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THE

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OF

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AND

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THE CANADA FARMER

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NEW SERIES.

The Field.

Making Hedges.

No. I.

As the forests gradually disappear from the face of the country, it becomes a more and more difficult matter for the cultivator of the soil to provide the chief materials to keep up fences in the manner he and his fathers before him have been accustomed to, and it must soon come to the point that we must either adopt the long-tried and successful plan of older countries in forming permanent live fences, called hedges, or else abolish all right of stock to freedom on the highway, and confine them at all times within narrow limits, feeding them in summer on the soiling system. That hedges can be grown here successfully, admits of no reasonable doubt; yet in the few cases where the ordinary farmer has attempted the work, he has often failed, and laid the blame of the failure on any and every thing but the right one, which in nine cases out of ten is his own want of perseverance in well doing what can not possibly succeed without being done well and thoroughly.

There are three cardinal points absolutely necessary to be attended to, in order to make hedging successful, 1st. Proper preparation and cultivation of the soil. 2nd. A proper selection of plants of the right sort. And, 3rd. Proper care and pruning of the plants after the hedge is once established.

PREPARATION OF THE SOIL.—The first requisite is proper drainage, which can best be secured by first laying a tile drain at the depth of three or four feet from the surface along the centre of the line on which the hedge is to grow. At a distance on each side of this from twenty to thirty feet, according to the retentiveness of the sub-

soil, another tile drain should be laid. The soil over the drain on which the hedge is set is first to be trench-ploughed or sub-



Fig. 1.

soiled for a distance of at least four feet on each side, or to a width of eight feet altogether. Then the surface is to be thoroughly broken, pulverized, and left ridged up slightly as seen in fig. 2, which gives a view looking from the end of a young hedge. To prevent surface water

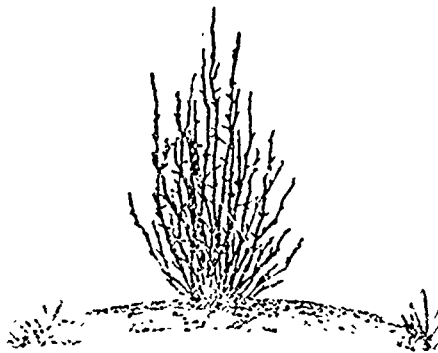


Fig. 2.

from being retained and soaking in amongst the roots, there should be a slight surface drain about five feet from each side of the hedge, just about the depth of an ordinary furrow drain, to draw off surface water from rains or melting snows, and let it soak away to the tile

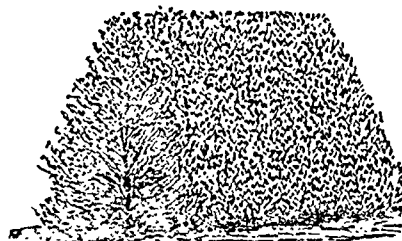


Fig. 3.

drain without first getting among the main roots of the hedge.

SETTING OUT THE PLANTS.—Whatever kind of plants are to be used to form the hedge (we shall discuss that point in a future article) it is requisite that they be selected of as nearly equal size and quality as can be; as if strong and weak plants are intermixed, the strong ones will shoot ahead, while the weak ones will soon be outgrown and choked out, leaving the hedge full of small gaps that can never be successfully filled. The plants are to be cut back before planting to within three or four buds or branches of the collar, which will leave them about three inches high when planted out; the side branches cut back severely, leaving the hedge when first planted to appear as in figure 1. The distance apart at which the plants are to be set will vary with the kind of material used, but in any case must be uniform throughout. In assorting out the plants as they come from the nursery or seed-bed, it will generally be found that there are three sizes, which may be classed as large, medium, and small. One strip of hedge may be planted with the best and strongest plants; another with those of medium size, and the small ones either set out again in the seed-bed till they get strong, or, if they are thrifty, though slim, set out in a strip by themselves. Every plant that has roots that are imperfect or deficient in fibres should be rejected, it being important that the roots, as well as the tops, should be equal in strength and quality. The planting out may be expeditiously done with a trowel or small garden spade. Insert the implement into the soil, press the handle forward, while another hand places the roots into the crevice, and on withdrawing the blade, the earth will fall back on the roots and can be compressed slightly by a pat of the implement, or by the hand.

AFTER-CULTURE.—Having planted out the hedge, the after-culture should con-

ist in keeping the ground stirred with the hoe, and all weeds down, for a strip the full width between the water furrows on each side. Care should be taken to allow no animals to browse on the hedge at any time, a thing they are most apt to do when it is young and full of succulent wood. Any plants that fail to grow must have their places filled from the seed-bed, or from the end of the hedge, as soon afterwards as possible. When the hedge has fairly started growing it should be left undisturbed by any pruning process for two seasons, at the end of which, the plants, which will appear as in fig. 2, are to be cut back to within four inches of the ground, and thereafter twice in each



Fig. 1.

year, say in July and September, to within three or four inches of the previous cutting, the first time it is done, and as much higher with an inch more added at each time of cutting, till the hedge has reached a height of five or six feet.

PRUNING INTO SHAPE—The most common error in pruning hedges, and one that results in making them thin at the bottom, is that they are cut from the top downwards, instead of the bottom upwards, thus leaving a flat top. The hedge should be allowed to extend at the bottom to thicken it, and cut so as to form a triangle, the base of which rests on the ground, and the apex points upward to the sky. Figure 3 shows the appearance of a hedge that has been properly pruned.

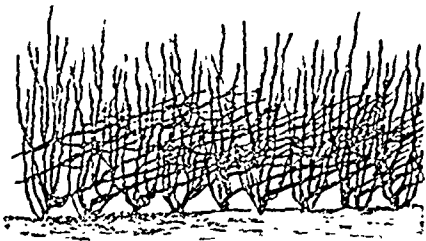


Fig. 5.

THICKENING NEGLECTED HEDGES.—When a hedge, even at six or eight feet high, has become scraggy and thin at the bottom, it may be restored to usefulness by cutting each stem halfway through, near the ground, with an upward stroke of a sharp hatchet or chisel, and bending the plant down to an angle of about 30°, commencing with the first stem at one end and bending it, the next being bent to it, and so on to the other end, when the hedge will appear as in fig. 4. This operation must be performed very early in spring, before the

buds begin to break. A new growth will start upwards from near the cut, and at the end of a year the hedge will appear as in fig. 5, and can then be pruned into proper shape, which consists mainly in throwing back the growth towards the bottom and side branches till they become as nearly like fig. 3 as it is possible to get them.

"Farming Don't Pay."

So many calling themselves farmers speak of it. And, as the reader of this article may be one that thus complains, let us together for a short time seek an answer to the question, *Why does farming not pay?* It is now say February. Let us go out to your barn and see how things are moving. "That is a fine roomy shed you have there. But there are some boards off, and you have hay in it. Hay is hay nowadays, and how much do you suppose has been spoiled by the rain driving through that opening since you harvested?"

"Nothing to speak of. I intended to repair it before the hay went in, but one is so awfully driven about hay time, little jobs are neglected."

"What is the depth of the mow?"

"About ten feet."

"Don't you think the hay for several feet round there, and the whole depth of the mow, has been wet through time and time again, until now it is quite unfit for feeding?"

"Well, I took some off there the other day, and came to think it was not quite what should be fed to horses."

"Wet, say two feet one way four the other, and ten feet deep, that is eight, cubic feet of good hay spoiled at that place, and all the labour attending the growing and harvesting it, putting it in there and getting it out, lost. And I see that the doors are off the front; been off since haying?"

"Oh, yes; a tremendous wind took the things off the year we built, and they have not been swung again."

"Any rain get in on that side?"

"A little."

"How is the roof—any leaks in it?"

"Well, yes, the man cheated me that sold me the shingles. They are not worth anything. I can take you into that mow of a clear night and show you stars through anywhere. These lumberers and storekeepers cheat us poor farmers at every turn."

"How much hay in there altogether?"

"I put twenty big loads in there."

"Boards off one side, two doors off the other, and can see stars through the roof anywhere. Do you think farming pays?"

"No, I don't."

"Here is the stable. Let us go in and see your team. Strong, well made. Good travellers?"

"I'd like to see the team that can pass them!"

"How old are they?"

"Six, past."

"That is your brood mare?"

"Yes, the mother of the nigh horse. Splendid beast. A little touched in the wind. I had to feed her hay out of that shed last winter and I think it hurt her."

"Do you feed any of that hay to the horses this winter?"

"I'm afraid the boys do sometimes, it is easy to get at."

"Will it not hurt them too?"

"No, I guess not, the little they get. I heard them cough the other morning, but they have a cold."

"Ah, these are your colts. Fine fellows!"

"Yes, them's good colts; both out of that mare."

"Feed them the same hay?"

"Yes, I am keeping my best hay for the spring work, and must feed it to them; they do nothing."

"Does it pay to raise horses?"

"No, sir, it don't; if I could get my price for the mare, I would give it up."

"What is she worth?"

"I was offered a hundred and fifty dollars cash for her two years ago; but I would sell her cheap now. If her wind was good, I would not take a cent less to-day."

"Let us have a peep at the cattle and sheep; they are together, I see, and not on the best terms of fellowship, judging from the wool-tipped horns of that steer, and the gait some of the sheep have. There is that shed again; it is a pity to see that hay wasting; it would have been prime too. Don't you believe that shed gave your mare the heaves?"

"Yes, that man that sold me the shingles should pay for her, that's so."

"I guess you had better doctor your team for their cold, I hear them coughing yet."

"Look here, Mister, have you seen this style of hay-rake? I got it last season; it is splendid. I see those pesky colts have run the cows over it and broken it. It is great on hay, that is."

"It must have looked well when you began to use it, it will need some repair and paint, however before you make hay again, if the colts, cows and the weather leave any of it for that time."

"Yes, it is no use keeping these patent implements unless you put up a building to keep them in. I tell you these men make money out of us farmers, selling such things; I wish my father had put me to a trade when I was a boy."

"There is your waggon, too, not very old, frozen in the mud, awaiting spring to loosen it for service. Don't you think the mechanics will drive a good business, so long as there are people willing to buy their manufactures, but unwilling to protect them from the influence of the weather and other destructive agents? Of the various costly and useful implements you possess, how many are sheltered? There is a plough, half buried in the manure, the iron rusting, and the wood decaying; have you any other?"

"Yes, a new patent plough."

"Where is it?"

"We were doing some fall ploughing, and believe it was left in the field."

"It will be there waiting for you when spring opens. I saw something behind that shed."

"That's the roller."

"And you say farming does not pay? Any wonder, think you? Two days' work of yourself and boys and a small expenditure of money would have saved you hay in that field last winter and thus saved your brood mare from the heaves, your span of fine horses from the colic, which, I think, you will find to be heaves too; as for the colts, take my advice, feed them clean straw, if you have it, in preference to that hay. A portion of that shed enclosed below would have sheltered you any rake, wagon, roller, every tool and implement you have and in the spring you would have found them in as good order as when last used. Your farm affords such extravagance but don't pay. Look about you: cattle and sheep struggling for the food that is spread broadcast over manure, snow, and mud; all playing 'grab' while the meal lasts, the poor sheep and younger cattle liable at any moment to be impaled on the horns of the larger animals, some to be crippled, probably killed, and all kept in a state of terror and excitement. The food is wasted by animal-trampling it into the filth, while chattering geese, squalling pigs, crouching, timorous sheep, and half-famished cattle engage at 'hurly-burly' round the yard. There is a litter of plgs, born in adversity, having come late in the fall instead of the spring, and having no suitable shelter, no feeding place save the barn-yard, exposed to the weather like your implements; they are already stunted in their growth, which they will never overcome. Even by much extra feeding next summer and fall they will not weigh more than one-half what you should realize had they not seen the light until spring, when there is plenty of milk and grass: they would have reached the weight they will now, and have escaped, to you the expensive, and to them the painful campaign of the winter. Go among your acquaintances who say 'farming don't pay,' and see if you cannot find an explanation of it—farmers who are living from hand to mouth, every crop spoken for by creditors before it is harvested—and see if they are not like yourself, having ploughs, harrows, cultivators, sleighs, waggons, and even reapers, and probably threshing machines, lying exposed to the hot sun and soaking rain, alternately to swell, and shrink and warp, until every joint is loose, tenon rotten, nails screws, and rivets rusted through. To-day in the mechanic's shop stands an implement, flashy with gay paint and burnished iron, flourishing in the papers as having taken the "First Prize at the last Provincial Exhibition." In a few weeks that instrument will

had its way into some farmer's field. His family will admire it and extol its merit to wondering neighbours; it will do one season's duty, and next fall be found in the fence corner, or behind the shed. "Farming don't pay." Of course it don't.

A FARMER'S SON.

Galt

New Rotary Engine for Farmers' Use.

In our efforts to give reliable information on all matters of agricultural interest, and among these of new farm machinery, we have scrupulously avoided any "puffing" of intricate inventions; but when the interest of our subscribers, as well as that of agriculture in general, is likely to be forwarded by any new invention, we do not hesitate to give it the publicity we are led to believe it deserves.

In the CANADA FARMER of July a correspondent describes a rotary steam engine, and predicts for it good success, but at that time the manufacture was in its infancy, and comparatively untried. Now, however, the success of this new engine seems placed beyond chance of failure, and in full hope that steam power is at last within reach of the farming community of Canada, we willingly publish the testimony of thoroughly competent and reliable persons who have actually made trial of the new invention, and can speak from experience of its working on the farm. Several such favourable accounts have been submitted to us, but at present we have only space for one of these, that, namely, of Mr. Silas Rodgers, of Bradford, a gentleman who is well known, and whose testimony is unbiassed and thoroughly trustworthy.

We find, on enquiry, that the enterprising manufacturers, Messrs. William Hamilton & Son, St. Lawrence Foundry, of this city, have made considerable additions to their premises, for the purpose of carrying out to the full extent of the demand the manufacture of the rotary steam engine, and are particularly adapting it, and the boilers attached, to farmers' use. We are also given to understand that it will be so reduced in cost and weight, as compared with an ordinary engine of the same power, that it is expected very shortly to be within reach of any farmer of reasonable means throughout the Dominion of Canada.

Messrs. Hamilton & Son inform us that several engines of their first manufacture have been sent to the United States, and are doing good work there. One or two have also been sent to England, but have not been heard from as yet, and several are working most satisfactorily in the western section of Ontario.

Mr. Rodgers, who has given it a thorough trial, and who tells us that his partner claims to have threshed with it, and cleaned up, at the rate of one thousand bushels of wheat in twelve hours, writes as follows:—

"I have applied the engine to driving a threshing machine, which it has done with every satisfaction. I have often threshed much in excess of any horse power, and have had no accident from fire, as some anticipated; nor do I think that with ordinary care there is any extreme danger of fire. I have long felt that horse power was too weak to drive a threshing machine efficiently, and fully believe that farmers would be much benefited by the introduction of steam in many cases where now horse power is used. The great barrier to this has hitherto been the cost and weight of a steam engine. This has now, by the new invention, been much lessened, and the very light and compact construction of Hamilton's rotary engine renders it every way applicable for farmers' use, where it has to be frequently moved from place to place, and especially for driving threshing machines.

The engine has given every satisfaction, and I shall be happy to communicate to the same effect to intending purchasers, who are treated to refer to me by my business connection respecting the performance of the rotary engine.

"I may further say, that, unlike the ordinary crank engine, there is no difficulty whatever in starting it. We just turn on the steam, and the engine goes off without any danger of sticking on the dead centre, as others do. Moreover, the rotary engine does not require any fly-wheel beyond the ordinary hand-wheel which drives the thresher, a fact which very much lightens it for transportation. As soon as the intentions succeed in applying the steam so as to make it locomotive, thus dispensing with horses to move it from farm to farm I shall have no hesitation in pronouncing it perfect so far as my experience goes."

Agriculture, to be successful, must, like every other industry in the present day, be progressive, and we believe the time has come when the partial substitution, at least, of steam for horse power in agricultural operations may be successfully introduced into Canada. Before many years, perhaps, the steam engine will cease to be a stranger on the farm. Its advent among us, and consequent saving of labour (the one great drawback to agricultural success in Canada,) we shall hail with hearty satisfaction.

REMOVING STUMPS OF TREES.—A very good plan is, after digging around and under the stump, cutting off all the roots that can be got at, to attach a chain around the stump, pass it over a frame like the letter A reversed, only allowing the top pieces to overlap six inches, attach a good pair of oxen to the chain, and the largest stumps may be drawn out. We have seen a pair of oxen, which had become familiar with this heavy work, go at it with a run by being merely spoken to, and throw their whole weight upon the chain. They seldom did it in vain. This is better than any patented stump-puller coming under our notice.

Practical Drainage

BY ALAN MACDOUGALL, C.E.

We must not content ourselves with the mere fact that by putting in a certain number of drains the land is dried, or rendered capable of being worked earlier in the season, or of bringing forth larger or more valuable crops. Draining does not merely take off all the surface water; it does more; it affects the earth in several ways: it opens up the earth to let air get in, to break up lumps, pulverize the soil, and deepen it; it lets in moisture, and allows the warmth of the earth to have its proper part in the sustenance of plant life in winter. The actions of air, moisture and warmth in the earth are some of those sublime mysteries that always confound the wisdom of men, when we examine into the mysterious systems and laws of nature.

Every one knows that plants thrive by the heat of the sun, moisture and air, that without all of these the plants would languish or decay. While this is necessary above the earth, the same elements are required under the earth, or in the soil. Air is required to get into the roots of the plants, to help them to spread out and go deep in search of food; moisture to supply strength, heat to make them grow, especially in winter, when all above the ground is frozen up and covered with snow.

Examined under a microscope, soil would be found to be composed of a great many particles, of varying size, shape and material, from small pebbles to the finest dust, made up of minute portions of rock, and decayed organic matter. Soil may be so firm as to appear solid under the naked eye, yet there are spaces between the particles having different functions, large openings acting like canals or the main pipe, smaller ones or pores in each particle, receiving the moisture from the main channels and retaining it for the use of the plant. When earth is moderately dry, these larger spaces or canals, to use a distinguishing word, are full of air; while the small ones, or pores, are either full of air, or have a certain quantity of water, according to the power of the soil to retain moisture.

When rain falls on properly tilled land, the canals immediately fill, and from them the pores are filled as full as they can hold. The land being saturated, the rest of the water runs off into the drains; the canals, being empty, are filled with air; thus the plant gets both moisture and air. In undrained, or badly tilled land, the water has no means of escape, and remains in the soil, keeping canals and pores both full; the consequence is, when frost comes, the surface gets frozen over, or in dry summer weather the land is baked; in either case the water in the earth has no means of getting away, and the land suffers. In drained land, the canals being free to fill with air, let the heat of summer into the roots, and keep the land

from baking, and in winter let the heat of the earth come to its surface to find plant life. There is no superfluous water to attract the heat or cold.

Water falling on the surface of the ground naturally sinks into it, and, drawn down by gravitation, continues to sink until it meets with some impenetrable stratum, when it commences to rise; rising till it comes to the level of a drain, it enters that drain at the bottom or sides, but not from the top. The too commonly accepted idea that water enters a drain from the top, by coming into it from the surface of the ground, is erroneous, and from this secret, that water enters from the bottom of the drain, is the great value of deep draining obtained.

The causes that lead the water to the earth also serve to let air into the soil, which entering into it cracks it up, crumbles it, and forming new air shafts, opens up the subsoil and deepens the top soil. This gives plants the benefit of being able to strike their roots downwards, whereas formerly they were obliged to spread along the ground in search of food, from being unable to penetrate the hard subsoil. From the soil that is being opened up the plants get nourishment, which saves the land from being impoverished. The land will require less manure, also, from this simple reason, that the wet decomposes the manure more rapidly than the land can absorb it. Then, too, earth-worms and insects can dig down deeper, making more air channels to open up the land, more canals to let the water escape into the drains.

It has been computed that one inch of extra depth in ploughing has added 235 tons of extra soil to one acre, and rendered it capable of retaining under its surface about 1,500,000 additional cubic inches of air. Draining helps the opening up of soil, for air circulates through the drains when they are empty, and from them into the soil. Many experienced drainers consider this a matter of so much importance that they lead all drains to the surface at one end, or give them an air connection by lying in a drain at the top of the field, to which all the other drains are connected, having each of its ends opening to the surface.

Alsike Clover Hay.

To the Editor.

SIR.—I have to-day, December 7th, finished threshing my Alsike clover. The yield of seed per acre was five bushels. Now, as I have often heard it remarked that the hay was of no use after it had matured its seed, I send you a sample as it came from the mow at the time of threshing, that you may judge of its quality as feed for stock.

Brooklin, Ont.

H. M. THOMAS.

NOTE BY EDITOR.—The sample of clover hay sent with the above communication, was in very fair order, and would no doubt make good feed, especially if passed through a chaff cutter.

