrive well in this climate. The tree is quite vigorous, bears fruit early and very abundantly, and should have a place in every choice collection.

SUGAR AND ACID IN CATAWBA GRAPE JUICE.—A test was made at Hammondsport, in Steuben county, N. Y., this fall, of the several varieties of grapes grown in that vicinity. Several samples of Catawba grapes were subjected to the test for sugar and acid, and the average of all the samples showed that there were two pounds of sugar in a gallon of juice, and 7.29-100 parts of acid in one thousand parts of juice. That is, the juice stood at about 90 degrees on Oechsle's scale, and the acid was about 7.4 per thousandth.

Roses for Canada.

THE PROVENCE ROSE.

Many years ago, when the varieties of roses were much fewer than they now are, there grew in the garden, where many hours of childhood were passed, in playful dalliance with the best roses of the time, one large showy rose, exceedingly double, which was a great favourite with us all. It had been named, by some not very poetic mind, the Cabbage Rose; and now in maturer years, and with much more extended acquaintance with the Queen of Flowers, our riper judgment places the old Cabbage Rose among the very best we have, believing that however brilliant or select may be our collection, it will not be complete without the common Provence or Cabbage Rose. It seems to flourish in a great variety of soils, and to repay a thousandfold any care that may be bestowed upon it. In colour it is a clear rose, perfect in form, and of exquisite fragrance. The half-open buds are as beautiful as heart could wish, and the flowers are produced in great profusion. No one who has enough of love for the rose to care for it will ever regret the purchase of this old, well-tried and ever admired variety—a variety which, after the lapse of half a century, yet retains its place in the catalogues of the best rose-growers of England and America.

Winter Window Gardening.

Use, for this purpose, only such plants as have been prepared for winter blossoming by giving them two or three months' previous rest. It is altogether too much to expect that plants which have been blooming all summer should be covered with flowers in winter also. Give them plenty of room, so that the air and light may have free access. It is a great mistake to crowd them close together. There is more pleasure in a half-dozen well-grown plants than in any number of poor, weakly, drawn-up things. Keep the temperature as uniform as may be, letting it fall as daylight fades, so that the night temperature shall be from fifteen to twenty degrees cooler than during the day. It is very commonly the case that, for a part of the night at least, this is reversed, and by drawing the curtains and stirring the fire the temperature is increased. Plants should rest at night, which they cannot do unless the temperature be decreased. When the weather will admit of it, give the plants fresh air, but never let it blow in directly upon them. To sit in a draught is as bad for plants as for human beings. Dropping the top sash a little way, less or more, according to the warmth of the weather without, is the most convenient method. Keep them clean, removing the dust from the leaves by a gentle shower-bath of tepid water from a fine-rosed watering-pot, and by gathering all the dead leaves and all the insects that appear.

Fairy Rings.

A correspondent sends as the following account of one of these curious circles of greensward, commonly known as "fairy rings," of which he desires an explanation. He remarks that:

"The vulgar belief in England is that they are caused by fairies dancing round the circle. Some think they are the consequence of lightning; others say they are produced by ants.

"The lawn is now (Dec. 9, 1870) a faded or yellowish green; the ring or hoop is of a grassy green, several shades darker than the lawn, as if it had been manured. The inner diameter is five and a quarter feet, the width of ring or hoop about eighteen inches. The ground is exposed to the sun on three sides, but sheltered at the north by an oak, which is, however, not over it. No tree has been removed from the spot, but it has been part of the lawn for years. No cows or other animals have been allowed on the lawn. There are no marks of ants. No manure heap was made on the spot, and even had there been one, it would not have left an open spot in the centre. The whole lawn was equally covered with a top dressing last autumn, which was raked off in the spring.

"A gardener could not plant a more perfect circle. They are always about the same size."

The explanation of these curious circles is that they are caused by the presence of certain species of fungi, of which the champignon is an example, whose natural habit is to grow in this manner. That is, the original germ sends out concentric filaments under ground, and the outer ends of these filaments become a bed of fungi, which from their manner of production are arranged in this regular ring. They fertilize the grass, and give to it in that particular circle a peculiar verdure. Our correspondent is mistaken in supposing that they are always of the same size.

The Japan Lilies.

These have been found on trial to endure our winters even better than our native lilies, and to flourish in a greater variety of soils. They surpass all others in beauty, and are most deliciously fragrant.

To grow these beautiful flowers in perfection the ground should be dug fully eighteen inches deep, and enriched with surface soil from the woods that has been well mixed with plenty of coarse sand and old—not less than two years old—well rotted manure. The bulbs should be set five inches below the surface, and remain for several years without being disturbed.

The white Japan Lily is pure white, without any spots, and is very healthy.

The red Japan Lily is really the most beautiful variety, marked with deep red spots, and suffused with a rich roseate hue.

There is a faintly spotted variety, known as *runcatum*, which is very delicately coloured, but the bulbs seem not to possess as healthy a constitution as the other varieties.

We believe the variety known under the name of *roseum* is nothing more nor less than the red Japan Lily, which varies in its shades of colour very considerably, and although often priced higher in the nursery-men's catalogues than the red (*rubrum*), not worth any more in reality. They are now so low in price as to be within the reach of every one, and we hope very soon to see them in every garden in the country.

Bark-splitting.

To the Editor.

SIR,—“Observer’s” plan for protecting fruit trees from injury by mice is an excellent one; but as regards the splitting of the bark, I cannot see it in the same light that “Observer” does. He seems to think the splitting is caused by water collecting in a small pool, and freezing around the roots. Allow me to give my views and experience as to the cause:—

After conversing with several of my most painstaking neighbours on the subject, and carefully examining many trees, I have come to the conclusion that the splitting is caused by hard freezing at night, and the heat of the sun through the middle of the day. In the first place, I ask if any person has had trees injured either on the east, north, or west side, by the splitting of the bark? I find that in nearly every instance the bark is split on the south or south-west, say from twelve to two o’clock, when the sun is at its greatest heat, and takes the frost out of the bark, in a narrow strip, up the body of the tree, and the frequent freezing and thawing through the latter part of February and through the month of March, in my opinion, is the cause of the bark splitting. Trees that are inclined to lean to the north are the most in danger, as they have but little top on the south to protect the sun from the body. Trees inclined south, with low bushy tops, are not in much danger. Young, tender trees are more liable to split than older ones. The bark is more tender and glossy, and the sun has more power on them than on older trees. We have one tree in our orchard that met with the misfortune several years ago, of having its bark split up the body, and in several instances the branches, where they lay fair for the sun, had cracks in their bark a foot or more long. I was on the look-out for such things, and noticed it soon after the bark was split, and applied some grafting wax both to the body and branches. The tree is now as sound and thrifty as though nothing had happened to it. The best preventive that I know of is

to shade trees most in danger. Say take two strips of board six or eight inches wide, with one straight edge, nail the flat of one to the edge of the other, which will form a half square. Set them up on the south side of the trees, and let them remain until warm weather sets in; then they can be removed and all will be safe. Any other substitute for a shade will answer every purpose.

Tramping or packing the snow down around fruit trees several times through the winter is a great preventive against mice burrowing trees, especially the outside row, where the snow is apt to drift. Soft damp lays are the best, as the snow will pack hard, and the mice cannot work through or under it if properly done. It will also have the tendency to make the trees start later in the spring, and throw the blossoming out of the way of the late frost that is so apt to injure the fruit.

A LOVER OF FRUIT.

December, 1870.

Gen. Grant Tomato.

We have been very much pleased with this variety of tomato, and believe it will give very general satisfaction. It matures its fruit, which is smooth, solid, and fine flavoured, early. A writer in the *Rural New Yorker* says that last spring he sowed some seeds of the General Grant tomato in a hotbed, transplanted them to the open ground in the latter part of May; when they were a foot high he commenced tying them up to stakes six feet high, and after the first blossoms set cut off all the laterals, leaving only the main stem to grow. Then he applied liquid manure, which he obtained by setting up a leach of horse manure. His first ripe tomatoes were gathered the 24th of July, and plenty of them. The vines were covered with beautiful smooth tomatoes, and continued to bear until the frost killed them.

To Prevent Mice from Gnawing Trees.

To the Editor.

SIR,—A good many communications have appeared in your paper, suggesting several ways in which to keep mice from gnawing trees. I will give you my plan:—

I use felt roofing, or such as is put on flat roofs. Take one end of a roll of felt, lay it on a board and draw a knife across it, the width you require to go round the trees; then divide crossways, and you have two pieces, and so on to the amount required. Two or three hundred pieces can be carried in a basket while putting on. One roll will do from four to five hundred trees, according to size, and the same amount can be cut in one hour.

The material is cheap, and durable if taken care of. If the felt is very moist with the tar, tie it loosely round, else it

might do injury. It will soon harden, and the strings can be cut away, when the felt will remain if wanted, and loosen with the expansion of the tree, and thus be of service for several years. It might also prevent injurious results from insects ascending the trees in summer. In this way I have gone over an orchard of nearly one thousand trees, and when spring comes, I hope to feel satisfied with my labour, as considerable damage was done last winter.

It is not necessary to purchase first-class material; stuff that is somewhat damaged will do quite as well. The greater part of mine cost me nothing, having been taken off an imperfectly laid roof.

J. McL.

Owen Sound, Nov., 1870.

Grape Culture.

To the Editor.

SIR,—I am an amateur grape grower. I have two hundred vines planted, mostly Concord; so far they have been growing wild, but next year they will require pruning and trellising.