Practical Draining with Wood

To the Editor.

SIR.—In a recent issue of your journal, a communication over the signature "C" gives some useful information relative to the practice of draining with wood instead of tiles. Tiles are, no doubt, more permanent, but in the western section of Canada, where the land is generally level and flat, and especially in the lower plateau which extends all through the townships adjoining the oil region, wood fit for draining is reasonably cheap, and can be obtained, to a great extent, by the farmer's own labour; whilst tiles are high in price, and must be paid for in cash. I have often recommended the use of swamp ash, or elm, where pine or hemlock was scarce, as capable of being sawn into boards, and used for draining. There are also many other kinds equally good, always provided they are constantly kept wet; this is most important, and, indeed, absolutely necessary.

Your correspondent has, however, omitted to point out a most valuable idea in modern draining with wood, namely, that of constructing the drain with but little fall, or only enough to drain off the water, and from their larger size they may be used to advantage on flat land very nearly on a level, with, of course, a good and free delivery of the water at the outlet. Indeed, I have seen some persons who were using wood in draining, construct little dams of turf, of a few inches high, at the mouths of their drains, over which the water flows; but only so deepened by the dam as just to keep the drains full at the outfall. The experience of drainers in Lincolnshire, England, shows this most clearly, although in that section, of course, no wooden drains are used, but large tiles substituted. Vast quantities of draining are, from necessity, done there without any fall whatever to the drains themselves, but sufficient outfall is secured in all cases, and there must, of course, be some descent in the land itself. Rats, the great scourge of draining in some localities, are thus completely prevented from working, the drains being generally full of water. In clay land there is also such little tendency to "wash" that board drains may be used without any "sole" or bottom.

I am surprised at the omission of these advantages by your correspondent "C," as they certainly are most important in the level wet parts of the country where draining is absolutely required. I can state from my own knowledge that in many localities draining is abandoned because farmers are told that there is little or no fall for the drain *per se*, although the *bed* may have a few feet depression. No fear for the success of the drain whatever need be apprehended on this score, where there is *any* fall to the land, the lower end, at the outfall, may not be very much benefited, but all the upper portions most certainly will be.

It is a well-known principle in hydraulics, "that water will always find its level," and where the fall is little, the time required for the water to get away will be in proportion, only requiring a sufficient size of drain to allow of its moving more slowly. Until tiles be one cheap, therefore, for all practical purposes, the wooden drains entirely fulfill the conditions, and will, if decay is prevented, be found to answer admirably. The preventing of their decay can only be attained by keeping them always, or for the most part, under water, and this end can only be accomplished by laying the drains nearly level with the outfall. And I would strongly recommend farmers intentionally forming little dams of sod at the mouth, so as to prevent as much as possible, any air from destroying the drains. Some eminent writers and advocates of draining condemn this, and urge strongly that such a drain will not aerate the soil from the drain mouth upwards, and that thereby great loss will be sustained, much benefit being derived from the air, if the drains are almost always empty, by being laid with an inclination; but certainly that idea would not answer where wood is used. I even doubt there being much utility from it where small tile drains are used, under any ordinary adaptation of draining, as generally practised, here in Canada. We shall readily see that such a benefit as air, passing up the drain from its mouth and so upwards through the soil, is at least very problematical, especially where small tile drains are used. To show this we will follow the course of the water into the drain. In heavy rain-falls, the water, of course, runs or percolates downwards through the soil, from the various low spots, towards the drain, and in its descent, if in sufficient quantities, it displaces a considerable portion of the air that may be in the land, and between it and the drain towards which it runs. When the supply of water has ceased, the air, as a consequence, follows down to occupy the space that the water previously held in the soil, and which, from its greater density, it has expelled. But I have grave doubts as to any practical benefits that air may produce by ascending up a long and tortuous small tile drain, sometimes nearly a quarter of a mile long, almost always with one or more slight depressions in it to the extent of the diameter of the pipe, if a two or three inch tile is used, thereby forming a trap that most effectually prevents any air passing up. Nor do I see any principle, on which such an upward tendency of air is probable, when we consider that there are very few interstices in the tiles for its escape.

All this resolves itself into these facts: That, practically, we must use wood instead of tiles, where wood is cheap and tile dear. That to enable us to use wood, and avoid decay, we must keep it wet; and to accomplish this end, the drains must be, to a considerable extent, laid nearly level, and of sufficient size to allow of the water passing

slowly off, under these conditions. Do not let us, therefore, allow the bugbear of aerating the soil, upwards through the tiles or drains, to influence us in attempting to use such drains as are within our reach. Most of us farmers are practical men, who only want the first sound idea to be given, and who are quite capable of carrying it practically out. We want our land drained, and we want cheap material to do it with, and we want machines to dig the trenches, and we shall not be deterred by any theorists who tell us we cannot do it.

DRAINER.

Clover,

Clover differs entirely from the cereals in this respect, that it sends its main roots perpendicularly downwards, when no obstacles stand in the way, to a depth which the fine, fibrous roots of wheat and barley fail to reach; the principal roots of clover branch off in creeping shoots, which again send fresh roots downwards. That clover, like the pea plant, derives its principal food from layers below the arable surface soil, and the difference between the two consists mainly in this, that the clover, from its larger and more extensive root surface, can still find a sufficiency of food in fields where peas will no longer thrive. The natural consequence is that the subsoil is left proportionably much poorer by clover than by the pea. Clover seed, on account of its small size, can furnish from its own mass but a few formative elements for the young plant, and requires a rich, arable surface for its development, but the plant takes comparatively but little food from the surface of the soil. When the roots have pierced through this, the upper parts are soon covered with a corky coating, and only the fine root-fibres, ramifying through the subsoil, convey food to the plant.—*Lishig.*

Hops, in Otsego county, N. Y., command twenty cents per pound. It is now known that the hop crop of the world was short last year, and the price of hops must necessarily advance.

SODA-ASH FOR WIRE-WORMS. A letter quoted in Milburn's "Pests of the Farm" states: "I had sown a headland with soda-ash, as a fertilizer; the following spring it was under turnips, and a man hoeing asked if anything had been done to the headland? I asked 'why?' He said, 'there was not a plant destroyed by the wire-worm, and the rest of the field had fifteen to a nest.' I then determined to try it upon another field which was full of wire worms. I have never since seen one on it. In the following year I had twenty-five acres of oats attacked more generally. I happened to have a cask of soda-ash by me, and ordered it to be sown. From that day the ravages ceased, and within a week the whole field changed its colour to a vivid green. I have since ceased to consider it as an experiment, and have always a cask by me, ready, in case of any appearance of the wire-worm. The remedy is equally efficacious in repelling the attacks of the green fly."—*Dep. of Ag. Report. U. S.*

Applying Manure to the Soil.

There seems to be a considerable difference of opinion among first class practical agriculturists, as to which is the best time to apply barn yard manure, and what is the best state to have it in when applied to the soil. Mr. Mechi, the great English authority on farming matters, draws out his manure as fast as made, and spreads it at once on the land during the winter, letting it lie for the rains to wash out its best properties into the soil, and turning under in spring what remains. This procedure seems to answer very well on the heavy clay soils of Essex, and has the advantage of ensuring a comparative saving of labour, the work being done at a time when teams and men have a season of leisure. Little, if any, loss from evaporation of the volatile constituents need be feared in cold weather, and clays are too retentive to allow the rich salts to be washed down below the reach of the roots of the crop to follow. This plan can also be followed with advantage on tough sod land, intended to be ploughed up for corn in spring. But on soils that are light and open, either sandy or gravelly loams, such a procedure would be wasteful and ruinous, as the abundance of straw in long manure tends to give it a mechanical effect that is favourable on clays, but quite the reverse on light soils.

Where the most immediate effect is desired on the crop to which the manure is applied, and where the soil has to be brought to a state of fine tilth, it will be found much more advisable to compost the manure, and make it as concentrated and finely divisible as possible, in order that the roots of plants can assimilate it at once. John Johnston, of Geneva, who for many years raised the heaviest crops of wheat and grass in America, always composted his manure and applied it as a top-dressing in the winter or early spring. A farmer near London, Ontario, puts the manure as a top-dressing on his fall wheat in spring, before the frost leaves the ground. As a general rule, the sooner manure is buried in the soil, provided the soil is suitable to its mechanical action, while undergoing fermentation in it, the more organic material we add to the land; but this enriches the soil rather for the crop of the second and after years than that grown immediately on the application of the manure. On roots, barley, and, in fact, any crop requiring to be stimulated into a quick and vigorous growth at the start, a manure well decomposed and capable of imme-

diate action on the roots of the crop is necessary. So it comes that when long manure is used for root crops, by being covered over in the drills, some artificial manure, as superphosphate or guano, is needed to be sown with the seed, or immediately after it, the root crop taking up only such portions of the manure, the salts, as can be made available, while the wheat and grass following gain the chief benefit.

Raising Nut-bearing Trees from Seed.

The *American Farmer*, in an article on tree planting and raising, gives the following directions in reference to the treatment of seeds enclosed in nuts or shells:—

The vitality of a large proportion of nuts is entirely destroyed by drying before they are planted. Very few of the hickory nuts and chestnuts that have been kept for a few weeks in a dry place will ever germinate. The true way is to plant them in autumn, before the germs have been injured by drying. But as nuts and seeds are so liable to be devoured by squirrels and other animals, the better way is to put the nuts in a box, having alternate layers of mellow earth or sand, and nuts. Then sink the box in the ground so that the upper side will be even with the surface, and cover it with a thin layer of earth. In such a place every nut will freeze and thaw so many times that the shell will open the next spring, and allow the germ to grow. While in such a box, the nuts will be secure from all animals. Butternuts and black walnuts require a moist place, where they will freeze and thaw several times during the winter. The seeds of the locust trees, and other seeds, should be planted in autumn, beneath only a little leaf mould, before the integument has become so tenacious and impervious to water that no moisture can reach the germ.

Take a lesson from nature. She plants her nuts in autumn beneath only a thin covering of mould, and early in the growing season every seed and nut that has not been disturbed springs into life. Birds drop berry seeds in mellow places, and the next season luxuriant vines or bushes appear.

The seeds of the locust are enveloped in an exceedingly tough integument, which is so impervious to moisture, after it has been thoroughly dried, that they will sometimes resist the powerful influences of frost and rain, and will remain in the soil, like the seed of the wild mustard plant, for many years without germinating. In order, therefore, to secure the germination of locust seeds, the pods should be gathered as soon as they are ripe, and hung in a cool place like a cellar, where the integuments of the seeds will not become so tough as when they remain on the trees for a long period. Then let the seeds be planted late in the growing season. If planted in the spring, such tough seeds must be scalded in hot water to soften the tenacious integument, so that moisture can find its way to the germ.

Beet Sugar.

A correspondent wishes to know if there is any reliable work on the process of extracting sugar from beets; and also if the proper seed can be obtained in Canada. We do not know of such a work. The seed will have to be imported from Europe. The following extract from a letter of Mr. Dunlap in one of our exchanges briefly describes the process employed at Chatsworth, Illinois, and may be of interest:—

One trouble with the prairie soil is the excess of nitrates. Were it not for these, all we should have to do to make sugar would be to wash the beets, reduce them to pulp, press out the juice, and boil it down to the point of crystallization.

If some cheap and simple process can be discovered to accomplish the separation of the earthy salts, sugar will become a cheap article of food.

At present the process is an expensive one and requires great skill in the manipulation. The beets are first washed in a revolving cylinder of wood, which is placed in a tank through which flows a stream of water. They pass to the grater, and are reduced to a soft pulp, then to the centrifugal, where the juice is separated, not by pressure, but by centrifugal motion. Lime water is now added, turning the juice black as ink. It is then super-saturated with carbonic acid gas heated to 180°, and then passed into the saturating pans, where it is treated with muriatic acid, and again heated to 180°. It is then forced through the filter presses, and divested of earthy matter, woody fibre, and the lime. It is now called thin juice. It is next pumped into the open evaporating pans, and reduced to thick juice by steam coils. We next find it in large vats of animal charcoal or bone black. It is filtered from this, and comes forth clear, and is now ready for the first vacuum pan, and is boiled in *vacuo*, at a temperature of 170 degrees, some 40 degrees below the boiling point in the open air. From there it goes into a similar pan, called the finishing boiler, and it is reduced to sugar. It is then in the form of mush sugar, and is run into coolers of two hundred pounds, to complete the crystallization. It is then put into the sugar centrifugal and separated from the molasses. The machine revolves sixteen hundred times a minute. To complete the process, a small quantity of water is dripped on the sugar when in motion, to wash out of it the last particles of molasses. The molasses has a strong affinity for the nitrates, and also holds the peculiar beet root odour, thus leaving the sugar in pure, clear crystals, without any smell or offensive taste. It is then dried on tables, and is packed in barrels for market.

To lay off a square acre of land, measure 200 feet for each side of your square, and it will contain an acre within an inch.

A Mile

The following exhibit of the number of yards contained in a mile in different countries will often prove a matter of useful reference to readers.

Mile in England or America, 1760 yards.
Mile in Russia, 1100 yards.
Mile in Italy, 1467 yards.
Mile in Scotland and Ireland, 2200 yards.
Mile in Poland, 4100 yards.
Mile in Spain, 5028 yards.
Mile in Germany, 5866 yards.
Mile in Sweden and Denmark, 7233 yards.
Mile in Hungary, 8800 yards.

League in England or America, 5280 yards.

More than a hundred hay growers in New England indorse the report of the Board of Agriculture, that the time to cut hay is when it is flowering, and not when the flower is dying, as formerly practised.

Dr. Voelcker says:—"Placed in a heap with ashes or sand, occasionally moistened with liquid manure or water, bone enters into putrefaction, and becomes a more soluble and energetic manure than ordinary bone dust."

Some varieties of grass, though not so strong as others, should be more cultivated on account of the aromatic flavour they give to butter. The finest butter that comes to Philadelphia is made on farms where the sweet-scented vernal is abundant.

A Southern paper mentions the case of an eighty acre farm that had become so exhausted as to yield but four or five bushels of wheat per acre, but by the use of clover as a green crop, it was made to produce this year from 20 to 25 bushels of wheat per acre.

DRAINING.—"An Old Farmer says in the *Country Gentleman*, that he has laid many miles of tile drain, and observed that in a very dry season the rows of potatoes directly over the tile, are double in yield to those on each side.

FARR'S DITCHING MACHINE.—This machine was exhibited by Mr. Carter at the New Jersey Fair, where it was examined by a committee appointed for the purpose, consisting of Gen. N. Halstead, the President of the Society, Hon. Amos Clark, and E. G. Brown. These gentlemen reported that they were present at a trial of the machine. It cut, in the dry, hard ground, two and a half inches at one cut, and made a ditch eight inches wide and two feet six inches deep in a short time. The committee were pleased with its working, the ease to the operator, the great simplicity of its construction, and the small cost of repairs when parts are worn. They report the machine a decided success. The exhibitors were awarded a diploma or silver medal, at their option.

Stock Department.

Notes on Canadian Herds.

NO. 7.

THE MARKHAM HERD.

About twelve miles north from Scarborough station, G.T.R., and three miles from the village of Markham, is the breeding establishment of George Miller, Esq., one of the oldest, and at one time the most extensive breeder of Short-horns in Canada. At one time he farmed nearly a thousand acres of a rich gravelly loam soil, but as his family grew up, portions have been given to the children, till now but 400 acres remain in the old homestead. Mr. Miller commenced breeding stock as far back as 1834, but principally kept the Leicester sheep, with a very few Short-horns, till 1854, when he imported the famous cow Red Rose, by Baron of Kildale (41156), from the herd of Mr. Syme, of Redkirk, Scotland, and also got a bull, Captain (11210), from the herd of the Duke of Buccleuch. These he followed up by the importation, from Mr. Syme's herd, of Miss Syme, Snowdrop 2nd, Young Starling, Nurse 2nd, Fancy, Jane 3rd, Lucy 2nd, and that famous bull Prince of Wales (578) (18630), an animal that never was beaten in the show-yard, and that, besides the first prize, sweepstakes, and gold medal, took the Prince of Wales prize the first year it was given, when the Prince himself was present. Within the last few years he has added some fine animals from Kentucky to his herd, and notably the bulls Marion Duke of Airdrie (134), and Bell Duke of Oxford (830). Mr. Miller, now quite an old gentleman, has been almost blind for the last three years, but is now partially recovered, and able once more to look upon his favourite Short-horns. The bull Bell Duke of Oxford has proved a remarkably fine stock-getter. He is rather small, but of solid substance and good symmetry, colour dark red. He is by Royal Oxford (18741) from Lady Bell 3rd. His pedigree shows him to be descended from such noted bulls as 2nd Cleveland Lad (3108), 4th Duke of Northumberland (3619), Short-tail (2621), Belvidero (1706), through the F family of Mr. Bates' herd, from Filbert down to Fletcher. A finer lot of young ones than the calves got by him from cows of different strains we have never yet had the good fortune to see. Out of eighteen of this year's calves fifteen are heifers, three bulls, and all, with one exception, are red, with a very little white. All the calves with the cows in

the herd are by Bell Duke of Oxford. Of the cows we saw, Queen of the May, a light roan, 12 years old, by Young England (822) from Miss Syme. She is a fine large framed cow, that has bred many good calves. She has a red heifer calf, Jessie, 10 years, roan, by Young Tweed-side (760) from Red Rose. She has a roan heifer calf, Lady Bell of Oxford 1st, at her side. Necklace, 8 years, red and white, by Prince of Wales (578) from Fancy, is a very large handsome cow, the best in the herd. She has a bull calf, Bell Duke of Oxford 2nd. Mayflower, 7 years, roan, by Prince of Wales from Bessie Bell, has a red heifer calf. Flirt, 6 years, red with some white, by Prince of Wales from Fancy, is a very fine solid fleshy cow, now suckling twin bull calves. Mara, 6 years, red, by The Priest (743) from Morlina, is a handsome long-bodied cow, bred by R. A. Alexander, of Kentucky. She has a red heifer calf, Mara 4th. Rose of Autumn, 5 years, red, by Clifton Duke 2nd (133) from Red Rose, has a red heifer calf. Blanche, 5 years, red, by Burnsides, 4618, from Linda, is a large handsome cow, bred in Kentucky. She has a red heifer calf. Portia, 4 years, red and white, by Burnsides from Delia, is another fine cow from Kentucky. She has a red heifer calf, Lady Bell, for which \$500 was refused. Necklace 2nd, 3 years roan, by Marion Duke of Airdrie from Necklace, has a red heifer calf, Necklace 4th. Orphan, 4 years, roan, by Duke John, 2741, from Anna 2nd, has a red heifer calf. Miss Barnum 2nd, roan, by Duke of Marlborough, 3866, from Miss Barnum 1st, is a nice cow bred in Kentucky. Markham Maid, red, by Kentucky Champion from Miss Barnum 2nd. Rose of Kentucky, red, by Burnsides from Elsie, is a young cow recently brought from Kentucky, with red heifer calf, Lady Bell of Markham. Lady Bell of Oxford, twelve months, dark roan, by Bell Duke of Oxford from Jessie, is a neat heifer. Royal Mary, 2 years, roan, by The Priest, from Orphan, is a large heifer, of fine form and substance. Barnum, roan, by Young Paragon, 1155, from Lady Harrison, bred by James Renick, of Kentucky, is a large handsome heifer, with her first calf, a red heifer, a real little beauty. Necklace 3rd, 16 months, red, by Bell Duke of Oxford from Necklace, is a very handsome solid fleshed heifer of great size for her age. Miss Lucy, 16 months, red, by Bell Duke of Oxford from Mrs. Duncan, is a neat one. Jane, 15 months, dark roan, by Bell Duke of Oxford from Mayflower, is a nice neat-shaped heifer. Lady Jane 6th, 12

months, red, by Bell Duke from Lady June 5th, is a heifer of good form and substance. Rose of Markham, 12 months, red, by Bell Duke from Orphan, is large for her age as well as handsomely built. Christmas Eve, 2 years, red, by Bell Duke from Flirt, is the best heifer in the herd. She is a beautiful animal. We question if we have yet seen a finer one. Mara 3rd, 20 months, red and white, by Bell Duke from Mara, is a splendid heifer, of neat form, large size, and solid substance.

Mr. Miller has recently purchased a bull, Canadian Prince, bred by Mr. Campbell, of Kinellar, Scotland, got by Gladstone from Isabella, and having for grandsire that noted bull Diphong (21547). He is a neat, compactly built, solid fleshed bull for his age, 21 months, and carried off the red ribbon in his class at the London Exhibition in 1869.