Now, I do not want to buy my experience in grape raising as dear as I have in some other things that I have tried—bee keeping for example. I want the experience of others, and will spare no expense to get it, if it is worth having.

Andrew Fuller on the Grape, I believe, is considered the best authority in America. I have his work; and his system of pruning, trellising and training appears to be sensible, practical, and easy, and one that I would like to follow; but I wish to begin right, for whatever system we adopt must be followed up, as if not it will be a loss to the grower.

Some of our Canadian grape growers say, prune and pinch; others say, no, let the vine grow. Some adopt the arbour system of trellis, others approve of the straight trellis; some say, run the wires horizontally; Mr. Fuller says, run them perpendicularly, and I think his reasons are good for doing so.

Now, the question I wish to ask is this: Shall I, as a new beginner, take Mr. Fuller and follow his system right through to the letter, or take my chance, and do as Tom, Dick or Harry advises, or as my own ignorance may dictate? An answer to the above may be interesting to others besides,

A. C. ATTWOOD,

Vanneck P. O.

THE BERBERRY AS A HEDGE PLANT.—The berberry is a pleasing ornamental shrub, and answers well as a fancy hedge or screen; the bright yellow flowers in spring, and the scarlet or purple fruit in fall, which often hangs on nearly or quite all winter, producing a very pretty effect. A deep, rich loam suits it best, but it will grow well in any dry soil.

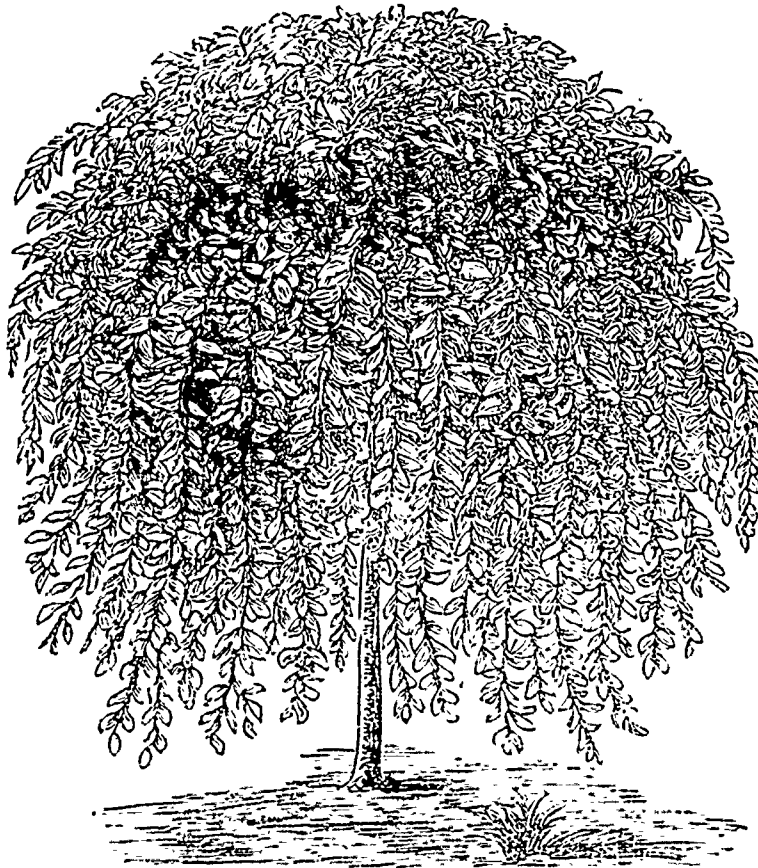
The Aspen.

Every country place should have that very coquette among trees, the aspen. It seems never to sleep. Its twingling fingers are playing in the air at some arch fantasy almost without pause. If you sit at a window with a book, it will wink, and blink, and beckon, and coax, till you can not help speaking to it. That must be a still day that does not see the aspen quiver. A single leaf will sometimes begin to wag, and not another on the whole tree will move. Sometimes a hidden breath will catch at a lower branch, then shifting, will leave these still, while it shakes the topmost twig. Though the air may move so gently that your cheek does not feel it, this sensitive

Like all things mortal it has its failures and its disappointments, and there are some things hard to understand. But it is never without its rewards, and, perhaps, if there were nothing but successful cultivation, the aggregate enjoyment would be less. It is better for the occasional shadows that come over the scene. The discipline, too, is most salutary. It tries our patience and it tries our faith. But even in the worst of seasons, there is far more to reward and encourage than to dishearten and disappoint. There is no day of the year without something to afford tranquil pleasure to the cultivator of flowers, something on which the mind may rest—rest with profit and delight.—*Corr-hill Magazine*

The Profits of Grape Culture.

We find in *Hearth and Home* an account of the cost of growing and selling the grapes from 2 73-100 acres of vineyard. We condense the account for the benefit of those of our readers who are interested in grape culture. The cultivator puts down the cost of cultivation from the time of gathering the grapes the previous autumn to the commencement of picking them this year at \$233 51. This includes cultivating, hoeing and pruning, and 800 pounds of ammoniated superphosphate of lime applied to parts of the vineyard. The cost of picking, packing, and marketing, including freight and commissions and wear and tear of crates, he gives at \$227 88, making total cost for



The Kilmarnock Willow.

tree will seem all of a shudder, and turn its leaves upward as with shuddering chill. It is the daintiest fairy of all the trees. I have seen such fair sprites, too, in human form. But one does not get off so easily; if he takes too much sport with them. The aspen leaf makes no wounds. Its frolics spin no silken threads which one cannot follow and will not break.—*Henry Ward Beecher*.

Gardening in the Evening of Life.

I would recommend to every man, especially in the autumn of his life, to take to gardening, if he has not already experienced its pleasures. Of all occupations in the world, it is the one which best combines repose and activity. It is rest in work and work in rest. It is not idleness; it is not stagnation; and yet it is perfect quietude.

We give our readers an excellent engraving of this very handsome and very popular drooping tree. So perfect is the representation that no description is needed. The tree has been planted in nearly every part of the Province, and we believe it has been quite hardy everywhere. Its graceful, pendant habit makes it a very ornamental tree, when planted around our dwellings. It is grown by grafting it at the desired height upon the black willow stock, from which point the branches grow downwards.

The winter meeting of the Fruit Growers' Association of Ontario will be held in the Court House, in the City of Hamilton, on Tuesday, the seventh of February, 1871, commencing at 10 o'clock, a.m., and continuing throughout the evening.

the year \$461 39. His crop of grapes was 14,500 lbs., for which he received \$1,096 76, so that he received \$635 37 profits. In this he does not make any charge for rent of land nor taxes, nor for taking the grapes from the vineyard to the railway station. His vineyard contained 2,000 vines in bearing and 250 younger vines. They are mostly Concords, a few, about one-tenth, Delawares, and some Hartford Prolific, Diana, &c. His first Delawares sold at 20c. per pound, his first Concords at 10c., his Delawares falling to 10c. and his Concords to 6c. before the close of the season. He had about 12,000 pounds of Concords and 1,200 pounds of Delawares, the remainder being divided by some eight or nine other sorts. By this it would seem that it cost him about 31-5 cents to grow and market a pound of grapes; that the average gross receipts were about

7½ cents per pound, and the net proceeds about 4 1-3 cents per pound; or \$232 per acre.

These grapes were marketed in the city of New York. We wish some of our readers who marketed their grapes here would give us the results. We are frequently asked if grape-growing will pay, and only those who have had experience can satisfactorily answer the inquiry.

Keeping Cabbage in Winter.

Three facts need be borne in mind in putting cabbage away for winter, namely:

1. Repeated freezing and thawing will cause them to rot.
2. Excess of moisture or of warmth will also cause them to rot.
3. A dry air, such as is found in most cellars, will abstract too much moisture from the leaves, injure the flavour of the cabbage, causing some of the heads to wilt and the harder heads to waste.

The most convenient way in this climate is to open a furrow in some well drained place, deep enough to receive the heads, place a couple of rails at the bottom so that any surplus water may be readily carried off; place the heads compactly together on the rails, with the roots up, and then cover with soil, ridging it up just enough to cover the roots an inch or so with soil.

Low-headed Standard Pear Trees.

The advantages obtained by heading standard pear trees low are the following:—

- Protection to the body of the tree.
- Shading the ground and keeping it cool.
- Light is admitted into the centre of the tree.

The fruit colours better and grows larger. The trees come earlier into bearing.

Closer planting can be practised, and thus the trees protect each other.

Pruning and thinning out of fruit can be more conveniently and expeditiously done.

MR. QUINCE ON THE BEURRE D'ANJOU PEAR.—The Beurre D'Anjou is only a moderate growing tree, and with us has done better when planted as a standard. This is the case wherever I have seen this variety growing. It is only when a few trees are wanted for family use in the garden that, on account of its coming sooner into bearing, the dwarf will answer the purpose better than the standard.

GRAFTING LARGE TREES.—In grafting large trees commence at the top, and leave the side branches for another year. The higher branches draw the sap more than the lower branches, and if first grafted the result is more likely to be successful. Never graft all the branches in one season. It is dangerous to the health of the tree to make the leaves so disproportionate to the roots.

Poetry.

The Two Armies.

BY OLIVER WENDELL HOLMES.

As life's unending column pours,
Two marshaled hosts are seen—
Two armies on the trampled shores
That death flows black between.

One marches to the drum-beat's roll,
And wide-mouthed clarion's bray,
And bears upon a crimson scroll,
"Our glory is to slay."