Mr. Miller owns some fine Clydesdale horses, among them a very fine dark brown stallion, Young Conqueror, imported from Scotland, and also keeps about 100 Cotswold ewes. He has a ram imported from the flock of Mr. Tombs, Gloucestershire, which is remarkably large, heavy and handsome. He has this year imported a number of English and Chinese pheasants, that will be an acquisition, should they prove hardy enough to withstand the cold of our winters.

Had Mr. Miller not been excluded from exhibiting his stock at London, through the action of the Board in refusing his entries, because they were a few days after time, there would have been a change in the prize list, as he would undoubtedly have carried off the red ribbons with some of the young stock by Bell Duke of Oxford, an animal that as a stock-getter seems to have no equal in Canada so far as we have seen, though he has never been exhibited, owing mainly to his not having been kept in a high enough condition to enter the show ring.

Mr. Miller's eldest son, John, now on a farm of his own, though still giving his father a helping hand with the stock, has a few choice animals, and will soon enter the list as a breeder of Short-horns, in which he will doubtless make his mark some of these days.

An instance of heavy pork raising is related by the *St. Thomas Home Journal*. Mr. Calvin Russ, of the township of Yarmouth, sold the last lot of a litter of pigs of the Chesterswhite breed on the St. Thomas market on recently. These consisted of seven pigs, five of them of monster size, the heaviest weighing 650 lbs. For this last lot he received in payment \$240. And the produce of six pigs of the spring of 1868, of which the above lot formed part, brought him \$405.

Hereford Cattle.

It is always difficult, and in many instances impossible, to trace with clearness the rise and early progress of the different breeds of live stock; a condition to which the Hereford cattle do not certainly form an exception. More than two centuries ago, old Fuller and Camden visited the picturesque and fertile district of the old red sandstone, bordering on Wales, enumerated and extolled its most important productions, but, what is remarkable, said not a word about its cattle. "Some are of opinion," observes Mr. Dixon, from whose prize essay we shall largely draw in the preparation of this article, "that the cattle of the country were originally brown or reddish-brown, from Devon or Normandy, and that the appearance of a white-faced bull-calf at Huntington, in the middle of the eighteenth century, was deemed akin to a prodigy by the Tully of that day. Allusions are also found in the old chronicles to white cattle with red ears, on the north side of the Wye, with which the Welsh Princes were wont to compensate each other for injuries, or soothe an angry king. It is also on record that Lord Scudmore, who died in 1671, introduced red cows with white faces from Flanders, which may have cropped up in the Tully bull-calf: so that, after all, the theory of some of the Hereford breeders, that the pride of their pastures and their platters have as indefeasible a two hundred years title to the soil as the 'Duchess' tribe to Stanwick Park, or the Longhorns to Bosworth Field, may be correct in the main. Old cattle-books have it that one William Town sold 'nine Hereford oxen for £52,' on August 25th, 1694; and then a veil, which no chronicles can lift, is drawn over their history till about 1766, when Messrs. Tomkins, (who was also a great breeder of Ryeland sheep), Weyman, Yeomans, Hewes, and Tully, stood out from their fellows, as the special champions of a county breed."

Whatever might have been the characteristics of the early Hereford cattle, one thing is certain, that they owe their present high position to changes that were commenced a century ago, when Mr. Benjamin Tomkins began a system of breeding which ultimately exercised a great influence on the stock of this part of England. At that time, (about 1769) size, adaptation to labour and the dairy, appear to have been the chief points to which the Herefordshire breeders directed their earnest attention. Mr. Tomkins, when a young man, was in the employment of an individual, afterwards his father-in-law, and had the especial charge of the dairy. Two cows had been brought to this dairy, supposed to have been purchased at the fair at Kingston, on the confines of Wales. Tomkins remarked the extraordinary tendency of these animals to become fat. On his marriage he acquired these two cows, and commenced breeding from them on his own account. The

one with more of white he called Pigeon, and the other, of a rich red colour with a spotted face, he called Mottle; and it is remarkable that the marking of the two cows may be distinguished in their descendants of the present day. Mr. Tomkins appears to have selected good cows when he could obtain them in the district, but to have reared his bulls from his own stock; although, in the earlier stage of his improvements, he sometimes made use of other bulls when they suited his purpose. After a time, however, he abandoned this practice, and confined himself, in breeding, to his own stock. It thus appears that the principle of his system was the selection of the most suitable individuals for breeding, and that having produced, by this means, animals of the properties required, he confined himself to his own herd. Having arrived at the improvement sought for, he communicated to the individuals, by intermixture with one another, that uniformity and permanence of character which constitutes a breed. In this latter respect, however, he was not so successful as Bakewell, as many of the Herefords deviate considerably from a common type. "Tomkins, indeed, had what he termed his different *lines* of stock, as his Mottle line, and his Pigeon or Silver line, from which we are merely to infer that his animals had not been so amalgamated as to acquire a permanent class of common characters. Tomkins continued his improvements during a long life. He was a person of very retired and unassuming habits, seldom, if ever, showing his cattle from home, or concerning himself much about what was passing beyond his own circle. In this respect his conduct was the reverse of that of his distinguished contemporary, Bakewell, who took every opportunity to derive advantage to his stock, and to spread the reputation of it throughout the country. In one respect, indeed, the course of the two breeders was similar; each maintained the utmost reserve with respect to his mode of practice, and the sources from which he derived his original stock. It is merely known that Tomkins began breeding from the humble stock of cows which he had early acquired; but of the breed of these cows nothing is known, nor of the animals, male or female, which he afterwards made use of for extending and improving his herd. It may be believed that the selection was made from the best of the cattle then existing in the district, and that thus the breed of Tomkins was formed from the pre-existing cattle of Herefordshire, rather than by any mixture of dissimilar kinds proper to other parts of the country. The Short horns were then of little estimation beyond the district which produced them, and there is little appearance of the Long-horned blood in the modern breed. A resemblance, indeed, has generally been sought for between it and the Devons. The resemblance, however, is merely such as may be supposed to arise from a common and distinct ancestry; and the form of the modern

Herefords differs greatly from that which is typical of the true Devons. There is nothing therefore in the breed, as it now exists, which can lead us to the conclusion, that its original improver had recourse to any other races than those which he found naturalized in his native district" (Low).

It will be evident from the subjoined description of the Hereford cattle at the close of the last century, by a distinguished observer and writer, Mr. Marshall, that they constituted a good stock on which very valuable and permanent improvements were worked by subsequent breeders. "The countenance pleasant, cheerful, and open; the forehead broad; the eye, full and lively; horns, bright, taper, and spreading; chest, deep; bosom, broad and projecting forward; shoulder bone, thin, flat, no ways protuberant, but full and mellow in flesh; head, small; chop, lean; neck, long and tapering; loin, broad; hips, standing wide and level with the chine; quarters, long and wide at the neck; rump, even with the level of the back, and not drooping or standing high and sharp above the quarters; tail, slender and neatly haired; barrel, round and roomy; the carcass deep throughout and well spread; ribs, broad, standing flat and close on their outer surface, forming a smooth, even barrel, the hindmost large and full of length; round bone, small, snug, and not prominent; thigh, clear and regularly tapering; legs, upright and short; bone below the knee and hock small; feet of middle size; flank, large; flesh everywhere mellow, soft, and yielding pleasantly to the touch, especially on the chine, the shoulder and the ribs; hide, mellow, supple, of a middle thickness, and loose on the neck and buckle; coat, neatly haired, bright and silky; colour, a middle red, with a bold face, characteristic of the true Herefordshire breed."

The progress of the breed under Tomkins was slow but sure, and after devoting to its improvement the energies of a long and unobtrusive life, accompanied by a handsome competence, he had the satisfaction of knowing that he had imparted to the Hereford cattle several improved and permanent characteristics, and that they were progressively spreading over their native county, and gaining a foothold in several of the adjacent districts. The late Mr. John Monkhouse, of The Stow, who died only about three years since, was the oldest breeder-look with the past, and speaking of going with his cousin, Mr. Hutchinson, in 1809, to purchase Hereford cattle of the most prominent breeders, thus observes: "I found Ben Tomkins, Price of Ryall, and Smithies of the Lynch, the great mottle-face laen; Tully and Knight had the light greys; and Walker of Burton Court, Hewes, Yeomans, and Weyman, with his strong-boned tribes, were the most noted for the white-faces. We young fellows thought we should like to lay in a stock from Ben Tomkins, and so we drove over to see him. He asked a hundred

guineas—not pounds, mind you—for an in-calf heifer, to calve at Christmas, and that was all the satisfaction we had.”

This breed of cattle was formerly characterized by various shades of a red color, sometimes approximating to grey, with little or no markings of white, with faces frequently mottled. “The mottle-faces were popularly known as Ben. Tomkins’ sort: but although they made his fame at Wellington Court, he attributed much of his success to the use of ‘Silver,’ a white-faced bull. The picture of that equally eminent breeder, the late Mr. Price of Ryall, which meets the eye in so many West Midland homes, is as true an emblem of faith in the Hereford, as that of the late Mr. Frank Quartly in the ‘red and all red’ Devon, as you roam away to the west.” The modern Hereford has almost invariably a white face, with usually more or less white on the throat, back and belly. His form is good, the head resembling the Devon, but with more throatiness, and the face and muzzle not so tapering and fine. Hair, waving and soft, and only excelled, perhaps, by the Highland Scot: the hide thicker than the Devon, but loose and supple, and the skin of a yellowish hue. The shoulder is prominent, and when well fattened has but little coarse meat. Hips, loins and rump are generally well developed: formerly animals highly fed often laid on lumps of fat on the latter that were a positive disfigurement, a defect which more recent and improved breeding has in a great measure removed. The chest is usually well expanded, denoting a good constitution: and the twist full. The horns are of moderate length (medium), well spread, a clear yellow or white, and sometimes tipped with black.

Herefords have never been distinguished, in modern times at least, for milking properties, and are consequently bred for the shambles, and they are usually slaughtered at three years old, attaining to great weights, second indeed to none but the Short-horn, on whose heels it has, of late years, been closely pressing in the race. “Carefully” observes Mr. Dixon, “as the blood may be attended to at head-quarters, there is some truth in the remark that Herefords are not a very favourite sort with the London butchers. The fault is not with the beasts, but with their competitive age, which forces a man to ‘grind up his saplings.’ It would be strange if they, or any other breed, could bear a comparison with their fore-runners of the more orthodox five-year-old beef era; and salesman can say with justice that such noble bullocks as Western and Rowlands used to pitch in Smithfield market are not seen in Islington now. White-faced cattle, like Black-faced sheep, are a breed which, of all others, requires time to ripen: and that is just what their own thriftiness and modern usago combine to deny them. Hence they flourished best under the old school of graziers, who knew too well the roast-beef

stomach they had to deal with, to offer it young steers, and sometimes, when capital was plentiful, kept them even to six or seven years old. At present they are more profitable to the breeder and the grazier than they are to the butcher. In the grass season, owing to their remarkable aptitude to grow fat quickly, they are sent off to market ‘creamy,’ in butchers’ language, or to put out so much of their fat outside, and thus they do not ‘prove’ as they ought. It is only with age that their meat attains its beautiful marbled appearance, or intermixture of fat and lean. An experienced feeder of both sorts writes us his opinion that they will not graze to the size of the best Short-horns, but are quite their equals as feeders. They have generally a good chance, as the grazier can pick a more sorry lot out of them for his pet field, and therefore they often get the best of the grass.”

A rough, curly coat is always preferred in Hereford cattle to a smooth one, admirably fitting them for a humid and changeable climate. Their fine, placid tempers are a great point, as they not only feed better, but will bear packing closer in the straw yard, where a West Highlander’s horn is never at rest. For the yoke, the steers are much esteemed, combining the activity of the Devon with the strength of the Durham. “We have met with eight of them in the drag harrows on a Sussex farm, whose tenant found them quite equal in powers of draught to the county reds, and answering with as much docility to the ‘Duke!’ and ‘Diamond!’ ‘Love!’ and ‘Lovely!’ exhortations and mysterious pricks of the goad with which the driver boys guide their steps. Those who have tried all three sorts assure us that they have not the pace of the Devon, but that they go quite as fast as the Short-horns. The late Mr. Forbes, of Echt, in the north of Scotland, used them in teams of six to trench-ploughs, which turned up whin, heather, and stones to the depth of fourteen inches. Despite the immense strain upon them they never broke step, whereas horses, if such a task had been set them, would most probably have snapped every trace. They are remarkably easy to break to the collar; but if there is a recalcitrant among them, he is pretty certain to be a mottle-face.”

It is only of late that this celebrated breed has been much known and appreciated on this continent. The few representatives we had of it in Canada, previous to Mr. Stone’s importation in 1860, were of a very inferior description, and gave the general public no adequate idea of the great beauty and size of the modern Hereford. Mr. Stone, though long known and esteemed as a Short-horn breeder, considers that the Hereford bull is quite as valuable as the Short-horn for the improvement of the stock of Canada, and certainly that gentleman possesses several excellent specimens of Hereford grades. Those who are disinclined to go fully this length will find no difficulty in admitting

that for grazing purposes, the Herefords, as they are now improved, rank, at least, next to the world-renowned Durhams. It is true that they have been slow in migrating beyond their own native district; but their boundaries are not so rigidly restricted as many are wont to suppose. A few following observations of Mr. Dixon will show.

Few counties south of Shropshire lack the Hereford bullock element. Surrey was represented in their ranks at Leeds, and eleven other English and Welsh counties at Batterssea. They have pushed their way into Cornwall, and Ireland reports pretty well of them. The late Messrs. Rea did a good business with Jamaica, and one importer recently won prizes for cross-breeds by them in seven classes; in one of which lots eight steers were shown, after the Forres fashion. Canada has welcomed them; and in 1820, Henry Clay, the statesman, imported two pairs of heifers, and is said to have thought them as good ‘fill-pails’ as the Short-horns. Mr. Corning, who has had them for nearly thirty years on the banks of the Hudson, about three miles below the city of Albany, and who took the precaution of laying himself in with well bred ones at £100 a head, delivered, speaks of them as thrifter than the Shorthorns, very active in the plough, and, on the whole, better suited for the western prairies than the richer pastures of the States. The Australian settlers decidedly prefer them to the Devons on the pampas, from the fact, *inter alia*, that they are not half their price and take so much less catching. On the continent they have gained no great hold, and in the ranks of Poissy you very seldom find them. Still, if their ramifications are not nearly so wide, and if they have not shown the same peculiar aptitude for crossing as the Shorthorn, it must also be remembered that, as a breed, they have been maintained principally by struggling tenant farmers, and have not had one-twentieth portion of the money expended on them. They may, however, ‘rest and be thankful’ with their bullock’s patent. Disputes, which may run high in the pastures, or over ‘cakes and ale,’ as to relative goodness of breeds, are all levelled by the kitchen-spit. Men know no politics in boiled or roast, and history will not enquire what ox is supposed to have produced the ‘Baron,’ which Hogarth’s lean sentinel apostrophized at the gates of Calais:

“Oh! raro rosbit! loved by n anknd,
If I were doomed to have thee,
All dressed and garnished to my mind,
And swimming in thy gravy:
Not all the country’s force combined
Could from my fury save thee.”

In the *Agricultural Gazette*, England, are published some directions as to the choice of cattle for fattening, by Mr. Redly. He thinks the head ought to be the first consideration, and that an animal with a broad, full capacious skull, will be found every way superior to one with a long, narrow skull. A large, bright, open, soft eye he finds denotes aptitude to fatten.

About Breeding Cattle.

There seems to be a great want of knowledge and discrimination on the part of the majority of farmers in the matter of breeding cattle. Whether the point aimed at be to get first class animals for the dairy or for the butcher, or to combine both qualities in one animal, the first consideration should be the selection of females that combine size, good constitution, and milking quality. This must be done at the beginning. Next, the bull must be an animal combining perfect purity of blood with the several good points of whatever breed he is from. We are not now going to say anything on the point of breeding choice animals of any particular breed for the sole purpose of establishing a herd of thoroughbreds, the animals in which are designed to command a fancy price. Our object is simply to give some general information especially applicable to the improvement of stock in the hands of farmers. Taking the native stock of the country as the basis from which to breed for the butcher, females should be selected having large size, but compactly built. These may be bred to a pure-blooded bull of either the Short-horn or Hereford breeds. The produce will combine the large size and rather coarse frame of the dam with the earlier maturity and aptitude to fatten of the sire. The females of this cross bred to a pure-blooded bull of the same breed as their sire—say of Short-horns—will produce stock with still more of the good qualities of that breed, and by constantly selecting the best females of the crosses and breeding them to pure blood bulls in four or five generations, the progeny will be, for all practical purposes, equal to Short-horns, with perhaps a less soft skin and easy handling, but with a somewhat larger frame and hardier constitution.

So, in breeding for the dairy, select those females that have the well established points of good milkers, and cross them with a pure-blooded Ayrshire bull, continuing the cross.

Or, should a stock be desired to combine both milking and feeding qualities, it may be well to cross first with the Short-horn, and after three or four generations have been bred through this cross, to select the best females and breed them to an Ayrshire bull, continuing the cross only up to a certain point, and then returning to the Short-horn cross. But it will often be found that some of these grades, instead of being superior animals, are decidedly inferior points. These

are to be carefully culled out, and not allowed to breed, but sold off or made into beef as soon as their deficiencies can be noted.

In breeding grades, or rather obtaining a cross between any pure breeds and the common stock of the country, care should be taken to select and retain such females of the cross as approach in colour and appearance the breed the sire belongs to. In no case should males of a cross ever be used as stock-getters. Every male produced from a cross, no matter how fine in appearance and quality, should be castrated when young. It is a common mistake to suppose that a grade Short-horn bull is of any value to improve even native stock; for however well he may appear, or whatever good qualities he may possess, he is much more likely to breed back to the deficiencies of the stock from which his dam sprung, than to perpetuate the good qualities of himself or his sire. A pure-bred bull, of good pedigree, even though he may have deficiencies caused by neglect when young, or appear otherwise but an inferior animal, will nevertheless produce better stock than a grade bull that is much his superior in appearance.

And it must be considered that in breeding stock of any kind good blood will always tell, and the more of it there is in the male, the more likely is the produce of a cross on native or grade stock to result satisfactorily to the breeder; and once the quality of the stock on a farm has been improved and brought to a standard of excellence by judicious crossing, the labour will be lost if the use of a thoroughly pure-bred sire is not persevered in.

A Warm Bed for Pigs.

We very well remember a saying of an old gentleman, an excellent farmer, that if you would make a hog profitable, you should not let him ever see a winter: and we think we have satisfied ourselves that spring pigs, well kept and nursed, are far less expensive, and yield more in return for their keep, than those which are fifteen or eighteen months old. But one thing is quite certain, if we prefer our store hogs to come in in the fall, we ought to be careful to keep them through our long, cold winters, both warm and dry.

Every observant farmer knows that if his cattle are not sheltered from the cold weather and storms, they will require much more food to keep them in tolerable order than if they are kept warm and comfortable. Just so it is with pigs, if they are suffered to run over your premises in the snow and sleet, with their legs and snout as red as the gill of your gobbler, without a warm and dry bed of clean straw to resort to when

they choose, they will not only, in all probability, come out with mange in the spring, but every grunt they give will convince you that all the food they have devoured has been thrown away, for shoats that have a cold, damp, comfortless bed will get mangy, and mangy pigs cannot grow.

Let any one who has a mind to try the experiment take two pigs of the same litter, suffering the one to run as above, and let the other be well housed and well fed, and it will be found that the superior growth of the latter will pay for the care bestowed upon him, with good interest.

Hogs that are confined, and cannot get to the earth, will frequently be benefited by having a little charcoal, soft brickbats, or soft rotten wood thrown to them; and a trifling quantity of brimstone mixed with their food occasionally is an excellent thing. —*Colman's Rural World.*

Breeding Mares.

If two or three general rules were observed by all breeders, great changes might be wrought in a few years. The first of these is, *never to breed from an old animal*, whose body has been injured and its vitality weakened by injudicious treatment or by too severe labour. The results which follow these are obvious to every observer, both in man and beast. They are all impressed upon the living organism, and can no more be separated from it than breath can from the body and life still be preserved. They are *there*, whatever they may be, and will be imparted to the off-spring, just as sure as "like begets like."

It is possible that cases may exist where it is safe to breed from an old mare. Two of the finest horses that reins were ever drawn over were from a mare nearly thirty years of age, but she was perfect in limb and spirits; had always been owned by the same person, and fed with as much regularity as the owner's meals were served; she was never raced at a "military muster," or overloaded in any way, and at thirty-three years of age, she and her mate, of about the same age, were not only sound in wind and limb, but were a pair to be proud of when one held the reins over them. A pair of her colts, born after she was twenty-five, sold, under our eye, for twice as many hundred dollars as other fine horses about them brought! A moderate old age should not, therefore, absolutely exclude the mare from breeding, if she is right in other particulars.

The common practice for many years past, and one which has become woven, as it were, into the habits of the people, so that it seems as natural as the breath of life, is to keep the old mare for breeding, when she is unfitted for service on the road or on the farm. This is where the evil commences. She is a favourite animal, was handsome, spirited, and with a power of endurance almost beyond belief. But now she is seventeen

years of age, has a spavin, a slight touch of the heaves, and one or two other trifling matters which are a little inconvenient for a working animal, but she will make a good breeder, and about pay her keeping besides! This is the conclusion arrived at, and thousands of such cases exist among us to-day.

So the old mare, crippled by too early labour and disabled by disease, is to become the progenitor of a race which is to occupy a certain locality, perhaps, for a hundred years! It is scarcely possible that her young will not be injured before they see the light; and the strong probability is that each of them will bear the marks of her imperfections; some with ringbone, perhaps, or asthma, or spavin, or some lurking disease that had not developed itself in the overworked and disordered mother. We have seen a yearling colt with a ringbone upon every foot; well-formed otherwise, apparently healthy, eating and drinking well, but suffering and utterly worthless. *New England Farmer.*

Short-horn Sales in Britain.

The unusually rapid spread of that infectious disease of stock, known as "Foot and Mouth Disease," affecting equally cattle, sheep and swine, seems to have led to the dispersion of several fine herds of Short-horns, at prices that a few months ago would have been considered ruinous. Mr. Rowland Wood, of Clapton, England, sold by auction 58 head from his herd, at an average price of £30 8s. each. Among the most noted animals sold were Oak Leaf, 31 guineas; Joan 5th, 49 guineas; Flame, 46 gs.; Fuchsia, 43 guineas; Prize Leaf, 33 guineas. The famous bull Lord Chancellor (20160) was bought in at 100 guineas, while several of his sons went at prices ranging from 42 guineas down to 11½ guineas. Following this comes the sale of a draft from the Brailes herd of Mr. Sheldon, 35 head bringing an average of £46 17s. each. A roan yearling heifer, Lady Ellen Barrington, brought 155 guineas; Venetia, 130 guineas; Johanna Southcote 73 guineas. The bull Duke of Brailes was bought in at 200 guineas. 46 head of the Farnborough herd (Rev. C. Holbeck's) brought an average of £26 15s. 10d. for cows and heifers, and £23 15s. 9d. for bulls. The celebrated Keavil herd of Captain Barclay, one of the best in Scotland, came under the hammer in September, and averaged but £58 16s. 9d. each for 27 head. Seraphina 13th brought 110 guineas, Fanfar 165 guineas, Seraphina Carrissima 120 guineas, Seraphina 150 guineas. Baron Booth (21212) 61 guineas. The great prize bull of Scotland, Heir of Englishman, only fetched 100 guineas. Frederick Fitz-Booth 90 guineas. The herd had been thinned out by careful weeding till none but the very best animals remained, and considering the prices given by Captain Barclay to obtain selections from the best herds in England, the prices he obtained at his sale seem altogether too low.

A farmer in Mekelumue county, California, is feeding his cows on Bartlett pears.

The show of the Royal Agricultural Society of England is to be held in 1870 at Oxford, commencing on July 18th, and to close on July 22nd.

Latest accounts from England speak of the foot and mouth disease as very sensibly and even rapidly diminishing. It is said, in a few instances, to have been communicated to human beings.

Skillful fatteners are far less common than good grain-growers. Recent experiments have proved that animals cannot take on flesh rapidly, unless the temperature is nearly uniform, and between fifty and sixty degrees.

STOCK SALES.—Mr. Snell has purchased of J. S. Preston, of Esquesing, the four year old Short-horn cow "Adelina Patti," the first prize cow at the last Halton County Fair; price \$204. Adelina Patti was sired by imported Young Prince John, dam Catharine Hays by Imperial Master Mason, grand-dam Imperial Jenny Lind. He has also sold to M. A. Kenny, of Paris, Kentucky, six Berkshire pigs, two boars and four sows. The demand for Berkshires has been very lively; Mr. Snell has sent thirty-four to Kentucky since last spring.

SALE OF A VALUABLE COLT.—M. J. J. Davidson, of Pickering, recently sold to Mr. A. Bell, of Huntington, Quebec, his two year old colt Prince Royal, for the sum of \$850. This fine colt was sired by the imported horse Netherby, the property of Mr. Thompson, of Brooklin, and was out of Mr. Davidson's imported mare Darling. This noted mare, we are informed, was first in her class at the Highland Society's show at Perth in 1861, and other British exhibitions, and within a very recent period she and her progeny have won numerous prizes, including those of Provincial Exhibition in this country. Mr. Bell also bought at Mr. Miller's late sale at "Thistle Ha," four ewes for \$124, and also three of Mr. Hope's last importations for the sum of \$80 each.

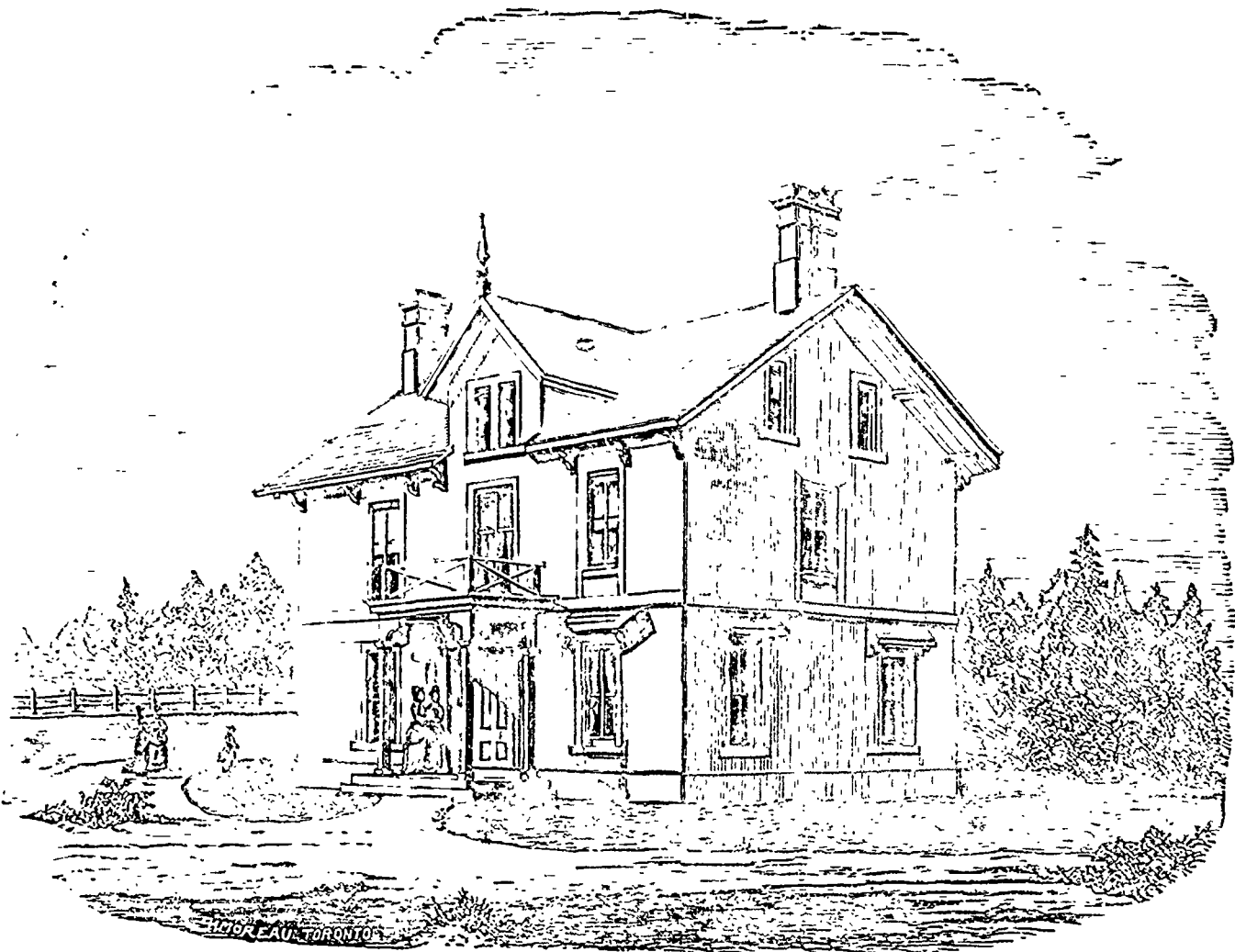
FEEDING GRAIN TO STOCK.—At the present high prices of meat and low prices of grain—wheat especially, we are confident that the farmers in townships somewhat remote from the lakes or lines of railway, will find they can make more money out of their wheat by feeding it to stock. Pork is now at a good paying figure, while the difference between the price per pound of store hogs and well fattened ones is quite considerable. Beef is likely to be high priced in spring. Allowing that 480 lbs, or 8 bushels of wheat, fed to an animal will make 100 lbs of meat, if the farmer gets \$8 for that 100 lbs, which he is likely to do with pork, and not much less for beef in April, he will then realize \$1 per bushel for his wheat, instead of the present price of from 60 to 80 cents, and would have, in addition, all the manure made during the process of feeding, which would be worth double or treble the cost of the labour and trouble expended on the beast.

AYRSHIRES FOR CANADA.—Mr. John L. Gibbs, Maple Lodge Farm, Compton, P. Q., informs us that he has sold off the entire of his Short-Horns, Herefords and Devons, together with some Ayrshires. We did not get the particulars of the prices realized at his sale, which took place Sept. 2nd, but he says he will breed only Ayrshires hereafter, and has ordered a lot of the finest animals of that breed that money can buy in Scotland, to arrive here early in the spring. Mr. G. owns the Ayrshire bull "Mars," which is claimed to be the best of the breed ever brought to America. Full particulars of his next importations are promised us as soon as the animals arrive.

THE BIRMINGHAM FAT CATTLE SHOW.—This show this year, as we find by our English exchanges, was much inferior to that of former years, the blame of it being laid on the prevailing foot and mouth disease, the sufferers from which, under a recent Act, are obliged to be slaughtered immediately on its appearance; rather a hardship, we imagine, considering that it is far from being so deathly destructive as the rinderpest was. Altogether, but 206 animals were shown, and the judges seem to have considered them of no very high class of merit, as they did not give a single commendation, and even withheld the first prize in one class. Mr. Heath obtained first in Herefords, with a four year old; while another Hereford shown that did not get a prize, girthed 10 feet 1 in. and weighed 3192 lbs. Mr. Farthing, of Stowey, took three first prizes for Devons. The Scotch feeders were notably absent, the first prize for west Highlanders going to Captain Gunter, of Wetherby. The gem of the show was a roan short-horn ox, belonging to the Earl of Aylesford, that took five prizes, and the gold medal as the best animal in the show. No full report of the great poultry show held at the same time and place has yet reached us.

HIGH PRICES IN HORSE-FLESH.—The following statistics, concerning the enormous prices that horses of great reputation have commanded, are taken from the *Turf, Farm and Field*: At Newmarket, in 1865, a bay colt by Pipato, sold for \$75,000. In the same year, a two-year old colt by Benningborough, a two year old by Volunteer, and a three year old filly by Sir Peter, were sold for \$75,000 each. For the celebrated horse Shark, \$50,000 were refused, and O'Kelly declined to accept an offer of \$100,000 for his stallion. Tradition says that the Duke of Devonshire, refused for Flying Childers the weight of the horse in gold. A few years ago the great sire Stockwell could not be bought for \$100,000; and we presume that when Gladiateur was carrying everything before him on the English turf, the Count de la Grange would not have parted with him for \$150,000. Coming to America, we find that nearly \$15,000 were paid for Lexington, and that his son, Kentucky, was sold for \$40,000. Mr. Alexander refused \$50,000 for Asteroid, Kentucky's half brother; and Norfolk, another half brother, was valued at \$10,000. Mr. Bonner paid \$35,000 for Dexter, and offers \$100,000 for one that can equal Dexter's waggon time.

Rural Architecture.



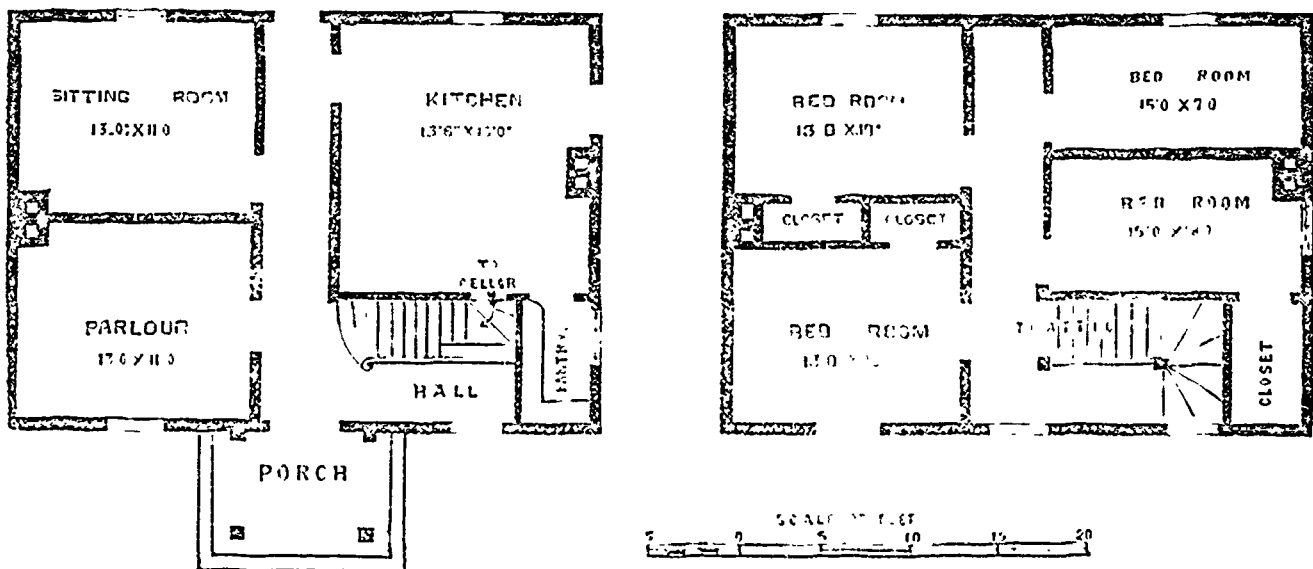
Design for a farm house

The accompanying plans and perspective elevation form a design for a plain,

substantial and serviceable farm house, which could be built under the direction of any ordinary carpenter.

The plans are drawn to a scale of six-

teen inches to the foot, so that little need be said by way of explaining them. The entrance hall occupies a part of the front of the house, and in it are placed the stairs.



GROUND PLAN

DAMOREAU ENG

CHAMBER FLOOR

This arrangement obviates the necessity of having a wide hall through the centre of the house, as a much narrower one will answer the requirements of giving access to the various rooms, and an exit in the rear.

There are three rooms on the ground floor. The kitchen and staircase hall occupy the right hand side of the house, and a bed-room and a dining-room the left hand side. There will be a pantry, connecting with the kitchen, under the stairs; also a stairs for access to the cellar, which will be under the kitchen.

There are four bed-rooms on the chamber floor. Each of them will be roomy, with lofty ceilings. Over these rooms there is space for a large garret; or two or three small bed-rooms might be formed at any subsequent time, should it be found necessary.

This design could be carried out with either brick, wood, or stone, as may be most readily procurable in the locality. The illustration represents a frame house resting on brick or stone foundations. In order to make it a warm house it might be double boarded, first with up right boards tongued and groved into each other, and then weather boarded over them, in the ordinary manner, with narrow dry, clear boards, well nailed, and having overlapping joints.

In order to take away the plainness of the windows, they are furnished with hoods, moulded and bracketted. This arrangement not only gives effect to the exterior, but affords a certain amount of shelter from the weather, and shade from the rays of the sun.

The front door is protected by a substantial portico with a railing round the roof of simple but effective design.

The eaves have bold projections with ornamental brackets under them. The chimnies are carried well up from the roof at each gable, and are divided into two stacks with projecting heads. The front of the house is taken up by a pediment, which gives height for windows to light the garet.

The above design, though simple in outline and construction, would form a convenient and pleasant dwelling house, and if surrounded with neat and appropriate out-buildings, fences, and shrubbery, might satisfy the requirements and taste of any well-to-do farmer, or citizen who could afford the luxury of a country house, and whose ambition would be satisfied with a plain and substantial building, rather than one of a more ornamental style of architecture.

Veterinary Department.

Structure and Diseases of the Horse's Foot

We have already described many of the injuries and diseases occurring to the foot of the horse, but as the circulation of the journal is increasing, and consequently introducing us to many new readers, and moreover, inasmuch as lameness arising from injury or disease to the foot is so common, we are induced to give a few more articles on the anatomical structure of the foot, its diseases, &c.

The foot of the horse is an exceedingly beautiful but yet complicated structure, and the various tissues entering into its formation are horn or hoof, bones, tendons, cartilages, laminae, bloodvessels, nerves, &c.

We intend to notice first the external structure, which consists of the hoof, or horny covering which nature has provided for the protection of the delicate internal structures. The hoof represents a sort of box or horny casement which envelopes the lower extremity of the digit, and is applied in a very intricate and exact manner to the sensitive structure by numerous elevations and depressions which fit closely into each other.

To the ordinary observer, the hoof appears as if it were constituted of one piece, but it is found to be made up of three distinct parts, which by the process of maceration can be easily separated. The three divisions are the wall, the sole, and the frog. The wall is the part of the horny casement visible when the foot stands upon the ground, and it forms a boundary of a circular form around the sensitive laminae. From the coronet the wall passes downward in an oblique direction to the bottom of the foot, the termination in front being known as the toe, which forms the bow or front of the hoof. The wall is highest and thickest in front above the toe, gradually decreasing in height and in thickness as it passes backwards, where it terminates posteriorly in two prominent portions called the heels. From the heels a continuation of the wall is inflected inwards to the centre of the foot, and this inflected portion is termed the bars. At one time the bars were erroneously supposed to be part of the sole, and at every shoeing they were cut down level with that part, and by so doing the foot was weakened and rendered more liable to disease. The bars are a continuation of the wall, and tend materially to strengthen the foot. They should never be touched with the knife except in cases

of injury or of disease. The portions of the wall between the toe and the heel are called the quarters, which are thinner than the rest of the wall, and from the manner in which their component fibres run, they give to the hoof a twisted appearance. The inside quarter is generally weaker than the outside one.

The superior or coronary border of the wall is in relation with the skin, and its inner side presents a groove, in which is situated the coronary substance. It also shows an immense number of minute orifices, into which are inserted the secreting villi of the coronary substance. The lower or inferior surface of the wall in the unshod foot is in contact with the ground, therefore the wall may be said to be the most important part of the hoof, because it is to it the shoe is attached. The wall on its outer surface has a smooth appearance, whilst the internal surface presents throughout its whole extent numerous parallel plates or laminae, which are formed of semi-transparent processes of horny substance, and they are arranged with the most exact precision. To them are attached the sensitive laminae which cover the wall of the coffin bone.

The sole of the hoof is that plate of horn comprised between the inner circumference of the wall and the bars, and occupying the inferior portion of the foot. The sole, generally, in a healthy foot, is more or less arched, presenting therefore a concave surface inferiorly or externally, and a convex surface superiorly or internally. The sole is usually spoken of as representing three parts—the toe, which is in connection with the toe of the wall, a central portion, and the heels, or that part situated between the posterior part of the bars and the wall, and which is the seat of the disease known as corns.

The internal surface is attached to the sensitive sole by the villi, or small vascular projections of the latter, from which the horny substance is produced. The usual thickness of the sole is about one-sixth of an inch. The frog, or third division of the hoof, is a mass of spongy horn, which is situated between the bars, and consequently is of a triangular form. The inferior, or ground surface, has a triangular cavity called the cleft of the frog, the walls of which are kept moist by a secretion from the sensitive parts underneath. The odour of this secretion is peculiar.

The superior or internal surface presents numerous orifices, into which are inserted the vascular connections of the sensitive frog, from which the horny frog is developed.

Purgatives for Horses.