One moves in silence by the stream,
With sad yet watchful eyes;
Calm as the patient planet's gleam,
That walks the clouded skies

Along the front no sabres shine,
No blood-red pennons wave;
Its banner bears the single line,
"Our duty is to save"

For those no deathbed's lingering shades:
At honour's trumpet call,
With knitted brow and lifted blade,
In glory's arms they fall.

For these no clashing falchions bright,
No stirring battle cry;
The bloodless stabber calls by night,
Each answers, "Here am I."

For those the sculptured laureled bust,
The boulder's marble piles;
The anthems pealing o'er their dust,
Through long cathedral aisles.

For these the blossom-sprinkled turf
That floods the lonely graves,
When spring rolls in her sea-green surf,
In flowery, foaming waves.

Two paths lead upward from below,
And angels walk above,
Who count each burning life-drop's flow,
Each falling tear of love.

Though from the hero's bleeding breast
Her pulses Freedom drew,
Though the white lilies in her crest
Sprang from the scarlet dew—

While valour's haughty champions wait
Till all their scars are shown,
Love walks unchallenged through the gate,
To sit beside the throne.

Under the Leaves

Oft have I walked these woodland paths
In sadness, not foreknowing
That underneath the withered leaves
The flowers of spring were growing.

To-day the winds have swept away
These wrecks of autumn's splendour;
And here the fair arbutus flowers
Are springing fresh and tender.

O perfect flowers with lips of bloom!
Surpassing in their beauty
The pearly tint of ocean shells,
To teach me faith and duty.

Walk life's dark way, ye seem to say,
In hope and faith, foreknowing
That when man sees but withered leaves,
God sees the fair flowers growing.

Apiary.

Bee-keeping—Review of the Past Season.

It will be remembered that 1869 was one of the poorest seasons we have known in Canada for many years, so much so that during the winter, over half the bees in the country perished for want of stores; hence the spring of 1870 opened with the number of stocks greatly reduced, and many of them in nearly a starving condition. But as 1869 was one of the poorest, so, on the other hand, 1870 has been one of the best honey seasons for several years. The result is, that bee-keepers find their loss made up in numbers and their stocks in fine condition, while nearly all have taken some surplus honey.

There was, however, in many sections, a drawback experienced in the Spring. The dry weather causing the honey harvest to fail, soon after the drones made their appearance, they were in many cases killed off by the workers, though this did not affect the gathering of honey, as drones do not gather honey; yet it retarded swarming, as the rearing of queens will not commence to any considerable extent when such is the case, and swarming is delayed until another set of drones are sure to make their appearance, the queen always laying drone eggs again as soon as the honey harvest improves. In all sections where this was the case, more or less swarms came off too late to gather sufficient stores, except in cases where they were put into hives containing old or empty combs. Fortunately for such swarms, there were a large number of such hives this season, owing to the great loss of bees last winter. It is always to be regretted by every bee-keeper when anything occurs to retard swarming in this country, as there is so little Fall pasturage. In the section of country where I reside we have nothing growing from which bees can gather anything worth mentioning after the end of August. If they hold their own during September we are quite satisfied; but in sections where buckwheat is grown it is different. The amount of honey gathered this season, I believe, is greater than for several years. The amount taken from single stocks far exceeds anything ever before recorded in Canada. This, however, is partly owing to the introduction of the honey extractor, as by using it more honey may be obtained from a stock than would be stored in boxes under the most favourable circumstances. In order to use them, however, bee-keepers must use frame hives, and become accustomed to handling their bees.

The demand for Italian bees is fully equal to any previous year, and the reputation they have gained for being better workers is generally well sustained. Many are Italianizing their entire stock, and will keep no others, while others are satisfied with sim-

ply crossing. And it certainly is a great improvement to the stock to cross them with Italians, for the hybrids are fully equal to the pure, as honey gatherers.

The demand for frame hives is gradually on the increase, and several new patterns—new in some features of their construction—have been introduced; and one is led to believe that, ere long, the market will be flooded here, as in the United States, with a "thousand and one" hives, many of which are not worth the expense of making. As a whole, the interest taken in bee-culture has been as fully maintained as in any preceding year, and the prospects are fair, as the Fall has been exceedingly mild, that the season of 1871 will open under very favourable circumstances.

Though we have had some drawbacks in this country not experienced in many of the United States, yet we are holding our own with our American bee-keeping brothers very well; and though we may not as bee-keepers make quite so loud a buzzing, yet we gather about as much honey. True, they have several journals devoted principally to the interests of bee-culture (of which the *American Bee Journal* is prince), and bee-keepers' associations are organized in several of the States; yet, in point of scientific knowledge, we are as a community of bee-keepers not a whit behind them. We have our yearly meetings known as the "Ontario Bee-keepers' Association," which is held at the time and place of the Provincial Fair. Though we have no journal devoted entirely to the interests of bee culture in the Dominion, yet the CANADA FARMER, has an apiary department, and several of our leading agricultural and secular papers devote a column to the interests of bee culture. May we not hope to see the day when Canada shall be the "land that flows with milk and honey?"

J. H. THOMAS.

Brooklin, Ont.

Bee-hives.

To the Editor.

SIR,—In answer to the note by the editor at the end of my article in the November number of the CANADA FARMER, I must say that if the reporter had made proper enquiry as to the use of certain parts of the hive, he would have been able to give a more intelligent description of it.

The wire screen is to "keep the moth out" when you ventilate, the bottom board being withdrawn altogether. A person residing in the township of Clarke did so with the hive in question during the extreme heat of last season, and obtained thirty pounds of surplus honey.

"Clippings" are wax, not dirt. I have never come in contact with a hive so constructed that the frames formed the inner wall, and I experienced no difficulty in obtaining a patent on such a hive.

Though "rejected as inconvenient by most bee-keepers," I can only say that the New Dominion Bee-hive has met with the largest sale of any hive yet offered in Canada the first year of its patent. It obtained a first prize at the Exhibition at Montreal, over the Thomas hive; also in the county of Northumberland.

B. LOSIE.

Cobourg, Ont.

Superstition among Bee-keepers.

It is strange how tenaciously we cling to old ideas. The teachings of early days—even the sayings of our grandfathers and grandmothers—have become as it were incorporated into our very selves. No matter if ever so superstitious, we cling to them, loth to give them up. Perhaps in nothing do we see more of this than in the common ideas respecting the nature and habits of the honey bee.

So much is this the case that even among bee-keepers of considerable scientific culture, there are still held wrong ideas, detrimental to proper management. Doubtless we have escaped from the dense fog of superstition in which Virgil wrote, when he tells us that after killing a steer, it was left in the sun, until

"The tainted blood, in this close prison pent,
Begins to boil, and through the pores ferment,
Then wondrous to behold, new creatures rise,
A moving mass at first, and short of thighs.
Till shooting out with legs, and impud with wings,
The grubs proceed to bees with pointed stings."

Yet there is much of superstition still clinging to us. Even in far more modern days the ideas so poetically expressed by Virgil were entertained in England by one who was called the "great husbandman of Cornwall, old Mr. Carew of Anthony." Here are his directions:—"Take a calf, or rather a sturk (steer) of a year old, about the latter end of April; bury it eight or ten days till it begin to putrefy and corrupt; then take it forth of the earth, and opening it, lay it under some hedge or wall, where it may be most subject to the sun, by the heat whereof it will—a great part of it—turn into maggots, which, without any other care, will live upon the remainder of the corruption. After a while, when they begin to have wings, the whole putrefied carcass should be carried to a place prepared, where the hives stand ready, to which, being perfumed with honey and sweet herbs, the maggots, after they have received their wings, will resort."—[Bees, their Habits and Treatment, by the Rev. J. G. Wood].

But we need not go back to the days of old Mr. Carew, for even in our own Canada, with all its boasted light and knowledge, and even in our immediate vicinity, not five years since, I heard an old lady remarking that "the drones are bees that have lost their stings and grown fat." There are those, too, among us, who still hold that her majesty the queen bee is a "he," and they continue to proclaim her

ladyship a "King," also believing that the drones are females, and lay all the eggs. By the experienced bee-man it will be seen at once, how a bee-keeper holding this long-explored theory must fail in his management of bees. But among us there are other equally gross errors, such as that drones are required to nurse the brood; that young bees ordinarily elaborate wax, construct the comb, nurse the brood, and do all the internal work of the hive; that a certain class of bees are appointed to attend the queen, constituting the "queen's train," that only certain bees gather honey; that young bees never gather honey till three weeks old; that another class are appointed as guard, and are relieved in regular order and at regular hours; that old bees do not build comb.

These are all errors—relies of superstition, if I may so speak—and whoever adheres to them is still in the fog. If drones were required to nurse the brood and keep it warm, as is thought by some, how is it that they exist only during the hottest weather, when, frequently, nearly all the bees require to leave the brood in order to reduce the temperature? In early spring, when more heat is required in the hive than is generated by the bees, there are no drones. The truth is that drones are the male bees, and when the swarming season is past, being of no further use, they are destroyed.

That young bees only elaborate wax is another great error. Every worker bee may elaborate wax, construct comb, gather honey, nurse the brood, attend the queen, stand guard, or lie idle, as the case may be. In a perfect colony there are sufficient bees to do all the work required, and some to spare; and apparently when there is anything to do there are bees ready to do it voluntarily. And, when large numbers of bees are lying out idle on the hive, if removed and given a queen they may be made, so to speak, to adapt themselves to the circumstances and go to work, performing all the different kinds of labour in the hive with equal facility with those that were labouring when they were removed.

As soon as we are thoroughly rid of all the false ideas relative to the honey bee, we shall have better management, and bee culture will be more interesting and remunerative.

J. H. THOMAS.

Letter from Texas.

ITALIAN BEES WANTED.

MR. PRINTER:—I hear you print a bee paper, and I want you to send me one to look at, to see if I like it. Cousin Upson was to see us when he came out prospectin', and he told us about a new sort of imported bees, with striped backs and harmless queen stings that never hurts nobody, and can be handled, like well-riddled rye, without gloves, in the

hottest weather. Mr. Printer, can't you put me in the way of getting a swarm? I would like to have them soon. Can't they be sent by telegraph, so as to come before Christmas? Swarming time begins here soon after New Year, when the drones have got over their holiday frolics. How much will they cost, though? If they are very dear I could not afford the expense till after the next cotton crop is made. They say a queen sells for five or six dollars! Just think of that! A little insect about an inch long selling at the price of a yearling colt! If the workers sell in proportion, won't they come high, as cousin Zeke reckons it out? Or if you put them down at even a picayune apiece, and there are thirty thousand in a hive, only think what a decent hive would come to, by the rule of three! Then there's the freight too, if they come by telegraph, for the ticking clerk always figures that out high; and so I am afraid that, if sent by that line, they might in the end cost more than they would come to. Aunt Dinah says she has read somewhere in the *Penny Whistle Weekly*, (which she gets every now and then at the grocer's around some articles she buys,) that they now send these bees, or some kind of bees, by mail. That, I think, must be a good joke! Why, you might as well send a basketful of hornets by express. Phew, I'd like to stand at a safe distance away and see our soberfaced, steady old postmaster open the bag when they arrived! Wouldn't he make tracks in a hurry, and feel worsen nor if he had a dozen big fleas in his ear? No, no, that's a little too tough a yarn to be swallowed by any but a greenhorn, though it is in print. But have those bees I will, sooner or later; and if they don't come quite as dear as cousin Zeke reckons it out, I'll get you, Mr. Printer, to have 'em sent by rail and steam even if they don't come till after Christmas. I'd have them sent by express, but that moves as slow in these parts as our old ox team used to do in old Middlesex, on Saturday nights, when we had hitched up to go sparking. Don't forget to tell the man who sells and sends them, to be sure to give them food enough for such a long jaunt, as the poor things mustn't be let starve on the way. Tell him, too, to pack them well and hurry them forward—"with speed and care, right side up!"

Before I close, Mr. Printer, I want to say further, that when cousin Upson was here he told us there was great fuss just now away up in the old States, about some wonderful improvements in bee-keeping, which he said they call "scientific beeculture." Now what is that? How is it made? How big is it? Is it patented? Does it go by machinery? Is it hard to learn how to work it? Or must you go to a sort of school or college to study how to manage it, till you get the hang of it gradually? Couldn't an old man learn to fix it up, without leaving home?

MILES HADAWAY, 3d.

Palo Pinto, Texas, Nov. 3, 1870.

—*Am. Bee Journal.*

Household.

Packing Pork.

We condense the following directions on this subject from the *Utica Herald*. To prevent meat spoiling in the process of curing, it is absolutely necessary that it should not be allowed to freeze before salting. Pig killing is often done in very cold weather, when the meat quickly freezes on the outside, before all the animal heat has escaped from the thicker and deeper portions of the body. Such meat is very apt to become tainted. This matter being first attended to and the carcass taken under cover before it has frozen, it is next cut into convenient pieces for packing.

The barrel must, of course, be perfectly sweet, and so strong that there will be no danger of leakage. This being insured, begin the packing, by covering the bottom of the cask with an inch and a half of coarse salt. This is to keep the pork from coming in contact with the cask, and thus being exposed to the air and the almost certainty of tainting. Then put in the layers of pork, one upon the other, and between the layers a heavy sprinkling of fine salt. Cover the last layer with one-half inch of solar salt. Let the barrel stand in this condition three or four days, so that the salt shall work into the meat, and form a sort of brine with the water of the meat itself. Afterwards pour on brine enough to just cover the meat, but not to cover the top layer of salt. Pork packed in this way will keep always.

When the pork is being used, the brine should be dipped out as the pork lowers in the barrel, so that a layer of salt may be on top. If the brine is allowed to cover the salt, it will have particles of animal matter floating upon it which, by thus coming in contact with the air, will become tainted, and will communicate this taint to the body of the pork below by means of the brine. A great deal of pork is lost in this way which could have been saved sweet and good if the brine had only been lowered with the pork. None but the best kinds of salt should be used. They will cost but a trifle more, and are often the means of saving an entire barrel of pork.

Domestic Recipes

CHRISTMAS OR NEW YEAR'S CAKE.—Five pounds flour, (prepared,) three and a half of granulated sugar, three of good butter, one dozen eggs, half a pint of wine, half a pint of brandy, one ounce of nutmegs, one ounce each of cinnamon, cloves and mace, one pound of candied citron, two of currants, two of stoned raisins, half a pint of yeast. Make a sponge of the yeast, and set it in the middle of the flour, cover it and let it rise; when risen, add all the other ingredients—previously working the butter and sugar to a cream—bake in one large shallow pan after raising a second time, and when done frost, and trim it with a holly wreath.

COTTAGE PLUM PUDDING.—A pound and a half of flour, four or five eggs, and a pinch of salt, a little nutmeg, one pound of raisins, half a pound of currants, sugar to taste and a little milk. Make a thick batter with five well beaten eggs, a pound and a half of flour, and a sufficient quantity of milk. Then add the currants, washed and picked, the raisins stoned, a little nutmeg, and sugar to taste. Mix all well together, and boil it in a basin or floured cloth for quite five hours. The peel of a lemon grated, and a few pieces of citron cut thin may be added.

BAKED SOUP.—Take one pound of lean beef, chop rather fine, place in an earthen pot which will hold five quarts of liquid.—Slice and add two onions, two carrots, two tablespoons of rice well washed, a pint of whole or split peas, a teaspoon of black pepper, and a tablespoon of salt; pour over all one gallon of cold water; put the lid of the jar on it, or a close fitting plate, and bake four hours. This is a nice, wholesome dish.

TO KEEP STOVES BRIGHT.—Make a weak alum water, and mix your British lustre with it; put two spoonfuls to a gill of alum water; let the stove be cold, and brush it with the mixture, then take a dry brush and lustre, and rub the stove till it is dry. Should any part of the polish become dry as to look gray, moisten it with a wet brush, and proceed as before. By two applications a year, it can be kept as bright as a coach body.

APPLE SNOW.—Put twelve good tart apples in cold water, and set them over the fire; when soft, drain the water, strip the skins off the apples, core them, and lay them in a deep dish. Beat the whites of twelve eggs to a stiff froth; put half a pound of finely powdered white sugar to the apples; beat them to a stiff froth, and add the beaten eggs. Beat the whole to a stiff snow; then turn into a desert dish.

ROAST GOOSE.—The *Hearth and Home* says a goose less than a year old can be cooked so as to taste almost as well as turkey. When the animal is nearly ready to be killed, put vinegar into its food, and the day before its neck is brought to the block, pour a spoonful of vinegar down its throat. It has the effect—the reason of which is not well understood—of making the flesh tender. Boil slowly for about two hours, if the goose is old, taking care to skim away the oil. One hour for a young goose. Then stuff, and roast, or bake, like a turkey, using a little good vinegar with the basting.

CHRISTMAS PLUM PUDDING.—One pound and a half of raisins, half a pound of currants, three quarters of a pound of bread crumbs, half a pound of flour, three quarters of a pound of beef suet, nine eggs, one wineglassful of brandy, half a pound of citron and orange peel, half a nutmeg, and a little ground ginger. Chop the suet as fine as possible, and mix it with the bread crumbs and flour, add the currants washed and dried, the citron and orange peel cut into thin slices, and the raisins stoned and divided. Mix it all well together with the grated nutmeg and ginger, then stir in nine eggs well beaten, and the brandy, and again mix it thoroughly together that every ingredient may be moistened; put it into a buttered mould, tie it over tightly, and boil it for six hours. This pudding may be made a week before using, boiled in a cloth, and hung up in a dry place, and when required put into a saucepan of boiling water and boiled for two hours or two hours and a half, then turned out and served with sauce as above.

To Cook Vegetables.

It is often observed that a meal from vegetables is not satisfying. I have found it frequently happen that the persons who thus objected, did not know even how to boil a vegetable. The rule is simple, and should never be forgotten. Every kind of vegetable intended to be served whole should, when put to boil, be placed at once in boiling water; and this applies especially to potatoes and vegetables from which the outer cover has been removed. Now it often happens that potatoes, etc., are, to save time, placed in cold water and left to boil gradually. It is just this which allows the nutritious matter to escape and renders the meal unsatisfying. When, on the contrary, the water boils from the moment the vegetable is immersed in it, the albumen is partially coagulated near the surface, and serves to retain the virtue of the vegetable. The reverse is, of course, the rule for making soup, or any dish from which the water will not be drained. By placing the vegetables in cold water the albumen is slowly dissolved, and actually mixes with the water—a process most necessary for the production of nutritious soup.

A Home-Made Earth Closet.