Horses, like other animals, man himself not excepted, are troubled with less physic than heretofore. Veterinarians and horse-owners are now generally more sensible than to prescribe physic when it is not required. Diet and regimen are more trusted in than formerly. Even in that difficult and somewhat mysterious process of getting horses into condition, reiterated doses of physic, although still too frequently used, are not now regarded as quite indispensable. Educated practitioners have long passed the stage of having fifty remedies for every disorder, and very many have nearly arrived at the opinion that one good remedy will often answer for fifty diseases. A difficult matter it is, however, to discover, amidst the host of useless and injurious trash which complicates our pharmacopœia, the few medicaments which are really useful and requisite. Popular instinct in its medical aberrations has had a considerable bias in this direction, and has long looked for a universal panacea. Wondrously concocted pills and potions, vended as effectual remedies for all the ills that flesh is heir to, still find thousands of simple purchasers. Most of the nostrums used by the ignorant for the doctoring of themselves or their animals profess to be "cure-alls." The impudent self-assertion of unblushing quackery ought, however, to bring with it its own defeat. Its absurd fallacies ought to become patent in its attempts to prove too much. When agriculturists are more liberally educated they will be less apt to be imposed upon by any sort of quackery. They will understand fairly the structure and functions of the animal body; they will study more the laws of health by attention to diet and regimen; they will learn better to preserve the health of stock, and will be able to avert serious disease by attention to early symptoms, and the use of simple remedies.

Whatever other medicines may be dispensed with, purgatives will still be required in many of the diseases of horses. As in other animals, the bowels are apt to get torpid; indigestible or noxious matters are liable to be retained; deleterious substances circulating in the blood require to be purged out. This purifying process may be viciously effected through the skin or kidneys, as well as through the extensive excreting surface which extends from the stomach to the anus, which comprises some ninety square feet of superficial area; which is abundantly studded with active secreting glands, through which an enormous weight of fluid and solid matter is daily excreted. By the administration of purgatives this natural excretion from the bowels is greatly increased. During the progress of most febrile disorders, and after inflammatory attacks, these secretions are advantageously stimulated in order that products of decay and disease may be summarily removed from the body. For these

ends some of the saline mixtures afterwards specified prove particularly useful.

For ordinary purgative purposes amongst horses, nothing answers better than the gum resin—aloes—of which the dose is from four to six drachms. Of the several varieties of aloes, Barbadoes, although the most expensive, is most generally used in veterinary practice, but well selected samples of Cape or East Indian aloes answer equally well. Aloes is conveniently given in the familiar form of a ball, which is made by mixing or melting the powdered aloes with spirit, oil, lard, soap, treacle, glycerine, or some such substance. A convenient aloetic mass is made by melting cautiously over a slow fire equal weights of aloes and treacle, adding for every pound of the mass a couple of ounces of ginger. Where a prompt purgative effect is desired, the aloes is best given in solution, the roughly powdered drug being dissolved in hot water. In colic, weed, or indeed wherever a rapid and full effect is sought, the physic should be given in this finely divided form. When the bowels are torpid, and no contra indications exist, calomel, in the proportion often to thirty grains, is sometimes given along with the aloes in solution. Croton beans, linseed oil, gamboge, jalap, and other substances used to be employed as purgatives; but for horses none of these is so safe and so certain as the aloes, or the mixture of the aloes and calomel. In giving purgatives to horses it should never be forgotten that their intestines are large, vascular, and abundantly supplied with nervous influence; they are accordingly very easily excited into undue activity; and dangerous superpurgation hence occurs more readily than in other animals, and especially during such diseases as influenza, bronchitis or scarlatina.

In horses the bowels are more safely, easily, and rapidly moved when the animal has for a day previous to the administration of the physic been restricted to a mash diet. Until the medicine begins to operate, which it generally does in from twelve to eighteen hours, the mashed diet should be continued, and chilled water given freely to drink. Gentle exercise will also hasten purgation, and there is no better adjuvant than soap and water clysters thrown up every two hours or oftener. In many cases of disease, hand-rubbing of the belly, and rugs wrung out in hot water, are employed in conjunction with the purgatives, and increase considerably their action.

As gentler purgatives or laxatives, aloes in doses of two to three drachms is used. In many cases, however, a still better effect is obtained by the use of salines. As already indicated, these are especially serviceable in febrile cases, in removing from the system products of disease, or in keeping up the action of the bowels after they have been moved perhaps by more active drugs. For such purposes a convenient article consists of three or four ounces of Epsom salts, given

once or twice daily, dissolved in water or ale, conjoined, if the case requires it, with a little nitre, with treacle and gentian, or sweet spirit of nitre, ammonia, or other tonics or stimulants.—*North British Agriculturist.*

Effects of Confined Air on Horses.

Some years since I had need of a new stable, and as I always considered it more healthful for horses to stand in a warm stable, unclothed, than in a cold stable with clothing, I determined to make a good warm stable; sufficiently so to be able to avoid the use of stable clothing.

We had a saw-mill, and lumber was no object. So we built a warm close stable, with granary at the horses' heads, and a large clap, in the stable loft, open to the external air, and one of similar size open from the granary in front of the horses' heads, and through the flooring into the hay loft.

When these were open, there was, of course, plenty of ventilation, and directions were left with the foreman always to keep them open. Subsequently the hay loft was filled with hay to the roof-tree, and, of course, all ventilation prevented by the stopping of the two claps, and the hay remained in this state for many weeks during the coldest part of the winter of 1867. All the horses were taken ill with symptoms of glanders, more or less severely developed, including swelling of the throat and underneath the jaw, especially on the left side. Great discharge took place from the nose, and of a very offensive nature.

The foreman wrote at once for advice and assistance, circumstances having called me away from home for several weeks. I got the best advice and took the most active measures, but before the illness could be got under, two young four year old horses were so badly affected as to become completely farcied. Farcy is well known, in many cases, to follow glanders and similar affections, after the disease works on the constitution of the animal affected, and this result occurred in two instances out of the twelve affected (the rest all got well during the following summer), and both these cases died during the spring. My attention was, of course, directed to find out the cause of such a virulent attack, and after reading numberless authors on the subject, I became convinced that the evil was entirely caused by a very tight warm stable without any ventilation. Of course, before another winter commenced, I opened several apertures all round the stable, and quite high up, so as to avoid draft to the legs and body of the animals, but so open as to afford free and certain ventilation, and so arranged that during any stormy weather, the openings on that side exposed could be closed during the storm, and opened on its cessation. My horses have ever since been perfectly healthy and well.

In my investigations, I found many well authenticated instances where troop horses

had been necessarily confined in a vitiated atmosphere, (as during storms on board ships) for even a few hours, and sometimes days, and the result was that all kinds of disorders of a glandular character were rapidly developed. Under these circumstances, we cannot be too careful of the ventilation of horse stables. Horn cattle seem less subject to injury from such causes, as will be seen in almost all distillery stables, where the absence of ventilation is the rule, and not the exception. Since that fatal season I have found that any horses not required for work during the winter were better and cheaper kept when running in the straw-yard, with good open shed shelter during storms, than if stabled in warm stables. I always turn all mares, horses not required to work, and also all colts, into a straw-yard by themselves, and feed to each a few pounds of grain each day, and in the spring, about the end of March, take up and stable any animals wanted for spring work. In about two weeks after so doing, all the old coat is started, and the horse rapidly becomes fat and sleek, and stands the spring work much better than if stabled all winter. C.

Staggers in Pigs.

A correspondent asks information regarding the cause and management of pigs suffering from what appears to be staggers. The symptoms are as follows: The pig stands and works his mouth, and froths at the mouth, then staggers and falls as if in a fit. After remaining in that state for a time it recovers, but at last the symptoms prove fatal. Some pigs force their noses against the wall, or into a corner, but the symptoms are always nearly the same. The disease, which is popularly termed staggers, in medical parlance is called epilepsy. It depends usually upon imperfect nutrition of the brain and nervous system. In pigs, as well as in other animals, epilepsy is often hereditary. Frequently it is developed by breeding in and in. Continued feeding on poor, innutritive fare, such as brewers' wash or Indian corn, or even on such unduly stimulating food as beans or peas will favour the production of epileptic fits. Wet, foul, uncomfortable beds also lead to epilepsy amongst young and delicate pigs. In preventing further losses we would advise the attending carefully to cleanliness, comfort, and liberal feeding: supply the small pigs with some good milk and a daily mess of boiled linseed, which is particularly good, as containing a large proportion of oleaginous matters. A few cabbages, grass, dry peas, and barley flour will help to vary the dietary. If the pigs are weakly, ten or twelve drops of tincture of the chloride of iron may be given twice daily in beer, water-gruel, or mash. For the next litter secure a strong, sound, vigorous sire of a strain of blood entirely different from that which has been hitherto used.—*Vet. Ed. North British Agriculturist.*

"Hoof Rot."

To the Editor.

SIR,—Knowing that your columns are always open for correspondents on all subjects relating to the interests of the farmer, I have thought fit to send you a few lines concerning a somewhat troublesome disease called "hoof ail," that has at different times affected our cattle in some districts in this Province. It generally makes its appearance towards spring, and always attacks the animal in one, or both, of the hind feet. The first symptom is an eruption between the hoof and around the upper edge of the hoof. This eruption continues to follow the membrane, or lining of the hoof, to the toe, and in a short time suppurative commences, and the hoof falls off, and when the case is a bad one, the lower part of the foot mortifies and comes off nearly up to the top of the hoof. The disease sometimes extends up the leg, forming a solid scab; at other times, when the disease is of a milder form, the attack will commence in the toe or sole of the foot, and nothing will be noticeable beyond a lameness of the animal; and when the bottom of the hoof wears off there will be seen a large hollow cavity. The disease is extremely hard on the animal, and often marks its approach by the roughness of the hair and general debility of the system some time before the disease is fully developed; but it is not generally fatal, though it commonly destroys the usefulness of the animal to the farmer for that season. The best remedy known among us is a solution of salt and strong hot lye, frequently and faithfully applied to the parts affected. This treatment, it is thought, if taken in time and properly applied, will do much towards preventing the severity of the disease. Will you, or some of your many correspondents, let us know what is the cause of the disease? What is its proper name? Is it contagious? Is it known in other parts? and what would be the best course of treatment? An answer to these few questions would oblige one of your many readers.

FARMER

Hampstead, Q. Co., New Brunswick.
November, 24th, 1869.

REPLY.—The disease above referred to, in our opinion, is the result of some local cause, and therefore we do not consider it contagious. It is probably produced by the unclean state of the foot, caused from cattle being kept constantly in wet or rough straw yards, and the feet never being thoroughly cleansed. As a means of prevention we recommend to keep the feet clean, and using plenty of dry and comfortable bedding. When matter forms, the sole of the foot should be cut down, and a lotion of carbolic acid applied, about one part of carbolic acid to fifteen parts of water.

Shoeing Horses.

To the Editor.

SIR,—As the shoeing of the horse is a necessary evil, that has entailed upon him more pain than any disease to which he is subject, I would here take the opportunity of advising all those who wish to keep their horses

feet in a sound and healthy condition, to spare no pains in employing men competent to do the work—this unnatural fettering of a structure so delicate and complicated, with that iron defence—knowing, as I do, the many evils resulting from bad practice, and the misery inflicted upon that noble and valuable servant of man, from the effects of bad shoeing. Observe the foot of that unshod colt, with its open heels, its expansive frog, and that beautiful circular form of crust that obviates concussion. Shoe him as he is generally shod throughout Canada, and mark the change there is brought about in that foot within a very short time. After shoeing, you will find that circular form of crust changed to an oblong, the frog diminished, the heels contracted, corns and navicular joint lameness brought on, the action of the horse impeded, and the beautiful elasticity of the foot limited or destroyed, and not unfrequently permanent lameness established. Who is there that cannot daily, nay hourly, observe instances of these poor creatures hopping along in our streets, and nineteen cases out of twenty brought on from the effects of bad shoeing, or from the owner not getting him shod at proper intervals, or from bad stable management of the foot?

This is a subject which has employed the pen of many eminent men; but little, I fear, have many of our Canadian smiths been benefitted. Very few are possessed of any work on horse shoeing, unless some old work written a century, or more, ago, and by men who understood not the anatomy or physiology of the foot. This is a subject which deserves the serious consideration of the smith and the owner of horses, for, could the amount annually lost through the effects of bad shoeing and other causes mentioned above, be estimated, I am persuaded that better attention would be paid to the subject by the owners of horses. I would also here advise all men having horses lame in front, to have their feet examined by some competent person, before treating them for sweeney, or some other imaginary disease, as cases are frequently coming under my own observation, where the shoulder or other parts of the limb have been blistered, or otherwise unnecessarily tortured, when the seat of lameness has been nowhere but in the foot. And frequently have I wondered that some veterinary surgeon has not employed his pen in exposing the many errors of the empirics of this Province. Although it has not been my privilege to attend any veterinary institution, it has always been my pleasure to study the veterinary art; and I hope the day is not far distant when horses laboring under disease will only be intrusted to the educated practitioner, and that quackery will be banished from our land. J. JEX.

Brantford.

We have much pleasure in inserting Mr Jex's article, and we quite agree with him, that injury and diseases of the foot from bad shoeing are very common indeed. Perhaps Mr. Jex will give the readers of this journal one or more articles on his method of preparing the foot for the shoe, &c.

VET. ED.

The Dairy.

Making Butter from One Cow.

Many people in the city, town, or village keep a cow, and as it is of the utmost importance to them to be able to obtain milk and butter in the winter season, a time when they are dearest and most difficult to obtain, while at the same time food for the animals costs but little, if any, more, in winter than summer, they prefer, or at least ought to prefer, having a cow to calve in the fall rather than the spring. But they often find a difficulty in the way of success to obtain good butter, either from want of knowledge, or from the carelessness of a servant. In the first place, the cow should be fed on good clover hay, and get besides abundance of water, a little salt twice a week, and in addition from one to two quarts per day of some grain; wheat, just now, is the cheapest and best. The grain should, if possible, be crushed or ground whole, mixed with water, and given in the form of a thick drink. Now for the care of the milk. When it is brought in from the cow, as much as is wanted for breakfast or tea should be put by, the rest strained into small, shallow tin pans; one pan full of milk is then placed on top of another full of hot water on the stove. Let it stand till the milk is just heated, no more; then remove to a place where it can cool down, but not get too cold. The cream will rise and cover the milk with a thick coat, that can almost be lifted unbroken; before taking the cream from the milk, sprinkle a little of the finest dairy salt over it. Put the cream in a stoneware cream crock, holding about a gallon. As soon as that is nearly, or quite, full, it should be placed near a stove to get slowly warmed up to a temperature of 65° to 70°, stirring it occasionally; as soon as warmed enough, it is to be churned, and the butter may be expected to come in ten, fifteen, or twenty minutes. Care must be taken that the cream is not kept over too long before being churned, or the butter will be apt to taste bitter, a very common fault with that made at farm houses in winter, from keeping both milk and cream in cold, damp cellars instead of a moderate temperature. It is an easy matter, and requires very little extra trouble, to get good butter in winter, where but one or two cows are kept, if the *modus operandi* or hang of the thing, as some would say, is once properly understood and carried out. And a good cow—no one should keep a cow in town unless she is a first-rate one—will give far more than will compensate twice over for her cost of keep and trouble given, in the plentiful supply of wholesome milk for the children—so much to be preferred to that will stuff carried round by milkmen—and rich, sweet, fresh butter for the table. The great point to ensure success in winter butter-making is to feed the cow well, keep her clean and comfortable, and get the cream thoroughly warmed to 68° before putting into the churn.

Milk Fever in Cows.

Milk fever is a disease that does not often attack the common scrub cows of the country, but when it does attack one it is very likely to attack others on the same farm, or where several are kept together. Cows that are kept in high condition seem most liable to it, especially those that are high bred, and much confined to their stables or byres, and fed on highly stimulating food. A short practical treatise, in pamphlet form, has recently appeared in England, the remarks in which seem so sensible that we give an extract from it of a portion that may prove useful to dairymen. As will be seen, the author justly believes preventive measures taken in time, in the shape of keeping the cow in a state of health at calving time and a week or two before, is better than risking a cure afterwards.

"Milk fever usually sets in about the third or fourth day after calving; it may come on in twenty-four hours, or be delayed to the tenth day, or even later. Every cow about to calve should be maintained as nearly as possible at a healthy standard, neither unduly stimulated nor depressed by food or physic, remembering that the act of parturition is a natural process, and all animals, with few exceptions, will be equal to the emergency when it comes. For ten days before calving a dose of aperient medicine with a little ginger should be given occasionally in the morning, and the animal should be allowed free access to water, and have turnips and laxative food, by which the blood is kept cool and fluid, and facilitated in its movement through the smaller capillaries of the body. The udder ought to be emptied of milk, night and morning, for some days before calving, whenever there is any extraordinary distension.

"Milk fever having set in, what plan of treatment is best adapted to meet its varied symptoms? If a cow that has been fed on very stimulating food, and has given a good supply of milk, is seized with great fulness of the vessels about the neck, blindness, and staggers, and the milk has deserted the udder, there can be no question about freely unloading the bowels with aperient medicine, given by the mouth, and copious injections of warm water clysters; indeed, it will always be a safe proceeding to empty the bowels at all stages of the complaint, unless the degree of prostration be so extreme that, until the circulation is a little rallied by stimulants, the animal may not bear the additional shock which even slight purgation may induce. The cow should drink plentifully of cold water, if hot and excited, or gruel and water; and fresh air ought to be freely admitted into the stable.

"Supposing, then, that a cow is in the state it is commonly met with—prostrate and restless, with short breathing and feeble pulse, in fact, all the signs of exhaustion being present, without any marked indications of

pain—in such a case it will be necessary to give stimulants at once. Administer one pint of brandy in a quart of gruel every three or four hours, according to the urgency of the symptoms. If no rallying take place in an hour after giving the brandy, it should be repeated, and then under no circumstances must it be had recourse to till four hours have elapsed. In the intervals, carbonate of ammonia is a most valuable medicine, and ought to be given in all cases. Half an ounce of this medicine may be mixed with a pint of gruel, and given every four hours. If the bowels have not acted, it will be well to throw up a copious clyster of soap and warm water, to which is added an ounce of oil of turpentine. This not only assists to clear away all obstructions from the bowels, but to rouse the system from the lethargy it is likely to sink into, and to favour the expulsion of air and flatulence, which, by accumulating in the bowels, gives rise to colicky pains, impedes the free action of the diaphragm, and embarrasses the breathing.

"If the cow is cold or shivering, keep her covered, and where the depression seems dangerous to life, have a long narrow slip of flannel wrung out of hot water, and then saturated with turpentine, and applied to the whole length of the spine. Unless there is evidence of much pain, and the animal has power, and the bowels are free, laudanum is a dangerous remedy. It should only be employed in cases of great pain. When there is extreme prostration, and a disposition to cerebral or head symptoms, it would assuredly accelerate a fatal termination."

Should Milk or Cream be Churned?

There seems still to be a diversity of opinion on this point, especially in dairies where the churning is performed by other than manual labour. The trouble involved in keeping so many milk pans clean, attending to the proper manipulation and skimming of the milk, in order to obtain all the cream that it can be made to produce, and the watching of the cream when put into jars, in order to seize the right moment when it should be churned, is avoided where the whole milk is churned. In Ireland, Holland, and some parts of Scotland, it is a very common practice to churn the whole milk, especially in summer. But such a course of procedure, though it may result in obtaining a somewhat larger yield of butter, does so at the expense of its quality, and is not to be recommended to first-class dairies, where a reputation for producing a very superior article of butter makes the price go much beyond what it would otherwise realize. Butter made from whole milk must of necessity contain more or less of casein, which increases its weight and gives it a cheesy flavour that is by no means pleasant, and besides it will not keep well even under the best management. Where the whole milk is churned it is usual to put the whole mess of one milking together

in one large vessel, or vat, and as soon as it turns the least degree sour, to churn it. Sometimes the morning's mess will get a sufficient degree of acidity as soon as that of the night before, when both may be churned together; but in no case can new or fresh milk be added, except at a loss. It is usual to get the whole milk up to a temperature of 68° to 70°, even a little higher sometimes. Where large quantities of butter are to be made at one dairy, merely to be packed in firkins at once, and sold as ordinary commercial butter, a great saving of expense, together with a corresponding reduction, however, in the price realized by the butter, would doubtless accrue from churning the whole milk only. But there is enough of such butter already in our markets, if not too much, and what is wanted is a really nice, sound, sweet butter, full of rich aroma and of a good colour, which can only be obtained from cream that has been raised quickly from pure sweet milk, carefully skimmed off, and churned at just the right time, at the right degree of temperature, then worked just right, which we define to be as little as possible, so that the buttermilk is entirely got rid of, the best and finest Goderich salt used to flavour it, and then to be sent at once to a market, or put away in small tubs of well seasoned sweet hardwood.

HAY REQUIRED FOR COWS.—After an experience of many years, a writer in the *N. E. Farmer* says that good cows will eat, on an average, twenty pounds of hay per day when giving milk, and fifteen pounds when dry. Not by guess work, but tested by actual weight for months at a time. They will pay well for their keeping by yielding an average of six quarts of milk per day throughout the year. He estimates summer pasture at fifty cents per week, and milk at three and a half cents per quart.