J. B. Lyman, agricultural editor of the *N. Y. Tribune*, tells how he made an earth closet:

I built a house lately, and managed matters in this way: I bought two camp kettles, sheet iron cylinders with a bottom and a bail; they cost a dollar each, and measure perhaps 14 inches across the top. The seat has hinges, and the kettles stand on masonry, so the seat when down touches the rims. The bail is long enough to fall over the rim, and touches the side half-way down. The shell of a box-turtle serves as a scoop. Once a week the box is filled with dry garden earth or with fine clay; once a week it is necessary to lift the seat and take out the kettles and add the contents to the manure pile, a chore that consumes five minutes. Before the kettles were used they received a thorough coat of coal tar thickened with slate-flour.

We like the system very much. It allows a closet to stand where with any of the old methods it would breed disease. It is cheap and simple; it saves all the night soil; we have no smell, for if any is perceived, two shovels of earth will quench it. It makes a light weekly chore of what would otherwise become an odious semi-annual job. In the hottest weather we scatter a little quick-lime or lime with carbolic acid. Lime alone will quench the ill odor of the fluids of sewage, and the dry earth muffles the other. In freezing weather sifted coal ash is a convenient substitute for soil. Any earth that is not sandy will answer; but it should be dry.

Agricultural Intelligence.

Agricultural Association.

The Council of the Provincial Agricultural and Arts Association met on the 8th Dec. in the Agricultural Hall. The following gentlemen were present:—Hon. D. Christie, President; Hon. James Skead; Messrs. James Young, M.P., Rykert, M.P.P., Cowan, Graham, Macdonald, White, Shipley, Gibbons, Wilson, Walton, Farley; Rev. Mr. Burnett, and Prof. Buckland.

Mr. Young brought up the question of examining the public accounts before they were adopted, and on the motion of Hon. James Skead, seconded by Mr. White, they were referred to a special committee, consisting of Messrs. Burnett, Macdonald, and Cowan. A number of communications respecting the award of prizes were taken up and disposed of. The Council having at a previous meeting decided upon publishing a volume of transactions covering the last seven years, the secretary was instructed to advertise for tenders for the printing of the volume, and a committee, consisting of Messrs. Rykert, Young, and the President, appointed to supervise the publication. The printing of diplomas was referred to the same committee. A communication was received from the President of the Young Men's Association, asking if the Council would sell the Agricultural Hall; if so, for how much? On motion, it was decided to reply that the hall was not in the market.

IRREGULAR VOTING.

Hon. Mr. SKEAD presented a report from the committee appointed at a previous meeting to inquire into alleged irregular voting at the general meeting of the Association. The following is the report:—

To the Council of the Agricultural and Arts Association:

The Committee appointed under the resolution of the 8th of October last, to investigate and report upon the circumstances attending the vote taken at the meeting of the Directors of the Association on the 6th Oct., in reference to the appointment of a place for holding the next exhibition of the Association, beg leave to report—

That having carefully examined the minutes of the meeting of the Directors on the occasion in question, as recorded by your Secretary, and availed itself of all the means of information within its reach, they find that there were in all 128 votes recorded. Of these, several were by individuals who voted as delegates or appointees of different societies, and claiming to vote as such in the absence of their President or Vice-President, but exhibited no satisfactory evidence of such appointment. That several individuals of such alleged appointees assumed to vote without the authority of the society which they pretended to represent. That several

of the votes so given and recorded were spurious, and given by parties not legally qualified to vote as Directors of the Association, and therefore that the result obtained by the voting as aforesaid, was not a lawful and just decision of the question then submitted. That your Committee, with the view of giving additional perspicuity to this report, annex hereto and embody herewith a schedule, exhibiting in detail a statement of the votes recorded and the particular facts as found by your Committee affecting their validity. That your Committee would respectfully urge upon the Council the expediency of passing a by-law regulating the voting upon similar occasions, and prescribing the precise form of credentials which a voter shall be required to produce before recording his vote, so as to ensure more regularity in these particulars for the future. Your Committee further respectfully suggest that your Secretary be admonished to keep the books containing the minutes of the different meetings of the Association with scrupulous exactitude, and that he is to be held responsible that the same are not tampered with or defaced. That your Committee, advertent to the schedule appended hereto, would draw the attention of the Council to the fact of there being forty-two votes recorded at the said meeting as having been given by parties who have produced no credentials whatever of qualification, the Committee in consequence having no ready means of estimating the validity of such votes; and it is further noticed by your Committee that even in those cases where credentials have been produced by the voters, such credentials for the most part afford no evidence of the parties therein named having been appointed as delegates by their respective societies according to the Statute—such credentials only going to show that the parties therein named had been nominated or appointed by particular members or office-holders of their respective societies. Also in reference to certain Horticultural and Mechanics' Institute Societies, represented at the said meeting, your Committee are uninformed as to whether the requisite formalities have been complied with in order to entitle them to such representation and report in the premises, assuming all such societies to have been legally constituted.

All of which is respectfully submitted.

J. SKEAD, Chairman.
S. WHITE,
JOHN WALTON,
ANDREW WILSON,
JAMES J. FARLEY.

Mr. RYKERT said the Act did not provide that presidents or vice-presidents must bring certificates.

Prof. BUCKLAND remarked that a blank circular would be sent this year to all the associations for the purpose of securing a list of their officers.

Mr. MACDONALD thought that according to

the Act the delegates should be required to bring certificates

Mr. RYKERT suggested that the Department of Agriculture be requested to furnish the Council with a list of the officers of the branch associations.

Hon. Mr. SKEAD pointed out a number of irregularities and illegalities in many of the credentials that had been sent in previous to the annual meeting of directors. He alleged that the list of delegates had been tampered with, as he had carefully examined it at five o'clock on the evening of the day of the annual meeting, and found only 91 votes on it, and yet no less than 128 votes were recorded when the vote was taken.

Mr. RYKERT contended that the Council had no legal right to pass a by-law regulating the voting at the meetings of the Association. That matter belonged to the Association. However, to bring the matter properly before them he would move the adoption of the report.

Mr. MACDONALD seconded the motion. Considerable discussion followed. It was unanimously conceded that some more stringent regulations respecting the manner of voting were needed, but it was held that that was a matter for a meeting of the whole Association.

Mr. RYKERT withdrew his motion, and the committee agreed to amend that clause of their report by striking out the reference to the passing of a by-law and recommending that some steps be taken to regulate the voting at the annual meetings, and that a precise form of credentials be prescribed for voters.

The report was then adopted.

Mr. RYKERT moved, seconded by Mr. Young, that the Secretary be instructed to apply to the Minister of Agriculture for a list of the officers of the branch associations, and that he be further instructed to write to the several agricultural societies requesting that all delegates to the annual meeting be furnished with proper credentials, at the same time furnishing them with blank forms. Carried. The Council then adjourned till four o'clock.

The Council re-assembled at 4 o'clock.

The SECRETARY read a communication from Mr. Weld, asking the Council to petition the Legislature for assistance to enable him to carry out his emporium plan, or to accommodate him for the same purpose. The Council decided that, while appreciating Mr. Weld's exertions, they did not feel themselves at liberty to advise the Legislature in the matter.

In answer to the President,

Mr. GRAHAM, the Treasurer, said the Denison case was not yet decided by the Courts.

The Committee on Accounts reported, recommending the payment of a number of accounts amounting altogether to \$2,043 60. Other accounts from newspapers for advertisements not ordered were referred to the

Council. On motion it was resolved not to pay those accounts.

The report of the Committee was adopted.

The TREASURER, Mr. Graham, presented the following abstract of accounts up to 1st December:—

Balance on hand 1st Jan., 1870...	\$1,649 97
Receipts since that date—	
Miscellaneous Accounts.....	771 54
Prize Account.....	112 00
Rents.....	1,000 00
Government Grant.....	10,000 00
Exhibition Receipts—	
Secy. on account of sub-	
scriptions.....	\$900 00
Do. on account of booths	1,510 00
Entrance Fees at Gates	17,454 81
Forage sold.....	464 65
Other Items.....	52 00
	20,381 46
On account of Denison.....	250 00
	\$34,164 97
Payments—	
Miscellaneous Accounts.....	\$1,905 00
Prizes.....	11,594 11
Council Expenses.....	1,206 75
Veterinary School.....	550 00
Salaries.....	1,689 98
Printing and Stationery.....	\$95 84
Legal Expenses.....	410 72
Exhibition Expenses.....	6,944 55
	\$25,196 95

Balance on hand 1st Dec., 1870...\$ 8,968 02

Mr. GRAHAM added that there was about \$500 yet to come in on Exhibition account. The total receipts were over \$3,000 more than those of last year at London.

The PRESIDENT congratulated the Council upon the great success of the Exhibition, and expressed his belief that, all things considered, it was unequalled by any other similar association.

Prof. BUCKLAND presented a statement of expense of cuts to illustrate the report of the Entomological Society, \$106,77, which was ordered to be paid.

In answer to Mr. Young, the Secretary said there were nearly as many entries in the Stock Register as were in the first Herd book. It was agreed to instruct the Secretary to call for entries up to the 1st of June next for a second Herd Book.

The Council then adjourned.

Birmingham Cattle and Poultry Show.

The Birmingham and Midland Counties Show took place during the last week of November. The entries in all the classes were numerous; but, with some few exceptions, the individual excellence of the animals, says the *Mark Lane Express*, was scarcely up to the high standard one looks for at such an exhibition.