EXTRAORDINARY COWS.—Colonel Fitch, of New London, Conn., U.S., possesses a cow that is remarkable in many respects. She is one-fourth Ayrshire and three-fourths Jersey. She is now 24 years old, has had 15 heifer calves in succession, and is now in calf again. When fifteen years of age she gave 17 pounds four ounces of butter a week, besides the new milk and cream used in a family keeping three servants. Every one of her heifer calves that has come to maturity has proved a first class butter cow. He has another cow, a pure Ayrshire, that gives 5,000 quarts of milk each year, and a Jersey cow that gives milk yielding one pound of butter to 5½ quarts of milk; also another Ayrshire cow that has given 28 quarts of milk per day for several weeks. He has a herd of 200 head of Ayrshires and Jerseys, and crosses between the two breeds, that are said to have no equals anywhere for quantity and quality of milk and butter.

Entomology.

Water Beetles.

Some months ago we commenced a series of illustrated articles on Beneficial Insects, —those, namely, that are indirectly useful to mankind by preying upon their noxious fellows, keeping in check many of our greatest pests, or acting as nature's scavengers. We began with an account of the family of "Tiger-beetles" (*CANADA FARMER*, April 15th, 1869) and then described some of the more conspicuous "Carnivorous Ground-beetles" (*C. F.*, June 15th, 1869); but the irruption of the usual horde of summer insects, both friends and foes, with consequent multiplicity of specimens sent us for identification and notice, so crowded the space allotted to Entomology, that we were compelled to postpone any further description of our tiny friends, till the season's pressure should be over. We now resume our self-imposed task, and trust that our efforts may prove the means of saving the lives of many of those friendly insects, that are too commonly devoted to a pitiless and indiscriminating slaughter.

After the Carnivorous Ground-beetles (*Carabidae*), we come, in the natural classification of insects, to a large group that live almost entirely in or upon the water; some of them live on the surface of lakes, ponds, and pools; others prefer clear running streams; others, again, the muddy bottoms of half stagnant pools. This group is divided into two principal families, the "Diving-beetles" (*Dytiscidae*), and the "Whirligigs" (*Gyrinidae*). They are all more or less insectivorous, both in their larval and perfect state, and hence beneficial. As their food, however, consists mainly of insects that inhabit the water, and which are either similar in their food and habits to their destroyers, or live upon water plants of no particular value, it can hardly be said that they are beneficial to the farmer or fruit-grower; still, as they are not noxious and are certainly useful in their own sphere, we shall go on to describe them, and implore that their lives may be spared from the destruction so universally dealt out to the poor insects.

FIG. 2.



FIG. 1.



The Diving-beetles (*Dytiscidae*) (Fig. 1. The left hand side represents the male insect, the right hand the female) are mostly large-sized insects of an oval flattened shape, generally of a dark brown, olive, or blackish color, and often with a margin and other markings of yellowish. Their legs are specially adapted for swimming, being large

and oar-like, and covered with long hairs; the hinder pair are very much flattened, also, so as to give a propelling stroke. When they rise to the surface to take in a fresh supply of air—a silver-like bubble of which may generally be seen attached to their hinder extremities—they appear to come up merely from being specifically lighter than the water: but when they dive or swim through the liquid, which they do with great swiftness, they move by means of regular and successive strokes of their oar-like legs. When at rest upon the surface they extend these legs at right angles with the body, generally with the head under water and the tip of the abdomen above, enabling them to draw in air to the spiracles beneath the wing-covers. They inhabit stagnant pools in preference to running water, and are very voracious in their habits, attacking and devouring other denizens of the water, even occasionally preying upon very young fish. We have kept a specimen for many weeks in a glass jar of water, and watched its graceful movements and curious habits with much interest; it fed greedily upon house-flies, aphides, etc., with which we supplied it.

Their larvæ are called "Water-tigers" from their ferocity; they are long and cylindrical, with large flattened heads, armed with scissor-like jaws, by means of which they seize other insects, and, it is said, "snip off the tails of tadpoles!" Their body terminates in a pair of long tubes through which they inhale the needful supply of air. When about to transform they creep into the earth near by, and make a round cell, inside of which they assume the pupa state, the perfect beetle appearing in two or three weeks, if in summer, but not till the following spring if in the autumn. We have sometimes seen little pools of water in the spring perfectly swarming with these and other larvæ.

The Whirligigs (*Gyrinidae*) (Fig. 2) must be familiar to every one. They are those little black beetles that one sees so often in groups on the surface of water, whirling and circling about in every direction with great rapidity. "When thus occupied their motions are so exceedingly quick that the eye is perplexed in following them, and dazzled by the brilliancy of their wing-cases, which glitter like bits of polished silver or burnished pearl. On approaching them, they instantly take alarm and dive beneath the surface, carrying with them a little bubble of air, which glitters like a drop of quicksilver, and is attached to the posterior portion of their bodies. Sometimes they may be taken flying, their large wings enabling them to change their abode without difficulty, when the drying up of their native pool compels them to emigrate. This enables us to account for the occasional discovery of these insects in small puddles of newly-fallen rain-water. The structure of the short hind legs, and especially of the curious branched tarsi, must be examined in endeavouring to account for the singular motions of these insects; the

assembling together of which has been regarded by some writers as resulting purely from a strong social influence, and by others as indicating no closer bond than that of animals congregating round their common food. That the food of the Gyridae consists of small dead floating insects, I have ascertained: but I would further suggest that, being produced on the same spot, as is the case with the swarms of midges, they are influenced in some degree by the common desire of continuing their species. I have often observed that, in their gyrations, they hit against one another. In dull and inclement weather they betake themselves to quiet places, under bridges, or beneath the roots of trees growing at the water's edge. When touched they emit a disagreeable odour, arising from a milky fluid, which is discharged from the pores of different parts of the body. The remarkable structure of the eyes, which, unlike those of most insects, consist of two distinct pairs, one on the upper and the other on the lower surface of the head, must be greatly serviceable to the insect in the peculiar situation in which it is generally observed, and whereby it is enabled to see objects beneath it in the water, and above it in the air." (Westwood). They are all of a broad, oval form, generally of a polished black, with broad oar-like hind tarsi, and long slender fore-feet, used in seizing their prey. They vary in size from about one fifth to half an inch in length.

The Stick Bug.

The long-bodied, long-legged, slender, slow-moving, greenish-brown insects, about three inches in length, exclusive of their long, slender legs, which measure each of them nearly as many inches more, as the common *Stick bug* (*Spectrum femoratum*, Say). This is the best and most appropriate English name for them, for they have the remarkable habit of stretching forward their two front legs and their two antennae, in such a manner that the four form apparently but a single elongate limb projecting from the forepart of their bodies, and the whole insect, which remains all the while perfectly motionless, looks exactly like a dead stick growing from the tree on which the creature happens to be living. There are, however, a variety of other local names for them: 1st. Prairie Alligators; 2nd. Devil's Horses; 3rd. Devil's Darning-needles; and, 4th. Wood Horses. The first of these four names is very inappropriate, because their home is, not the prairie but the woods. The second is more properly given to the *Recluse*, or *Camel-cricket* (*Mantis caediva*, Linn.), found so abundantly in South Illinois, Missouri, and other southern regions, and which is a beast of prey peculiar to the South, while our *Stick bug* is common everywhere in the Western States, and is not a cannibal but a feeder. The third name is more peculiarly appropriated by the little *Dragon-flies* or *Mosquito-hawks*, with bodies only the size of a stout pin, and often

colored with the most brilliant ultra-marine blue (*Lyrion* family), that flit sluggishly among aquatic herbage in search of the various small flies and gnats upon which they prey. The fourth name, "*Wood-horse*," is only objectionable, because it might be just as appropriately given to dozens of other large insects that are exclusively found in the woods—the common *Catydid*, for example. As to the habits of the "*Stick-bug*," we have already said that he is a vegetable-feeder, and, therefore, to a certain extent injurious, by devouring the leaves of the trees and shrubs which he inhabits: still, as he never occurs in any considerable numbers, and as all perennial plants are benefitted by a little judicious summer pruning, we are loth to set down the poor "*Stick-bug*" as a foe, to be pitilessly exterminated, and, if he is not to be treated as a friend, would prefer to classify him as neutral. Entomologically speaking, he is of peculiar interest, because he is one of the very few true insects which never acquire wings, or even the merest rudiments of wings. Thousands upon thousands of them have passed through our lands in the course of eleven years' experience in collecting insects: and, although we always ruthlessly destroy every *Cucumber-bug*, *Chinch-bug*, and *Rose-bug* that lies in our way, never yet did we wantonly maim or kill this interesting and anomalous little creature. As to the popular superstition that he is poisonous, and can sting like a rattlesnake, that is simply a vulgar error. He cannot even bite; or, at all events, out of the thousands that we have handled with our naked fingers, not one even attempted to bite us. Of course, if they had been really poisonous, as is commonly believed, we should have been in our grave long ago. The sexes of this insect differ so widely, that at first sight they might be easily mistaken for a distinct species. The female is of a dull brownish color when mature, though when immature and young she is grass-green, and on her tail she has only two small conical inconspicuous appendages. The mature male, on the other hand, has at the tip of his tail a very conspicuous, horizontally-working, curved forepin, and moreover his general color is a shining, pale olive green, instead of an opaque dull brown color. When very young, however, as is generally the case among insects, the males are indistinguishable in color from the females.—*Entomologist*.

The Grape Seed Insect.

(*Isosoma vilis*, Saunders).

In Vol. ii, No. 3, page 20, of the *Canadian Entomologist*, I published a description of a larva found infesting the seed of the grape, and in the *Canada Farmer* for October 15 1868, page 516, a fuller description of its habits and destructive powers, and ventured the opinion that it would probably produce, when mature, a small cecidion. In this I was in error, for the perfect insect proves to be

Hymenopterous, a small four-winged fly belonging to *Isosoma*, and as it is believed to be undescribed, I propose for it the name of *vilis* (*Isosoma vilis*, n. sp.). The following notes on its history were made subsequent to the date of the issue referred to.

In October I detached a larva from the inside of the seed, and placed it in a small glass cell between two plates of glass, in which state it remained until early in January, when it became a chrysalis, having first attached itself to the sides of the cell by a few short silky threads. It had now contracted in length, become nearly oval, and assumed a yellowish tint, with a few short loose silky threads adhering to different parts of its surface. On the 11th of February I examined some seeds, and found the larva within still alive and active, just as it appeared in the fall. On the 7th of July further specimens were opened, and the inmates found soft and motionless; these appeared to be in the chrysalis state, but I did not examine them with sufficient care to enable me to be positive. During the remaining part of July I looked many times into the bottles in which the grapes were enclosed, but could not discover anything. On the 9th of August, feeling sure that the time for the appearance of the insect must be fully come, if not already past, I resolved on a thorough search for it. As soon as the contents of the bottles had been emptied on a piece of white paper, I observed a number of small four-winged flies among the dried-up grapes. They were all dead and stiff, some of them more brittle than others. From the observations made, I should judge that they made their escape from the middle to the end of July. [For a scientific description of the insect see the *Canadian Entomologist*, vol. ii, No. 3, p. 26.]

Having kept the grapes in bottles, only occasionally opened for ventilation, in a dry room, they had become quite hard, dry and shrivelled. In consequence of this, many of the flies were unable to make their way out, the seed having become too hard for their jaws to eat through. On opening some of these the flies were found dead with wings fully developed and surrounded by small fragments of the interior coating of the seed which they had evidently gnawed off while endeavouring to escape. Those which had found their way out had eaten a small, nearly round, irregular hole through seed and skin. In many similar cases where the larva feeds within a hard substance, it provides for the escape of the perfect insect by eating away the hard enclosure until it is reduced so thin as to appear almost transparent, when a very little effort is sufficient to remove the obstruction to the outward passage of the insect. In this instance I have been unable to detect any such preparation, and believe that the whole work of escape is accomplished by the perfect fly.

Notwithstanding the abundance of this insect last year, I have as yet been unable to detect their presence, or any evidence of their work during the present season, probably the cold and wet character of the summer has been unfavourable to their operations.—*W. Saunders, in the Canadian Entomologist*.

Parasite on the Saw-fly Currant-worm

Most of our readers will be pleased to learn that a parasite has at length been found preying upon that most destructive insect, the Saw-fly Currant-worm (*Nematobus ventricosus*, Klug). We may now hope that it will in process of time so increase and multiply as to keep in check that pestilent creature, and render the cultivation of currants and gooseberries once more a source of pleasure and profit. This parasite is a very tiny four-winged fly, belonging to the great family of Ichneumonous, whose members are of such vast importance to mankind from their lives being devoted to the destruction of vegetable-feeding insects. It was found by the editor of the *Canadian Entomologist*, who sent the specimen to Mr. Benjamin D. Walsh, of Rock Island, State Entomologist of Illinois, for identification, with the following note:— "On June 29th, I observed, to my surprise, a saw-fly cocoon (*Nematobus ventricosus*, Klug) attached to a leaf high up on a gooseberry bush, instead of on or under the surface of the ground, as usual. Thinking that the unwanted situation might be the effect of a parasitic attack upon the larva, I brought the specimen in, and in a few days afterwards found that there had emerged from it the Hymenopteron that I now send you." Mr. Walsh has given a full scientific description of the creature in the October number of the above-mentioned periodical (pp. 9-12), giving it the appropriate name of *Hemiteles monatorus*, Walsh, as it had not before been described. In the course of his article he observes: "Now, as I know that the very same species of *Hemiteles* occurs near Rock Island, in Illinois, where as yet *Nematobus ventricosus* has not been introduced, it follows that it could not have been imported from Europe along with this pestilent Saw-fly, but must be in all probability an indigenous species. Hence we may draw the further conclusion that a native American parasite can and sometimes does acquire the habit of preying upon a vegetable-feeding insect imported among us from Europe. The same conclusion, indeed, follows from a fact which I published in 1866 (*Pract. Entom.*, i. p. 120), namely, that this very same Imported Saw-fly is preyed upon by another indigenous Ichneumonoid, the *Beachplerus* [*Cryptus*] *Micropterus* of Say, which was described in 1836, or twenty years before the Saw-fly, which it now infests, had crossed the Atlantic. But on a question such as this, which is not only of great scientific interest, but of high practical importance, it is as well to make assurance doubly sure."

From the recurrence of such instances, we may hope that, in time, some of our native parasites may be led to attack the imported wheat midge, and thus save our farmers and the community generally many millions of dollars per annum. It is kept in check in Europe by at least three parasites, but hitherto it has had nothing of the kind to interfere with its ravages in America.

The Six-ribbed Pine Beetle.

Mr. D. Doust, of Yorkville, Ont., has afforded us an unusual pleasure at this time of year by sending us a lively pair of specimens of this beetle, which, he states, were recently found near his house. It is so seldom that we see any active life among the members of the insect world during the depth of winter, that we look with interest upon the movements of any specimen that is more lively than his fellows, even though he be commonplace at other times. The species before us, however, though not exactly rare in this part of Canada, can yet hardly be designated commonplace, or be deemed unworthy of notice, even when found at a more genial season.

The Six-ribbed Pine-beetle (*Ibajium livatum*, Oliv.), derives its specific name from the six longitudinal ridges, or elevated lines, running down the wing-covers—three on each. It is an ashen-gray insect, striped and marked with shining black; the male is nearly half an inch long, and the female about three-quarters. The head and thorax are rather long and narrow, striped with black, the latter has an obtuse thorn-like projection on each side; the antennae are about as long as the head and thorax together. The elytra (wing-covers) are broad at the shoulders, tapering hindwards, of the same ashen-gray hue as the rest of the insect, and with numerous black markings in addition to the ridges or ribs already referred to. It lives beneath the bark of the pitch-pine, which it loosens and often causes to fall off, to the great injury of the tree. In the larva state it is a yellowish white grub, about an inch long, and feeds upon the sap-wood, in which it excavates broad irregular patches next the bark, filling the unused portions of its burrow with fragments resembling sawdust. When ready to change to the pupa state, it forms a broad oval ring of these woody fibres between the bark and the wood, and in this cell remains quiescent for some time, turning into a beetle in the autumn, but remaining in the same quarters till spring. The specimens sent us were probably disturbed by the cutting of the wood in which they were. Some few weeks ago we found a live specimen indoors, which we judged had come from some soft pine used for kindling-wood; while lying in our yard this wood had been much attacked by various species of insects, and has furnished us with several interesting specimens.

The American Entomologist.

The first two numbers of the second volume of this excellent periodical are now before us, and present a very attractive appearance in their handsome wrapper. The first number contains, amongst other interesting matter, the following principal articles:—Why Noxious Insects increase upon us; Tortoise Beetles; Scientific Nomenclature; A Potter Wasp; Tomato-worms not poi-

sonous; Gooseberry and Currant Worms; The Hog-caterpillar of the Vine; besides upwards of eight pages of answers to correspondents, which are full of valuable hints and notes, not only for the applicants for information, but also for the general reader. Number two contains articles on Universal Remedies; the Bag-worm; Experiments with the Japanese Silk-worm; The Boll or Corn-worm; Galls and their Architects; Insects injurious to the Grape-vine, No. 3; Entomological Jottings; Notices of books; and half a dozen pages of answers to correspondents. The two numbers are illustrated with upwards of forty accurate wood-cut figures of insects in all their stages. The whole is written in a lively and popular style, while at the same time all statements may be relied upon as perfectly trustworthy; the names and position of the editors are a sufficient guarantee in this respect—Messrs. Walsh and Riley, State Entomologists of Illinois and Missouri respectively. The subscription price is \$2. The publishers are R. P. Studley & Co., St. Louis, Missouri. Parties in Canada desiring to subscribe can obtain the magazine from the Rev. C. J. S. Bethune, (Secretary to the Entomological Society of Canada) Credit, Ont.

After the foregoing brief notice of the *American Entomologist* had been written, we learnt, to our great grief, of the death of the esteemed and able senior editor, Mr. B. D. Walsh, an account of which we give elsewhere. We learn from Mr. Riley, that though great as is his loss, and doubled as his labors will be, he yet intends to continue the publication of the *Entomologist*; may we trust then that our readers will rally round him and support him in his arduous but most praiseworthy undertaking, cheering him on by their good-will, and supporting the work by their subscriptions? The next number, we are informed, will contain a full obituary notice of the late senior editor, and probably a steel-plate portrait as well.

Bedbugs.—In New York, the other evening, there was a learned dissertation on the subject: "Bedbugs, and their remarkable tenacity of life." One asserted of his own knowledge that they could be boiled and come to life. Some had soaked them for hours in turpentine without any fatal consequences. Old Hanks, who had been listening as an outsider, here gave in his experience in corroboration of the facts. Says he: "Some years ago I took a bedbug to an iron foundry, and dropping it into a ladle where the melted iron was, had it run into a skillet. Well, my old woman used that skillet pretty constant for the last six years, and here the other day she broke it all to smash; and what do you think, gentlemen, that ere insect just walked out of his hole, where he'd been laying like a frog in a rock, and made tracks for his old roost up stairs. But," added he, by way of parenthesis, "by George, gentlemen, he looked mighty pale."—*New York Republic*.

Correspondence.

Emigration of Tenant Farmers.

To the Editor.

SIR.—Can tenant farmers from the old country live and thrive in Canada?

This question has been asked a hundred times or more, and by persons of as many various qualifications for success, here or elsewhere. It is, however, a question of vital importance to many farmers at home, whose circumstances require some change, as well as to us here; and from the experience of thirty-seven years' residence in Canada—engaged as I have been during that period in constant intercourse with farmers, and their interests—I think I may venture to answer. I am absolutely certain that tenant farmers of the old countries, or any one with agricultural knowledge and small resources, can both live and thrive here, with less capital, and better chance of success, than they can at "home." It is necessary, however, as they *rent* at home and probably *purchase* here, that they commence economically at first, and do not lose sight of the fact that their small capital is all, or nearly all, invested in the freehold of the farm, and therefore not so available as it would be if invested as in England, in stock and other effects producing an immediate return, and often, indeed, being turned over in part or in whole twice a year.

But at present my observations will be more particularly directed to the case of those tenant farmers at home who have capital, usually all invested in stock, &c., varying in amount from \$4,000 to \$7,000, and whose expenses are yearly increasing, while their income is often decreasing, and who besides may have a family of children growing up, and no resources from which to give them such education as may push them in professions, even if the sons had the higher qualities of intellect, and habits of acquiring knowledge, that we properly look for in a different sphere of life. Such qualifications can rarely be found in the rural districts of England, Ireland, or Scotland, and no wonder that it is so, and no disparagement to the parties to say so. "Every man to his trade," is a trite old saying and a true one. The farmer at home knows agriculture, and usually knows nothing else. His grown up sons at home have so much occasional leisure and so much general rough luxury of amusement on horseback and otherwise, that they could not, as a rule, without an almost superhuman effort, pass at once from such a state of healthy out-door life to that of a student of law, divinity, medicine, or trade, so as to ensure success in any of these callings. Without education (at college or elsewhere) they would have to contend with those who had such advantages, and would fail accordingly. To learn easily and readily, a boy must be, from the beginning, brought up to

the life to which habits of study are familiar. Therefore, when our tenant farmer finds his son beginning to grow up, his mind is naturally turned towards Canada, or some other country, as a field where his capital (out of which he never could, by division, attempt their settlement at home) may enable him to establish them in farms of their own.