The first prize in the Shorthorn class was won by Mr. Pulver, of Kettering, beating

the Earl of Aylesford, who gained the highest honours at the Smithfield Club Show of 1869. The Herefords, we are told, were not as good as usual. Mr. P. Turner, of Leen, obtained the first prize for the best steer, and Her Majesty the Queen the third. The Queen also obtained the first prize for the best Hereford Heifer. The Devons were remarkably good, and as usual of very even excellence.

In the polled class Mr. McCombie, of Tillefour, was beaten by Mr. Heath Harris, of Earnshill, near Forres, Morayshire, though he showed the brother of the famous Black Prince, that carried all before him at Smithfield and Birmingham in 1869. The present steer, shown by Mr. McCombie, is equally fat with his celebrated predecessor, and of exactly the same girth—9 feet 10 inches—but has little beyond his size to recommend him, and rightly gave place in the prize list to Mr. Harris' well proportioned and finely built ox. Mr. McCombie was deservedly successful in winning the first prize for the best cow of the same breed, which has so long been a specialty with him.

In the sheep classes, Lord Walsingham's Southdowns and Lord Berners' Leicesters, as usual, carried off the honours.

The show of pigs was better than usual in all except the class of large breeding pigs. The best fat pig, which the *Mark Lane Express*, our authority throughout in this report, pronounces almost "perfect," was exhibited by Mr. Duckering, of Northope, Lincolnshire.

Mr. R. Fowler, of Aylesbury, was winner in the class of Berkshires. The whole of this class was so meritorious that the judges nearly came to the conclusion of commending all the pens. Her Majesty obtained prizes for some excellent pigs of the Windsor (Suffolk) breed.

Guelph Fat Cattle Show.

The annual Christmas show of fat stock, under the auspices of the South Wellington Agricultural Society, took place at Guelph on Tuesday, Dec. 13, and notwithstanding the unfavourable state of the roads, was numerously attended. There was altogether a fine show of animals, in quality no way behind the excellence which has earned for the farmers of Wellington the highest reputation. The comparative absence of American buyers influenced the sales, but notwithstanding this drawback, some very high rates were paid for choice stock. The prices ranged from \$3 50 to \$10 per 100 lbs. live weight. For fair, ordinary cattle, the figures would run from \$3 50 to \$4 50; for good, prime beef from \$4 50 to \$6; and for extra from \$6 to \$10, and in one case—that of Mr. Telfer's heifer—to \$12. But all above \$6 may be called fancy prices for fancy animals, and afford no criterion for the average rates paid for the common class of fairly fed cattle.

Some of the cattle had attained great weights. Among some of the most noticeable were Mr. P. Rennie's Sweepstakes prize steer, 2,273 lbs., sold to G. Hood at 11c. per lb. W. Armstrong also sold his cattle, which took prizes at Fergus, to Geo. Hood; one of the steers weighed 2,660, another 2,240 lbs. The two cows weighed 1,940 lbs. each. He sold them at \$10 per 100 lbs., and one at \$6 25 per 100 lbs. Mr. Hood was the winner of the chief prizes in the class of oxen over four years old, particularly, outstripping all competitors. In the class of cows over four years, seven fine massive animals were shown. The splendid cow owned by Mr. Alex. Watt, of Pilkington, which took the second prize at the Provincial Exhibition, carried off the highest honours. In the class of heifers also, of which there were six exhibited, the one owned by Mr. Watt, which took the first prize at the Provincial Show, carried off the red ribbon. Mr. Telfer was awarded the second prize for a very superior animal, of fine symmetry, which he sold for \$12 per 100 lbs. In the sweepstakes a very handsome heifer, in the finest condition, which was fed by Mr. Peter Rennie, of Garafraxa, and sold to Mr. Geo. Hood, took the prize. There was a large and highly creditable show of sheep in all the classes. Messrs. Wright, Millar, Cowan, Walters and Hood were the principal prize takers. There was a fine lot of fat hogs. The turkeys, geese, &c., were both in size and fatness fully up to those shown in former years, and they were speedily bought up at high prices.

Smithfield Club Cattle Show.

The Smithfield Club Cattle Show took place in the Agricultural Hall, Islington, during the first week of December, and excited the usual interest, bringing together some of the finest specimens of live stock, and attracting a large concourse of visitors. Amongst the exhibitors were not only those who make stock-raising their regular calling, but amateurs from the ranks of the noble and wealthy, with Her Majesty and the Prince of Wales among the number, who thus give evidence of the estimation in which they hold the farmers' vocation.

The show this year was, by all accounts, up to the high standard of these annual exhibitions, and following so close on that at Birmingham possessed many of the same features of interest. The principal winners at the Midlands show were also successful in the metropolis, though, as usual, some of the awards at the first were not sustained in the larger competition of the Smithfield show. The show of short-horns was, perhaps, not of extra merit; but that of Devons was particularly fine. The Herefords were good. The champion plate, value £100, for the best beast in the show, was awarded to Mr. Pulver of Kettering, for a magnificent short-

horn ox, winner at Birmingham. The gold medal for the best male animal, was won by Mr. Taylor for a Devon. The medal for the best cow or heifer, was also won for a Devon, by Mr. T. L. Senior. Mr. Heath Harris was again successful in the class of Scotch polled steers against Mr. McCombie.

The show of sheep was excellent, headed by Lord Berners' Leicesters, and Lord Walsingham's Southdowns.

The pigs were as usual a splendid lot.

A display of implements by the chief manufacturers in Britain, gave additional interest to the occasion; and the show of mammoth roots was really "prodigious" with mangolds weighing 50 lbs., and samples from crops yielding 72 tons per acre.

MONTHLY CATTLE FAIRS.

ELMIRA.—Second Monday in every month.
 LISTOWEL.—The next cattle market will be held on Friday, April 5th, and thereafter on the first Friday before the Waterloo fair.
 WATERLOO.—Second Tuesday in every month.
 GALT.—Wednesday after the second Tuesday.
 AYR.—The third Tuesday of the month.
 PARIS.—The Wednesday after Ayr.
 TEVIOTDALE.—The Friday before Guelph.
 HARRISTON.—Friday before the Guelph fair.
 BOSWORTH.—Saturday before Guelph.
 DRAYTON.—The day before Elora.
 ELORA.—The day before Guelph.
 GUELPH.—First Wednesday in each month.
 NEW HAMBURGH.—First Tuesday in each month.
 MOUNT FOREST.—Third Wednesday in each month.
 DURHAM.—Tuesday preceding the above.
 FERGUS.—Thursday following Mount Forest.
 ORANGEVILLE.—Second Thursday in January, March, May, July, September and November.
 MONO MILLS.—Third Wednesday in January, April, July and October.
 ERIN.—First Monday in January, April, July and October.
 MASONVILLE.—First Tuesday in February, May, August and November.
 BRAMPTON.—First Thursday in every month.

Hon. Horatio Seymour, of New York, is President of a cheese factory, which he considers to be more useful than had he been elected President of the United States.

The decrease in cultivated acres of wheat in Great Britain, according to the returns of 1870, is 5.3 per cent. Barley shows an increase of 5.2 per cent; cattle have increased 1.5 per cent., and sheep have decreased 4.40 per cent. The English evidently know where the money lies in farming.

The import of beet root sugar into England from the Continent is far more considerable than is generally supposed, and has averaged during the last three years something like 50,000 tons—an amount equal to that which she draws from the Mauritius.

The Conestago fat cattle fair was a success. There were present on the ground nearly 200 head and twelve buyers, several of whom were from Toronto, Guelph and Buffalo. Very large prices were in some instances realized, \$80 and \$90 being a common price for a fat ox.

There are 65,000 acres devoted to hops in England according to late estimates. In 1859 the acreage had fallen to 43,729, but there has been a gradual increase since that year until the present time. Of the total area, the county of Kent has about 33,000 acres, and Sussex 14,500.

The tenth volume of the American Short-horn Herd Book is now in press. The ninth volume was issued in February last, yet this contains the pedigrees of about 1,800 bulls and 2,500 cows. The volume will probably be ready for the public in February next.

A short time ago a farmer near Decorah, Iowa, lost twelve head of cattle. Eleven died inside of six hours, and all within a radius of ten or fifteen rods of each other. The first impression was that they must have been poisoned. Others have lost cattle in a similar manner; and it is now attributed to eating smut in corn, for the animals had been running in the cornfields for ten or twelve days.

A movement is on foot at Elora for the establishment of a beet sugar manufactory. Several meetings have been held, and the conviction is that the soil of that section of Wellington is favourable to the growth of the sugar beet root. An establishment is also being formed in the adjoining county of Waterloo.

The sale of Mr. Spears' Shorthorns at Tullula, Illinois, advertised in our columns, we learn from the *Prairie Farmer* was well attended and successful. There were 23 head sold. Two brought \$1,000 each, and 11, in all, \$500 or more each. The lowest price was \$150; and the next lowest \$225. There were sold at the same time 72 Berkshire pigs at an average of \$27 each. A number of the sows sold brought from \$50 to \$100 each.

The Acclimatization Society of New Zealand have sent to England their agent, to procure for that colony a number of English birds, including 100 sparrows, 100 robins, 100 chaffinches, 100 yellowhammers, 60 goldfinches, 60 linnets, 60 redpolls, 100 blackbirds, 85 thrushes, 120 larks, 2 pairs of black-caps, 36 English partridges, and 2 brace of blagame. He also takes out 18 head of red deer.