For many years my avocation has led me amongst farmers and farming interests here, and I most unhesitatingly say, there is no doubt whatever that such a family, under such circumstances, can do well here, and establish each male member in a home-stead of his own. In England or Scotland every shilling of such a capital is necessarily employed in stocking a 100 or 150 acre farm—that is, if it is done effectually, and so as to be able to contend with difficulties in case of reverses; whilst here, in hundreds of cases, it would buy two such farms, and furnish stock enough to manage them into the bargain, and after the first outlay there would be no rent to pay each year as at home. Many men have started for themselves on rented farms here, with \$500, and in five years have been able to buy farms of their own. If every reader of this were to relate individual instances of facts of this kind that had come under his own actual observation, and record the success of such a class in Canada, the largest publication in the country would want little other matter to fill its pages. No one, indeed, would venture to deny this statement except it be that class of would-be farmers who were never brought up to anything but idle gentility—the most worthless of all inheritances—and men who will neither "work nor want."

The usual course of emigration is, that some particularly distressed county or city in England, Ireland, or Scotland, all at once awakes to the fact that they have a number of poor artisans who are in want of daily bread, and whose families are probably destined, at no distant period, to be compelled to claim parochial relief. Meetings are held, and money and time freely given, and Canada gets a ship-load or more of distressed men, who have never lived or worked out of one sphere, and that almost always confined to the manufacturing towns of the old country. What is the result? Why, long speeches are made to them, and they are taught to believe that for every class of emigrants, when once they are landed here, there is constant and remunerative employment. The thing is absurd, and can not be, and never was, in any country under the sun. Most of these men have no particular trade, but have a knowledge of some particular branch of some trade, and have never done any other kind of work than that. I am quite well acquainted with many such instances. Of course, comparative disappointment is, at first, the consequence; but even here, the remedy is soon found; within one year these men naturally fall into their proper sphere and value. But the case of this class of emigrants

widely different from that of the tenant farmer, and must in no way be confounded therewith. Our adopted country has begun to grow from infancy to manhood, and people and capital that could not be more profitably employed here than at home twelve years since, can now find profitable openings in the thousand different channels into which money, enterprise, and agricultural knowledge will readily fall. Still, do not imagine that in this country, or any other, competence can be obtained without labour. Not alone hand labour, but active energetic enterprise, adapting means to ends, and conforming in all things to the conditions and requirements of the new country. If you would succeed in a farmer's life in Canada, banish at once and for ever all comparison with home life. Let no one "pull up stakes" and come here, whose circumstances are comfortable at home; but rather let that class of tenant farmers, who live from year to year on rented farms at home, and who are willing and ready to try and mend their circumstances by emigration, come to Canada, and get a home of their own. But above all, my observations are addressed chiefly to those who must, from circumstances, make some change. To those (and their name is legion), I say, come to Canada; banish repinings and regrets for home comforts and old established wants, and bring your remaining capital here before it has dwindled quite away. Your children will fall into the necessities of the case with ease, and especially be gratified with the hope of a home and farm of their own.

AN OLD SETTLER.

Crops on a Small Farm.

A correspondent sends us a brief report of the proceeds of his farm last year. He cultivates about seventy acres, including meadow, and pastures about as much more. He has sold \$300 worth of stock during the past fall. The grain account, as shown by the results of threshing, was as follows: Barley, 167 bushels; wheat, 303 bushels; oats, 330 bus.; buckwheat, 50 bus.; peas, 150 bus.; besides 70 tons of hay, 900 bushels of potatoes, and 500 bushels of apples.

The same correspondent promises some communications, which we shall be happy to receive, on various practical subjects. His conclusions are the points &c., of sixty years' experience, he tells us, of farm life, mostly spent in Canada.

PRICES OF GRASS SEEDS.—A Toronto seedman writes to us in reference to the prices of grass seeds as given in our editorial on "We want better pastures," in the December number of the CANADA FARMER. He says he has sold seeds of some of the grasses mentioned at forty cents per pound, sometimes even less by the quantity, for years past. We are glad to hear of it, and in order to give encouragement to our farmers, we advise any seedman who can offer grass seeds that he can

conscientiously recommend as sound, fresh, and true to name, at anything like reasonable prices, to advertise in our columns, and he will no doubt find a good sale for all he has. The figures we gave as the prices often charged, were taken from circulars and catalogues of seedsmen themselves, both here and in the United States. We do want better pastures, and provided the seedsmen offer imported grass seeds at prices within reach of the farmers, a beginning will be made, and the value of really good pasturage once found out, there will be no lack of customers for all the seed they can import or obtain. Let large sales and quick, though small, profits be the motto of the seedsmen.

PREPARING SEED WHEAT.—We are much obliged to a Toronto correspondent for his communication on this subject, but for the present do not publish it, as the same directions have been given in this journal, more than once during the past year. We shall, however, be glad to hear again from him on the other matters to which he refers.

CONCRETE BRICK.—A correspondent from Lucan writes to know where he could get "a cheap machine for pressing concrete brick for building, and also what kind of cement is used for making artificial stone, or to render the concrete brick indestructible by water or atmospheric influence." If the writer will apply to Mr. W. M. Westmacott, 72 King Street, Toronto, that gentleman will no doubt be able to give him the information he desires.

HAY PRESS.—"A subscriber" asks for full particulars about a hay pressing machine, giving "the cost of press, railroad freight for fifty miles," &c. We find on enquiry, that a good press can be obtained here for about \$80, capable of packing two to three tons daily, if worked by three men who understand their business. A car will carry about ten tons, provided the hay is sufficiently pressed to enable an ordinary box car to contain it. It is, however, a class of freight that railroad officials do not seem desirous to carry, and will do so only at the owner's risk from fire, at a charge of \$50 a car for fifty miles. These prices seem to us enormous, but such was the answer we received at the head office here; whereas if ordinary freight were sent, of second or third class quality, such as lumber, &c., the cost would be hardly more than half. This is discouraging to farmers and injurious to city interests. We cannot understand how hay freight need be any more dangerous than many others, provided eight box cars are used.

BUILDERS' GUIDE. &c.—A correspondent from Port Hope wishes to know if there is any good work on mechanics and building; something after the style of Knight's Store of Knowledge. There are several good works on architecture and mechanics, but most of them are expensive, ranging from \$4 to \$10. A good general treatise, entitled *Carpentry Made Easy*, by W. E. Peel, may be had at \$1.50. There are others at lower prices

among which may be mentioned, Allen's Rural Architecture, \$1.50; Woodward's Cottages and Farm Houses, \$1.50; Bridgeman's Young Carpenter's Assistant, \$2.50; Harper's American House Carpenter, \$3.50.

The same correspondent also asks for some work "on the western part of Canada, with full description of each township and county, the kind of soil, whether hilly or flat, timber and general productions, water privileges, &c. We know of no work that embraces all these particulars of the western part of Canada, or any part. There have been many works published in the interest of emigration, and containing much useful general information, and some that describe localities particularly; but none that we are aware of which enter so completely into particulars as our correspondent desires. There are, however, some esteemed contributors to this journal, who, in its interest, would give any general information to intending settlers in almost any portion of Western Canada, provided our correspondent would write with full particulars of his views and wishes, so as to enable the gentlemen alluded to to assist him, or any one who has special views of settlement in this part of the Province of Ontario.

The Canada Farmer.

TORONTO, CANADA, JAN. 15, 1870.

OUR NEW VOLUME.

The position of the CANADA FARMER in entering on the seventh year of its existence and commencing the second volume of the new series, supplies abundant ground for congratulation and encouragement. The extent of its circulation, and the favourable estimation in which we have reason to believe it is held by practical agriculturists as well as by men of scientific attainments and literary culture, afford gratifying evidence that it continues to be welcomed and appreciated by that large and important class in whose interest it was first established. Under these circumstances we begin the work of another year with unabated zeal and pleasure, and can assure our readers that no effort shall be wanting to maintain the reputation which the journal has won, and even to render the CANADA FARMER of 1870 an improvement on its predecessors.

We would again earnestly solicit the co-operation of agriculturists throughout the country in extending the circulation of the journal, and in contributing to its columns from the stores of their own thought and experience, making it the

medium of inter-communication with their brother farmers on subjects of interest relating to their common profession. The present season of the year, being one of comparative leisure, and long evenings, affords ample opportunity for such an exercise of their faculties; and nothing will enhance the value and interest of the paper more than the communications of farmers themselves.

We would, in conclusion, remind our readers that, although this first number is sent free to old subscribers, no future numbers will be sent to any whose subscriptions for the current year are not paid. The price will be, as heretofore, \$1 per annum for single copies, but very advantageous terms are offered to clubs and agricultural societies, particulars of which will be found in the prospectus on the last page.

European Continental Agriculture.

It will be in the recollection of Agricultural readers that a few years ago, Mr. James Howard, of Bedford, England, travelled over a large part of the States, and paid a hurried visit to Canada, making observations on the agriculture and social condition of the New World, respecting which, on his return to England, he gave an interesting and comprehensive account to his brother agriculturists at home. He has recently spent some months, and travelled many thousand miles, on a similar tour of inspection of the Continent of Europe, and at a late meeting of the Farmers' Club, in London, read a very lengthened, able and valuable paper on "Continental Farming and Peasantry." All the English Agricultural Journals report the lecture pretty fully, and comment very favourably upon it; and though to Canadian readers the interest is too remote to require a similar detailed statement of the subject, yet a brief notice of the chief points brought out in the address may not be unwelcome or un-instructive. Mr. Howard visited France, Germany, Belgium and Austria, and the observations to which we shall refer apply, with slight modifications, to all these countries.

One prevailing and striking feature in Continental Farming, is the general subdivision of the land into small holdings. There are thousands of farms of one, two, and three acres, the owners of which fill up their time by working for the larger proprietors. The quantity of land considered necessary to maintain a small family is ten acres, and there is a large number of farms of about that size. In Belgium

alone there are a quarter of a million of peasant farms under two acres, about twenty thousand farms of thirty acres, about ten thousand farms of one hundred acres, and about one thousand farms of two hundred and fifty acres and upwards, the average being about eleven acres. Land is considered the best investment of property, and is held at prices quite disproportioned to its intrinsic value. The proprietors, indeed, seem to be possessed with what a French writer calls the "demon of property in land." In consequence of this state of things, farms are not profitably cultivated for want of sufficient capital, wages are at the same time extremely low, and the condition of the peasantry is one of hard labour and little comfort. Mr. Howard asserts that the condition of the English labourer, about which so much has lately been said, is enviable by comparison with that of a large proportion of the rural population of the Continent. An ordinary rate of wages is 1s. 8d. or 1s. 3d. a day, the hours of work being in summer from 4 a. m., to 8 p. m., and even till noon on Sundays. Under these circumstances, it is not to be wondered at that multitudes are flocking from the country into the cities, so that French political economists are viewing with alarm the depopulation of the agricultural districts, an evil which has been augmented by other causes than those already mentioned; and chief among these is the conscription for military service. An army of 700,000 to 800,000 men is no slight drain upon the rural population of a nation. This state of things, Mr. Howard suggests, may ultimately lead to a solution of the European question, by rendering a large standing army in France an impossibility.

In striking contrast to the prevailing system of small farms, there are some very large ones, held by men of comparative wealth, and cultivated in the most scientific manner. To the example and teachings of these large proprietors much of the progress of agriculture in France is due. One enterprising farmer is mentioned as cultivating twelve hundred acres of land, half of which he owns, and has purchased out of the profits of farming. On all the best farms a system of deep culture prevails, the land being ploughed as much as sixteen to eighteen inches deep. Beet root forms an important crop, from which not only is a profitable return obtained in sugar, but the pulp left after the extraction of the juice serves to fatten a large number of cattle, and the amount of stock thus fed makes a most valuable return to the land in the manure they yield. The proprietor of the

twelve hundred acre farm just mentioned, grows upwards of five hundred acres of beets, and fattens annually from three hundred to four hundred cattle. He employs the "box system" of feeding, and finds great advantage in keeping the fattening beasts in comparative darkness.

The cultivation of beet root, and sugar making in connection with it, are perhaps the most marked and distinctive features of Continental Agriculture. On most of the farms one-third, and in some as much as one-half the land, is devoted to this crop. Mr. Howard gives an interesting account of the mode of culture, a notice of which, however, must be reserved for another article.

Agriculture on the Continent owes much to the fostering aid and encouragement of the Government. To this source, no doubt, may be attributed in great measure the success of beet root growing and sugar making; and in many other ways the State has adopted a liberal policy in this department. Under its wing the most valuable institutions flourish, such as Agricultural Colleges and Societies, with their exhibitions and experimental farms, veterinary colleges, museums and other important schools of instruction. The State attends also to the matter of drainage, roads, stock-breeding, and in a hundred ways seeks to promote the agricultural prosperity of the country. Among other methods adopted to raise the standard of farming, the Government annually offers, in each of the twelve agricultural districts into which the country is divided, a premium of £200 and a silver cup, worth £120, for the best managed farm. With all this, it must be confessed that the Government patronage in agriculture is not regarded in every quarter with favour.

The live stock of the Continent has exhibited of late years a very marked improvement, owing almost entirely to the introduction of the best English breeds. Among the native stock, some Swiss cattle are noted for their milk producing qualities. The Percheron horses are highly esteemed, and are no doubt, for draught purposes, a valuable breed. Great care is bestowed on the condition of the horses' feet. The French give the English credit for knowing horse flesh, but maintain that they are careless about their feet.

One other peculiarity of Continental Farming must not be passed over without a brief notice, the extent, namely, to which irrigation is practised. This is seen on the largest scale in the plains of Lombardy and Piedmont. In Lombardy, out of a total area of 6,000,000 acres, upwards of 1,000,000 are artificially irri-

gated; upwards of 3000 miles of main or minor canals have been cut in the province, besides a vast extent of small arteries belonging to private individuals. This system of irrigation has been in use for many hundred years, and in connection with it, in some places, the utilizing of the sewerage of towns has long been practised, and with the best results.

From this very imperfect sketch of Mr. Howard's paper, we Canadians, as well as our English brethren, may gain some useful ideas. The last point mentioned especially deserves serious consideration, and in our seasons of drought, incalculable benefit would no doubt be derived from some practicable scheme of irrigation, for which the streams in many parts of the country afford excellent facilities.

The culture of beet and the manufacture of sugar, which have almost been the regeneration of agriculture on the Continent, might also be introduced with advantage here; at least the experiment is worth a trial.

With regard to the division of the land, we are inclined to Mr. Howard's opinion, that the best condition of the country is secured by a considerable variety in the size of farms. It is, no doubt, necessary for us in Canada to guard against the tendency which has produced so much evil on the Continent, namely, the passion of owning the soil. To work land to profit, the farmer must have some capital to put on it. If all his means are absorbed in the purchase of the land, he cannot do justice to the farm; and if he even manages to keep out of debt, he can hardly fail to impoverish both himself and his acres. For a similar reason the tenant farmer should have more than a year's interest in his farm, and a considerable length of lease will be best for all parties concerned. Till a man can save capital sufficient to manage a farm to profit, he had much better continue to hire as a farm labourer. He can here command good wages, be at little personal expense, and can, if he has ordinary prudence, lay by yearly such a sum as will, in a comparatively short time, place him in a position to purchase land and cultivate it for himself with advantage.

A Homestead Law.

Another attempt to secure a homestead law for Ontario has failed, the motion in its favour brought forward in the Legislative Assembly by Mr. Boyd having been withdrawn almost without discussion. This is very much to be regretted, for there is, perhaps, no law that could be passed that would prove

more acceptable to farmers, and at the same time render them satisfied with their country, and desirous to settle their sons on farms of their own in Canada, instead of, as now, turning with longing eyes to the Western States, than a good, well-considered, and brief Act exempting their homesteads, together with some fifty acres of land, from seizure and sale under execution for debt. Such a law, in conjunction with a liberal system of free grants—not of barren rocks, but of fertile land—would also greatly tend to draw hither a large proportion of the emigration from Great Britain, where the necessity of finding new homes for a rapidly increasing and ill-supported population is forcing itself more and more on the attention alike of politicians and philanthropists. With such inducements as a wise and forecasting Legislature could and ought to offer here in Canada, we should not hear, as now, of English noblemen sending colonies of twelve hundred British subjects to form a settlement in Kansas, or any other part of the American Union.

Another collateral, but most important, benefit of a homestead law would be the check it would at once give to the ruinous system of credit, which merchants are so ready to extend to farmers or their families, so long as these very friendly and accommodating traders can look to the land of their creditors as a security. It may be urged that the privilege of exemption may be abused; but there is no practical difficulty in providing adequate safeguards against such abuse; and the experience of the United States has shown that on the whole this principle works most beneficially. Let cash, or payments in produce, become the rule, and very much of the troubles and improvidence which now keep numbers of industrious farmers always behindhand, and ultimately deprive them of their homes and lands, would be banished, and give place to ease of mind and substantial prosperity.

The proposed bill of Mr. Boyd might not, perhaps, have been all that could be desired, but yet was more than the Legislature is at present disposed to grant. Farmers should keep the subject before their minds. Constituting, as they do, the largest portion of the population, they have immense power in their hands, did they but know their strength and act in unison; but so long as they persist in sending, by their votes, an overwhelming number of lawyers into Parliament, to the exclusion of the good and true men in their own ranks, they may expect to get scant justice done to the agricultural interests.

Death of the State Entomologist of Illinois

It is with very deep regret that we record the death of Benjamin D. Walsh, the highly talented State Entomologist of Illinois. He was walking, it appears, on the railroad track near the depot at Rock Island, on Friday, Nov. 12th, when, a train coming upon him unawares, the engine caught his foot and crushed it. The injured limb was amputated, and for several days no great alarm was felt respecting his condition; it soon, however, became apparent that he had received serious internal injuries, and that there was no hope of his recovery. He lived but a few days longer, when death put an end to his sufferings.

Mr. Walsh was long known to the scientific world as a very able entomologist, and a writer of no ordinary force and ability. He had a most thorough hatred of everything that savoured of charlatanism or humbug, and ever denounced it when it came in his way, with unsparing severity; he was especially intolerant of all quack nostrums and universal remedies for noxious insects. He first became known to entomologists in general by his learned papers in the Proceedings of the Entomological Society of Philadelphia, during several years. He also wrote for several journals, and especially for the *Prairie Farmer*, published at Chicago. In 1865, the *Practical Entomologist*, a monthly periodical, was started at Philadelphia; to the first volume Mr. Walsh contributed largely, and of the second volume he was sole editor. This publication was discontinued in 1867, but in the following year, Mr. Walsh, assisted by Mr. C. V. Riley, an enthusiastic and accomplished student in the same department of natural science, established the *American Entomologist*, a well known and highly valued magazine, which has already done good service in the cause of popular science. In the same year he was appointed State Entomologist of Illinois, in which capacity he put forth his first report on the noxious insects of Illinois, about a twelvemonth ago. Death has now, alas! cut short his mortal career, and we feel that we have lost one of our brightest lights in entomological science, who had done good work in his day, and from whom we had looked for much in the future. That such a man should be cut off in such a way is one of those deep inscrutable acts of Providence, to which we can only bow in full submission, without comprehending, it may be, its mysterious wisdom.

The following particulars of his earlier life we gather from the *Prairie Farmer*. Mr. Walsh was born in Frome, Somersetshire, England, in July, 1808; he was, therefore, in the 62nd year of his age. He was a graduate, M. A., of Oxford, and originally designed entering the service of the Church. This idea was early abandoned, and when still a young man, he married and came to America, settling on a farm in Mercer County, Illinois. His health failing, after a few years he was induced to move to the city of Rock Island, Ill., and engage in the lumber business. This was in 1850; after some eight years he retired from business with a moderate competency. At an early age he showed a great taste for the study of Natural History, especially entomology; and had, early in life, collected a large number of insects, knowing much of their habits and characteristics. On retiring from business he devoted himself almost exclusively to researches in this, his favourite branch of study. He has left a widow, but no children. Of his family in England, one member, a brother, Mr. J. H. Walsh, is well-known as the able editor of the *London Field*, and as the author of the best treatise on the horse, extant, under the *nom de plume* of "Stonehenge."

Entomological Society of Canada.

We are much gratified to learn that the Council of the Agricultural and Arts Association of Ontario, at their meeting on the 1st of December, unanimously voted a grant of \$400 for the ensuing year to this Society. The Society is, in return, to furnish an annual report to the Association, to form a cabinet of insects useful or prejudicial to agriculture and horticulture, to be placed at the disposal of the Council, and to continue the publication of their journal, the *Canadian Entomologist*.