The *South Land* says that the damage done to the Cuban sugar crop alone, by the recent hurricanes, will have an effect reaching to every consumer of that commodity. The four districts that were devastated by the storm produced 316,000 tons of sugar in 1860, and their production for the present season was estimated at 400,000 tons. As these districts are in a narrow section of the island, it is feared that their entire crop has been destroyed, which will not only tend to raise the price of sugar, but will diminish Spain's revenue from Cuba.

The *New England Homestead* says that the Massachusetts Society for promoting Agriculture has awarded to Major Ben. Perley Poore, of Indian Hill Farm, near Newburyport, the premium of \$1,000 which it offered in 1858 for the best plantation of forest trees, planted before 1860 and growing in 1870. The premium was offered in compliance with a statute "for the raising and preservation of oak and other forest trees best adapted to perpetuate, within the State an adequate supply of ship timber."

Mr. Charles Delamere, of New Orleans has discovered a process by which the saccharine property from sweet potatoes can be extracted and its precipitate made into sugar. He took one bushel of potatoes weighing fifty-two pounds, and, with a rude apparatus for extracting the juice, aided by the addition of some ingredients known only to himself, made two and three-quarters gallons of beautiful golden syrup. He estimates that a barrel of potatoes, worth on the plantation one dollar, will yield eight gallons of syrup, which would be sold cheaper than cane syrup.

Miscellaneous.

Backwoods Life

DEER-HUNTING EXTRAORDINARY.

On the morning following the bear-hunting extraordinary already related, I resumed my journey, and the valuation in which I had previously been engaged. A few miles from the scene of the former exploit I came suddenly to another little homestead, cut out of the dense woods. The clearing might be about five acres, and had been cleared the previous spring, and at that time had been partly planted with potatoes and the remainder sown with turnips.

As I cantered my horse through the wood along the pathway, I heard loud calls for assistance, and a female name, and an axe or pitchfork was loudly demanded. I hastened on, galloping my horse round the little field, towards the sound. The trees obstructed me somewhat, but I arrived in time to witness the death of a fine doe in the most extraordinary manner.

It seemed that a doe and her fawn had leaped over a low part of a remarkably well staked and ridged fence. This portion had been lowered as a gap. They were disturbed by the woman of the house returning with the cow through the woods, intending to enter by the same gap. The doe and her fawn ran across the clearing, seeking for some place of exit. It is well known that a doe will not readily leave her fawn within an enclosure if it is too high for the little one to jump over, and the mother therefore ran round the field seeking for some place of egress, but found none. The fence was everywhere ten rails high, double-ridged and staked. After making the circuit of the little field, the doe and fawn came round to the spot where they had entered, and encountered the woman and her cow. The woman ran towards them, thinking to catch the fawn, which could not be more than a few weeks old; at all events, it was very small and young. The doe turned, and jumped at the fence, but whether her attention was distracted by her care for her young one, or whether she slipped on the turnips, could not be ascertained, of course; but certain it was that she pitched directly across the fence, her fore legs on one side, and her hind legs on the other, within ten yards of where the woman was standing. She at once dashed forward and seized hold of the doe's hind legs, and held *manfully* on to them. The doe kicked furiously, and the woman finally had to let go one leg, and put out her whole strength to retain possession of the other. This she succeeded in doing, and at the moment of my arrival her daughter, a girl of about twenty years old, muscular and tall, had just succeeded in finishing this most unequal contest by a vigorous stroke with the axe, which ended at

once the struggles of the doe and her maternal anxiety for her fawn. The little creature came up quite close to its dead mother, and was easily captured. In fact it would not go away, but bleated and smelt about its dam most pitifully. We took the doe to the house and skinned her, and I had some of her meat for dinner. Her fawn became quite tame, and I offered the woman \$4 for it for a pet for my sister's children. I had none of my own at that time. She declined selling it, and kept it as a pet about the house for years. It always wore a bell and red flannel collar to distinguish it from its wild playmates, who sometimes came to see it, being a female, and many a fine buck has paid the penalty of his life for the pleasure of a visit, the red collar always causing sufficient distinguishing mark to ensure its not being shot. At these seasons the bell was dispensed with. The collar, however, came off one day, and the owner shot her for a wild deer.

About that time, and for several years afterwards, deer were so plentiful that they could be shot at any time—almost, in fact, any week you could get a shot at one. I recollect, afterwards, seeing from a high elevation, in our own field, a herd of fourteen feeding on our young wheat, and a most beautiful sight it was, when my brother, creeping round in a ravine, came face to face with them all. It was evening, and the moment he appeared a splendid buck raised his head and looked at him for a second, then threw up the fan-like tail, and away the whole herd went over the fence, each taking a leap in its turn in the most beautiful manner imaginable.

To draw an old nail, first hit a blow with the hammer sufficiently hard to start it in; this breaks the connection with the wood which rust has made, and it is easily removed.

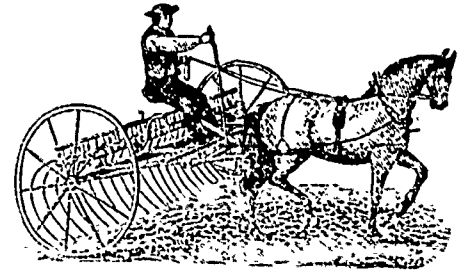
Plank walks about the house will save wet feet, colds, coughs and very likely heavy doctor's bills. Old boards, slabs, etc., with blocks nailed upon the under side, will answer very well.

One of the largest wheat growers of Alameda county, Cal., having had some experience in dealing with commission merchants, chartered a vessel this year himself, and has sent 1,200 tons of wheat direct to the Liverpool market.

A correspondent of the *Rural New Yorker* thinks that the safe, successful plan is to continue to cultivate hops, where the crop is established on good ground and in a good locality, notwithstanding the discouragements of the present and two preceding seasons.

At a late meeting of the New York Farmers' Institute, cranberry growing in New Jersey had a hearing, disclosing the fact that good judges estimated the crop in Ocean county at 25,000 bushels. The ruling price at present is \$3.25 per bushel, but an advance on these figures is expected by the holders. There are two practical enemies of the cranberry; two classes of worms and grasshoppers. A flock of turkeys will do for the latter, and timely flooding for the former.

Advertisements.



Steel Tooth Sulky Horse Rake

1st Prize, Provincial Fair, London, 1869!

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

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

Active Local Agents Wanted in every County.

JAMES SOUTAR & CO.,

Agricultural Foundry and Warehouse,

v3-1-1f.

Chatham, Ont.

CHEESE APPARATUS.

PEDLAR'S SMALL CHEESE VATS

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

Before buying, write to

GEO. H. PEDLAR, Drawer 5,

Agents Wanted.

Oshawa, Ont.

2-12-1f.

BREAKFAST.

EPPS'S COCOA.

GRATEFUL AND COMFORTING.

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

v2 11-12f

JAMES EPPS & Co.,

Homoeopathic Chemists, London.

TO BEE-KEEPERS.

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

I am sending hives to England, the United States, and every part of the Dominion, and shall be pleased to fill any orders accompanied with the cash for Hives, Honey Extractors, Italian Bees and Queens and everything belonging to the Apiary. CANADIAN BEE-KEEPERS' GUIDE, post-paid, 25 cents.

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

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

J. H. THOMAS, Brooklin, Ont.

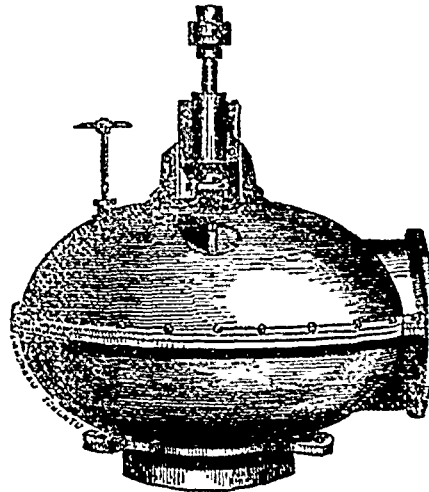
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(ESTABLISHED 1851.)
OSHAWA, ONTARIO.

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PROPRIETORS,
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DOUBLE TURBINE

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- | | | |
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1871. Daily, Semi-Weekly and Weekly. 1871.

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To Agriculture and the subservient arts, we have devoted, and shall persistently devote, more means and space than any of our rivals. We aim to make THE WEEKLY TRIBUNE such a paper as no farmer can afford to do without, however widely his politics may differ from ours. Our reports of the Cattle, Horse, Produce and General Markets are so full and accurate, our essays in elucidation of the farmer's calling and our regular reports of the Farmers' Club and kindred gatherings, are so interesting, that the poorest farmer will find therein a mine of suggestion and counsel, of which he cannot remain ignorant without positive and serious loss.

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

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v3-1-11

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Having in former years introduced to the public the Hubbard Squash, American Turban Squash, Marblehead Mammoth Cabbage, Mexican sweet Corn, Plumtree's Water Melon, Brown's New Dwarf Marrowfat Pea, Boston Curled Lettuce, and other

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

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

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A SURE CURE for this distressing complaint is now made known in a Treatise (of 48 octavo pages) on Foreign and native Herbal Preparations, published by Dr. O. PHELPS BROWN. The prescription was discovered by him in such a providential manner that he cannot conscientiously refuse to make it known, as it has cured everybody who has used it for Fits, never having failed in a single case. The ingredients may be obtained from any druggist. Persons desiring a copy may address Dr. O PHELPS BROWN, No. 21 Grand Street, Jersey City, N. J.

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Circumstances by Emigrating to a New
Country.

THE attention of intending Emigrants is invited to the great advantages presented by the Province of Ontario. Persons living on the interest of their money can easily get eight per cent. on first-class security.

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Can buy and stock a Freehold Estate with the money needed to carry on a small farm in Britain. Good cleared land, with a dwelling and good barn and out-houses upon it, can be purchased in desirable localities at from £4 to £10 Stg. per acre. Farm hands can readily obtain work at good wages. Among the inducements offered to intending Emigrants, by the Government, is

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Every Head of a family can obtain, on condition of settlement, a FREE GRANT of two hundred acres of land for himself, and one hundred acres additional for each member of his family, male or female, over eighteen years of age.

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The Free Grants are protected by a Homestead Exemption Act, and are not liable to seizure for any debt incurred before the issue of the patent, or for twenty years after its issue. They are within easy access of the front settlements, and are supplied with regular postal communication.

Registers of the Labour Market

And of Improved Farms for sale, are kept at the Immigration Agencies in the Province, and arrangements are made for directing emigrants to those points where employment can be most readily obtained. Several new lines of railway and other public works are in course of construction, or about being commenced, which will afford employment to an almost unlimited number of labourers.

Persons desiring fuller information concerning the Province of Ontario, are invited to apply personally, or by letter, to the Canadian Government Emigration Agents in Europe, viz: Wm. Dixon, 11 Adam Street, Adelphi, London, W. C.; J. G. Moylan, Dublin; Charles Foy, Belfast; David Shaw, Glasgow; and E. Simays, Continental Agent at Antwerp

Also to the Emigration Agents in Canada, viz:

John A. Donaldson, Toronto, R. H. Rae, Hamilton; Wm. J. Wills, Ottawa; Jas. Macpherson, Kingston; L. Stafford, Quebec; J. J. Daley, Montreal; E. Clay, Halifax, Nova Scotia; Robert Shives, St. John, and J. G. G. Layton, Miramichi, New Brunswick, from whom pamphlets issued under the authority of the Government of Ontario, containing full particulars in relation to the character and resources of, and the cost of living, wages, &c., in the Province, can be obtained.

JOHN CARLING,

Commissioner of Agriculture and Public Works for the Province of Ontario.

Department of Immigration,
Toronto, October, 1869.

v2-2-121.

Markets.

Toronto Markets.

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

FLOUR AND MEAL.

The market in produce has been quiet, with few transactions. The tendency of prices is upward, and holders, expecting a further rise, are unwilling to sell. The following are present quotations.—

Flour—Superfine, \$5 25 to \$5 30, Fancy, \$5 40 to \$5 50; Spring Wheat, extra, \$5 30 to \$5 40. Extra, \$5 75 to \$6; Superior Extra, \$6.
Oatmeal—\$5.20 to \$5.25.
Cornmeal, in small lots—\$3.75 to \$4.25.
Bron, in ton lots—\$15.

GRAIN.

The dulness prevailing in Flour, and for similar reasons, characterizes the grain market.

Wheat—Soules, \$1 20 to \$1 25; Spring, \$1 15 to \$1 16. Spring Midge Proof, \$1 15 to \$1 16; Treadwell, \$1 16 to \$1 18.
Barley—Inferior, 50c to 55c; Do., bright, 60c to 63c.
Oats—43c to 44c.
Peas—68c to 70c.
Rye—70c.

HAY AND STRAW.

The market has been pretty well supplied, and the prices range for Hay from \$9 to \$13.50; Straw, \$7 to \$8.

THE CATTLE MARKET.

Trade is recovering somewhat from the dulness which usually prevails at this season of the year

Beeves from \$3.25 to \$5 per 100 lbs.
Sheep from \$3 to \$7.
Catees from \$3.50 to \$8.
Lambs from \$2.75 to \$5.

PROVISIONS.

Pork—Mess, \$19 to \$19 50.
Bacon—Cumberland cut, 8½c to 10c.
Hams—Salted, 10c to 11c, Smoked, new; 11c to 12c.
Lard—In tins, 12c to 13c; In tierces, 11c to 12c.
Butter—Choice dairy, 17c to 19c.
Cheese—Reesor's Stilton, 18c, Royal Arms, 17c.
Eggs—Fresh, 22c to 25c per dozen.
Dried Apples—6c to 7c.
Hops—Superior, 15c to 16c, Ordinary, 8c to 12c.
Salt—Goderich, \$1 55; American, \$1 85; Liverpool, per bag, 75c to 80c.

PROVINCIAL MARKETS.

Montreal.—Flour—Extra, \$6.30 to \$6.35; Fancy, \$5.90 to \$6; Welland Canal Superfine, \$5.75; Superfine No. 1 Canada Wheat, \$5.70 to \$6; No. 1 Western Wheat, \$5.70 to \$5.75; No. 2 Western Wheat, \$5.30 to 5.40; Bag Flour \$2.50 to \$2.60. Wheat—Western, \$1.19 to \$1.23. Oats—Per 32 lbs., 43c to 45c. Barley—Per 48 lbs., 55c to 60c. Butter—Dairy, 17c to 20c; store-packed, 14c to 17c. Ashes—Pots, \$6 to \$6.05; Pearls, \$6 to \$6.05. Pork—Mess, \$19.50 to \$20, Prime Mess, \$16; prime, \$15. Dressed Hogs—\$6.62 to \$7.
London, Jan. 10.—Spring Wheat, \$1.15 to \$1.25. Red Fall Do., \$1 to \$1.15; White Do., \$1.10 to \$1.25. Barley, 45c to 60c. Peas, 62½c to 70c. Oats, 41c to 42c. Corn, 65c to 68c. Rye, 40c to 50c. Clover Seed, \$4.50 to \$5. Dressed Hogs, \$6 to \$6.70.

Hamilton, Jan. 10.—Wheat—Doehl, \$1.25 to \$1.30; Soules, \$1.25 to \$1.27; Treadwell, \$1.22 to \$1.25; Winter Red, \$1.18 to \$1.20; Amber, \$1.18 to \$1.20; Spring, \$1.17 to \$1.20. Barley, 50c to 52c. Peas, 70c to 72c. Oats, 45c to 47c. Flour, Superfine, \$6 to \$6.50; Extra, \$5.50 to \$6; Superfine No. 1, \$5 to \$5.50; do. No. 2, \$4.50 to \$5, fine, \$4. Oatmeal, per 100 lbs., \$1.75 to \$2. Butter, in rolls, 20c to 25c, do., tub, 17c to 19c. Cheese, 12c to 13c. Eggs, 30c. Honey, 25c. Apples, 50c to 60c. Potatoes, 51c to 60c. Green Hides, No. 1, inspected, \$8.50; do No 2 \$7.50; Calfskins, green, 10c; do dry, 15c to 20c; lambskins, 50c to \$1; pelts, 60c to \$1.

Guelph, Jan. 10.—Wheat—Fall, per bush, \$1.18 to \$1.27; Spring do., \$1.18 to \$1.20; Treadwell do, \$1.15 to \$1.22. Oats, 38c to 41c. Peas, 64c. Barley, 45c to 50c. Hay, per ton, \$8 to \$9.50. Straw, per ton, \$3 to \$4. Wool, per cord, \$3.50 to \$4. Eggs, per doz., 20c to 24c. Butter, store-packed, per lb., 12c to 13c; dairy-packed, per lb, 15c to 16c. Potatoes, per bag, 40c to 50c. Apples, per bag, 40c to 50c. Pork, per 100 lbs, \$5.80 to \$6.75.

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

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

GEORGE BROWN,
Managing Director

1871 PROSPECTUS 1871

OF

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- To arouse attention, by frank and temperate discussions, to all questions, scientific, commercial, legislative or otherwise, specially affecting the farming interests.
- To stimulate the agriculturists of our country to adopt an improved system of husbandry, by blending the lessons of modern science with the practical experience of the Canadian farmer.
- To bring under the attention of our farmers all improvements at home and abroad, worthy of adoption, affecting the management of Field Crops—the Barn Yard—the Stable—the Dairy—the Orchard—the Poultry Yard—the Apiary—the Kitchen Garden—and the Flower Garden; and to excite an interest in the progress of Rural Architecture and Landscape Gardening, and all that concerns the domestic economy of the Farm House.
- To mark and report all improvements in Agricultural Machinery, foster new inventions, and promote the adoption of all labour-saving machines, in the work of the farm and garden.
- To keep prominently under attention all that specially concerns the Dairy Farmer and the Grazier—the best breeds of Cattle—the best systems of feeding—the most approved processes of cheese and butter making—the best mode of packing—and the best markets to sell in.

- To keep prominently in view whatever is specially interesting to the Sheep-raiser and Wool-grower—the breeds best adapted to our climate—the best system of winter and summer management—and the varying prospects of the wool market.
- To afford the Farmers of Canada an ever-open medium for addressing their brother Agriculturists throughout the Dominion, suggesting matters of common interest and advantage, and eliciting information or advice on practical questions of difficulty or doubt.
- To report concisely the proceedings at Agricultural Shows, Fairs, and Sales, throughout the Provinces—note the condition and progress of the Herds and Flocks of prominent Stock-breeders; and record the importation of Thorough-bred Stock from abroad.
- To watch and report carefully and promptly the actual state and probable prospects of the Produce markets, at home and abroad; and specially promote all movements designed to secure the best prices in the best markets for Canadian Farm Produce.
- To afford the Farmers of the Dominion a common medium, where all who have for sale Live Stock, or Seed, Grain or Land, or who may wish to buy such, can make their desires known directly to the whole farming population of Canada.

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