It is pleasing to find that the enlightened liberality manifested in the neighbouring States in the support and encouragement of practical science is extending to this country, and that substantial aid is now being afforded to those engaged in one of the most utilitarian branches of natural history. No farmer, fruit-grower, or gardener in Canada is ignorant of the vast losses that are every year sustained through the ravages of insects, and few assuredly are not anxious to know how they may best combat these destructive attacks upon their property. The objects, however, are so minute, and their life and habits are concealed from view to so great an extent, that it requires constant, care-

ful and patient investigation by experienced persons to unfold their natural history, and devise useful and effectual remedies for their devastations. The Entomological Society has an immense field of work before it, but it is one in which the labours of each individual member are of value, and may be utilized for the benefit of the whole community. If they succeed in enabling the people of Canada to rescue from the devouring loc but one single percent. of their fruit and grain, they will have repaid their grant many hundred fold. That they may go on and prosper in their work is our earnest wish and hope.

Farming Capital

Much of the success of the farmer depends upon his having command of a sufficient amount of capital, and the way in which it is applied.

The great evil with the majority of farmers is that they seem to consider that their land is their capital, and so endeavor at the very commencement of their career to invest every dollar they possess, and often a little more besides, in the purchase of a large farm, leaving themselves with nothing but their labour with which to carry on the operations of the farm, often at the risk of having to run in debt to an extent that all the earnings of a half stocked and negligently cultivated farm can never pay for. Thus matters go on till the farmer finds his land yearly getting poorer, himself getting worn out with hard work, and his debts accumulating to such an extent that he has to sell off his stock, often his farm, and move to some other location.

Probably more than half the farmers in the country find that after paying their hired help, taxes, the cost of supporting themselves and their families, they have but little or nothing left to lay by, and are often obliged to sell the productions of their farms just as soon as they can be sent to market, be the price what it may.

Now, if a farmer would be content to own only just so much land as, after paying for, there would still be left sufficient capital to stock properly, and with good stock, purchase the best labour-saving implements, and still leave a reserve to fall back upon should crops fail, or prices rule low in the fall, and at the same time be content to work his farm so as to keep it in good heart, looking rather to the future than the immediate realization of present profits, he will find himself getting in a better position from year to year, and as his capital increased from being judiciously laid out, he would be able to

make many improvements that should add greatly to the value of the farm, as well as the comforts of his family. Being able to hold on to his grain or stock till remunerative prices could be obtained, he would soon be in a position to increase his acreage without diminishing his capital, or trusting to luck, as it is called, to get his land paid for. Let farmers study this matter thoroughly, and see for themselves that *without sufficient capital no man can succeed in making farming pay.* The more capital a farmer can put into his business, provided it is judiciously done, the greater will be the return he obtains for it. As an illustration, we will say that if a man has \$1,000 of capital to work 200 acres of land with, he would not be able to more than half stock it, while if he had \$2,000 he would probably be able to get enough stock of the most ordinary quality to begin with, in order to consume the pasturage, and make some manure. Supposing he had \$1,000, or was content with 100 acres, on which to expend \$2,000 of capital, he would be able to get first-class stock, employ reliable labourers, and being able to expend more labour in attaining good culture, the sales of both crops and stock would realize more than double what would be done on half the capital. In other words, he would make from 30 to 50 per cent. on his outlay in the latter case, where in the other he would but just save himself from loss, and have nothing but his bare living for his labour.

Good Management

Next in importance to having sufficient capital, much of the success in farming will depend on the tact and good management of the farmer himself in planning everything beforehand, and leaving nothing to chance or the caprices of others. The farmer who is never in a hurry, but drives his work, having it done thoroughly, at the right time, and in the proper season, allotting to each of his labourers the amount of work to be done in a certain time, and making them understand that they are to do it in a proper manner, is sure to succeed.

But to enable him to make thorough use of his brains the farmer must be educated sufficiently to make fair business calculations, keep simple accounts, and be free from prejudices that are too often the stumbling block in the way of carrying out improvements and observing facts. The farmer needs to be a close observer, and ought to know enough of natural laws to be able to apply his observations to practical use.

The farmer who is a good manager will always find at least a little time to study, and be willing to profit by what he can learn of the experiences of others, as given through the pages of good agricultural journals; and he will also find time to interest himself in advancing the knowledge of his profession among his neighbours, by encouraging them to form a club for the discussion of agricultural topics, during some of the long winter evenings, and by introducing improved machinery and stock. By his prudent contriving and good management in keeping his farm and his stock in a constantly progressive state of improvement, he will also show an example to them which they will in time come to imitate.

Notes on the Weather

The last month of 1866 has shown some noticeable features beyond the average weather of the season. In the back townships the ground has been generally covered with snow, and the sleighing has been tolerably good, while along the lake much rain has fallen and the roads have been in a state that precluded much business being done in the way of moving crops to market. Stock sales by auction were greatly in vogue during the fall, and very low prices were in most cases realized, but there seems to have come a sudden rise at especially for milk cows, and good common cows that were difficult to sell in November at \$25 per head, now readily command \$40, and even more. The importance of making manure is becoming so evident, and the price of hay and grain so low in comparison with that of meat, that many animals will be fattened for the spring and early summer trade.

The mean temperature of the month of December has been 28° . 8, which is 2° . 9 above the average, and 6° . 3 above that of December, 1865. The highest temperature was 43° on the 22nd, the lowest 6° on the 6th.

The amount of rain fall at Toronto was 2.590 inches, being 0.971 above the average, while of snow we had at Toronto but 7 inches, being 7.4 under average.

There have been but few clear days, 10 being entirely overcast, and most days partially so.

The prevailing winds have been from the west.

THE RURAL ALMANAC.—We have received from the publishers of the *Field* newspaper a very beautiful illustrated almanac for 1870. It contains, besides the usual contents of such publications, a large amount of very interesting information in natural history, with spirited and well executed wood engravings, and a well selected assortment of miscellaneous articles on subjects interesting to the sportsman, the country gentleman and the general reader. It is, altogether, very admirably compiled and printed, and wonderfully cheap,—the price being one shilling.

Horticulture.

EDITOR—D. W. BEADLE,

CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

Winter Protection.

The time has come when it will pay the farmer and the fruit grower to give attention to the subject of winter protection. Five and twenty years ago it was not necessary to give the subject a thought. Then there was sufficient protection afforded by the uncut trees of the forest, and then those that had fruit trees rarely failed to gather abundant crops, and the wheat was not killed out by intense freezing. Now it is all changed. The frost-laden winds sweep along the ground for many miles, sometimes blowing the snow from the fields and piling it up in the roads or along the fences. The orchards are fully exposed to the fiercest blasts, the sheep and cattle that are not housed find no better shelter than the lee side of a rail fence, and the houses of the farmer and the barns and sheds of the stock are shaken by every blast, and searched at every crevice.

Now, the stomach can contain and digest only a given quantity of food. Some of that food is changed into charcoal, and burned through the agency of breathing, to keep up the heat of the body. The colder the weather the more charcoal must be burned in the system to keep up the requisite heat, and if the animal, quadruped or biped, human or brute, be exposed to currents of air, even though the thermometer does not indicate any lower degree of temperature, these currents carry off the animal heat more rapidly, and a larger amount of charcoal must be consumed to keep up the warmth necessary to life. If all the food the animal can assimilate must be expended in keeping itself warm, how much milk or how much fat, or how much muscle, can be expected. And just in proportion as the quantity of food used up in producing warmth is greater, in the same proportion will the amount that can be used in the production of muscle, milk or fat, be less.

If any one will take the trouble to make a wooden tube, say that it is two feet square and one hundred feet long, place one end of it in his barn and let the other extend along the ground towards the west, and hang a thermometer at each end in such a position that it will feel the current of air that sweeps through it on

a windy day, he will not find much difference in the degree of cold indicated by the two thermometers. But let him now insert some wire screens, fastened on a frame that will fit into the tube, and he will find that the thermometer at the end in the barn will rise, and indicate a warmer temperature as the number of wire screens placed in the tube is increased, or the mesh of the screens is made finer.

This, then, demonstrates that the cold of the wind is lessened by being made to pass through the screen of a forest, and the finer the screen the better will it ameliorate the temperature.

But this is not all; the trees present such a barrier to the winds that the strong currents of air are forced to rise and pass over the tops. The winds can no longer creep along the ground, sweeping off from the fields every vestige of snow, and often the dry frozen earth itself, but must bluster and rage far overhead.

Cannot every farmer see in this the comfort of himself, his family and his stock; a certain amount of food saved, or laid up in muscle or fat, or returned in milk, being no longer used to keep up a fire of such intensity, in order to enable the animal to withstand the cold blasts? Can he not see that it is fuel saved in his own house; that his orchard is kept in a more even temperature, that his wheat is covered evenly with snow, the best and most natural winter covering; or if that have not fallen, the roots are not laid bare by the sweeping away of the earth.

By this it is not meant that it is necessary to restore the forests. Far from it. But it is of the greatest importance that every farmer should plant a few rows of trees on those sides of his farm most exposed to high cold winds. If every farmer would do this, and particularly so as to shelter his orchard, there would be much less complaint of failure of the fruit crop, of sunscald, of borers of various kinds, and trees dying from unknown causes. The increased return from his orchard alone would soon repay all the cost of planting.

But will the farmers do it? In some places (not in Ontario) the township councils have been authorized and have passed by-laws, whereby every hundred trees planted for shelter, and maintained in good growing condition for one, two and three years, vouched for in a prescribed way, are credited on the assessment roll to the farmer so planting and maintaining them, at a prescribed amount,

and allowed to him in reduction of his taxes.

Would our farmers avail themselves of such an opportunity, and take pains to send to the township councils men pledged to enact and carry out such a by-law? There is a lamentable indifference among us to every improvement that will not yield immediate returns. The present generation can see no reason for doing anything for posterity, simply because posterity has done nothing for it. Upon such narrow selfishness is its action too often based. But we believe a more just and enlightened view is beginning to take possession of the public mind. Have parents any higher worldly aim than the comfort and happiness of their children? And if what they plant to-day shall be an advantage to some or all of their children, will they grudge them the outlay?

Ten years soon pass away. In that time trees judiciously planted and cared for, mingled evergreen and deciduous trees, will begin to exert their beneficial influence. Most of the active men of the day may hope to live long enough to enjoy the benefits of their planting; and if they do not live to enjoy it long, is there no satisfaction in leaving, in the trees they have planted, that which shall be a memorial of their wisdom and forethought—a monument more lasting than brass; loftier than the royal pyramids of Egypt?

Autumn Foliage.

But little attention has hitherto been paid in the planting of our parks, avenues, lawns and pleasure grounds, to the charming effect of a skilful disposition and combination of our variously tinted autumn foliage. In planting shade trees they can very easily be so grouped as to combine all that is possible of vernal and midsummer beauty, and yet gain the rich and often gorgeous effect of the beautiful autumnal foliage. There can be nothing more charming than the rich orange tints of the maple leaves, blending with the beautiful deep brownish purple of the ash, and the brilliant scarlet of the oak, or the purplish red of the liquid amber, the whole wrought out in heightened splendour by contrast with deep green branches of intermingled hemlock.

The Canadian forests are full of many kinds of trees, each bearing its own form of beauty, and of clambering vines, all of whose leaves glow in autumn with most brilliant colours. There is no such variously coloured landscape to be found in

the old world as abounds in our warm, dry autumns. The fading year grows more beautiful with each passing week. Byron's description of an Italian sunset is no unapt picture of the changing hues of our autumn.

It well might read:—

"Parting" sun
"Dies like the dolphin, whom each pang inures
With a new colour, as it gasps away,
The last still loveliest—till 'tis gone, and all is, say

Besides the maples, with whose beautifully tinted leaves we are all familiar, the Scarlet Oak, so named, we presume, from the deep scarlet colour that its leaves assume in autumn, is well worthy of attention. Apart from its autumnal colouring, it is a beautiful and noble tree. It often attains a height of eighty feet, and its finely cut leaves are a bright lively green on both sides. It makes a superb object, either planted singly or grouped with other trees.

The White Ash will also find a place in groups of trees, not brought out too prominently, but mingling with the others, or skirting here and there a heavy plantation. In autumn this variety puts on rich tints of purple, which produce a most pleasing harmony with the more brilliant colours of other trees.

The Liquid Amber is always beautiful, beautiful in its regular and compact form, but more especially in its foliage, which all the summer long keeps its glossy freshness, and in the autumn puts on a vivid purplish red, as bright and gay as any parterre of flowers. Its effect, in combination with other autumn tinted foliage, is most magical.

The Peperidge may well claim a place in this connection, for though usually to be found in low, moist grounds, it will nevertheless flourish well in dry upland, and its beautiful dark green, shining leaves, assume in autumn a most brilliant fiery colour.

The Dogwood also can be introduced with great effect. In spring it is very showy, with its large white flowers, before the leaves are fully expanded, and in autumn it is covered with brilliant red berries, while the leaves change to a most beautiful deep lake red, by which it can be distinguished at a distance from any of its showy rivals.

The Plum-leaved Spirea is a medium-sized shrub, and can be used in any place where shrubs are needed, whether to form a screen or fill a gap. In spring it is profusely covered with double white daisy-like flowers before the foliage appears. The leaves are a most lovely glossy green all through the summer, and

in the autumn are most gorgeously coloured with orange and scarlet.

Nor are we wholly wanting in climbing shrubs, whose foliage in autumn adds to the charms of the landscape:

"And creeping shrubs of thousand dyes
Wave in the west wind's summer sighs"

The Virginia Creeper is a most rapid climber, fastening itself, like the ivy, by its little rootlets, and soon spreading itself over its support. The leaves are a rich deep green in summer, but in autumn they glow with scarlet and crimson. What more strikingly beautiful than the fiery leaves of this climbing shrub flashing through the dark green boughs of some tall old cedar, seeming in the distance like tongues of flame darting along its branches?

What need we more? Bountifully to our hand hath nature provided all these elements of beauty, and set the object lessons on every hill-side and by every stream. Shall we not avail ourselves of these rich stores, and weave their wondrous beauty into pictures about our dwellings?

The Fruit Growers' Association of Ontario.

NOVA SCOTIA APPLES

The Directors of this Society held a meeting at the city of Hamilton on Wednesday, the 8th December.

The occasion was made more than usually interesting by the reception of a collection of apples from Nova Scotia, sent by the Fruit Growers' Association of that Province, with their cordial greetings, and the expression of a desire on their part to make exchanges of scions, specimens of fruit, and information concerning the culture of fruit. The collection embraced forty-nine varieties of apple, many of them being well known sorts, which are generally cultivated in this Province, such as the R. I. Greening, Ribston Pippin, Gravenstein, Northern Spy, Baldwin, &c. According to the letter received from the Secretary of the Society, they sent one hundred and sixty one apples, but only some one hundred and forty could be found in the barrel when it came to hand. The barrel had been opened in the course of its transit and plundered. In consequence of this the apples that did reach their destination were very badly bruised. The fruit was sent from Halifax by steamer to Portland, and thence by Grand Trunk Railway to Toronto, and the Nova Scotia Society paid the freight through, including the bonding charges at Island Pond, so that no Customs official nor any one else had any right to open the barrel, much less to plunder it. It is a shame that a small parcel of fruit cannot pass from one part of the Dominion to another without being thus molested. The Nova

Scotia friends had taken much pains to paste a numbered ticket upon the fruit to correspond with the list forwarded by mail, but nearly all of these numbers had been rubbed off in consequence of such unauthorized disturbance, so that the value of the specimens was mostly lost.

It is very interesting, however, to see the samples of fruits well known to our cultivators, and easily recognized even without any numbers, to compare them with the same varieties grown here, and likewise to know the estimate in which they are held in Nova Scotia.

The R. I. Greenings were what would be here considered as a fair sample of that variety, not quite such as would be selected to exhibit at a county exhibition. They say that it does well there on warm light soils.

The Ribston Pippins were a very fine sample, and their remark is that it ranks high as a market apple.

The Gravensteins were a fair sample, not extra. This sort is esteemed by them as by us, a first-class apple for market, for the table, and for profit.

The samples of Yellow Bellflower were very fine indeed, and they say that it is first-class on light, dry soils.

The Northern Spy apples would be considered of medium size by us, and not very well coloured. They say that this variety has been scarcely tested yet, and seems tardy in bearing.

The Alexanders were doubtless very tall samples when put up, but they reached us in exceedingly bad order. This variety was at first condemned in Nova Scotia, but is now considered profitable.

Their Snow Apples were very fine, and they report them to be prolific and hardy, but apt to spot and mildew. This is the character of this apple in the warmer parts of Ontario, but in the more northern sections it is much less liable to be spotted.

Their Rome Grise would be here considered an inferior sample. They speak of it as good, but too small for profit.

The samples of Westfield seek-no-further were very fine, and evidently confirm their report of it that it does well there, even better, we judge, than with us.

Their Baldwin was a very good sample, and according to the report, is one of the standard sorts.

The samples of the English Golden Pippin were very fine and well grown, and it is reported by them to do well there, and sell readily at high prices.

They report the Talman sweet as a long-keeper and a good cooking variety; Lyman's Pumpkin Sweet as a first-class baking fruit, that sells quickly where known; the Hubbardston's Non-such as prolific and good, and Eopus Spitzenberg as good, but variable.

From this, our readers will be able to form some idea of the apples of Nova Scotia, and

the capabilities of that Province for their successful cultivation.

A number of local varieties were sent, but owing to the labels having been rubbed off, it was quite impossible to identify, save a very few of them. There was one, however, which was called the Iron Apple, that came in an excellent state of preservation, and seemed to be a very fine apple, having a fine grain and a rich and somewhat aromatic flavour.

The Secretary of the Association was instructed to acknowledge the receipt of the apples, with many thanks, and to express to our Nova Scotia brethren the appreciation by this Society of their kindness, and the readiness of the Society and officials at all times to reciprocate in any way that may be of service to them this expression of their fraternal regard.

Winter Meeting of the Fruit Growers' Association of Ontario.

This meeting will be held in the city of Hamilton, on Thursday, February 3rd, 1870, at 10 o'clock, a.m. to continue through the day and evening.

The following subjects will be discussed.

- 1st. The pear blight.
- 2nd. The best varieties of winter pears.
- 3rd. Does close summer pinching in or heading back produce bearing fruit spurs? If so, is it done without injury to the life of the tree? When is this pinching to be done, and how?
- 4th. What effects are produced by thinning out fruit, both as regards the fruit and the tree?
- 5th. Can fruit be kept for any length of time beyond the natural period of ripening, and how?

(6th. What are the best varieties of apples for shipping?

There will also be then considered the question of altering the constitution, Art. 4, so as to separate the offices of Secretary and Treasurer.

Prizes Offered by the Fruit Growers' Association for the Year 1870.

1. AN HONORARY MEDAL to the originator of any new fruit, which, having been tested, is found to be worthy of being placed among the fruits of its class for cultivation in Ontario.

2. The sum of FIFTY DOLLARS for the best new seedling late winter apple.

THIRTY DOLLARS for the best seedling harvest apple, and

TWENTY DOLLARS for the best seedling autumn apple.

These to be at least equal to the old popular varieties now in cultivation.

3. The sum of THIRTY DOLLARS for the best essay on the cultivation of the rasp-

berry, blackberry, strawberry and currant, and

FIFTEEN DOLLARS for the second best essay thereon.

Each essay not to exceed in length what would be equal to eight printed pages octavo, and to be forwarded to the Secretary D. W. Beadle, Esq., at St. Catharines, on or before the first day of February, 1870, and each essay to bear a motto and be accompanied with a sealed note, having the motto endorsed upon the outside, and containing within the name of the author of the essay.

4. The sum of TWENTY-FIVE DOLLARS for the best collection of insects injurious or beneficial to the various kinds of fruits, showing as far as possible the insects in their different stages of development. The collection to be meritorious, and the association to have the right to purchase it at the value fixed by arbitrators.

5. To any person sending to Wm. Saunders, Esq., of London, transportation prepaid, two thousand of the plum curculio (*Conotrachelus nemophilus*), the sum of TWENTY DOLLARS; or sending one thousand the sum of TEN DOLLARS; or sending five hundred the sum of FIVE DOLLARS.

The Treasurer will pay these to any person furnishing him with a certificate from Mr. Saunders that the requisite number of this insect have been received by him from the holder of the certificate, and that the transportation was prepaid.

Persons intending to send these insects to Mr. Saunders will find it very convenient to provide themselves with a strong wide-mouthed vial or small bottle, two-thirds filled with sawdust wet with alcohol, brandy, or strong whiskey, into which they can put the curculio alive as they catch them; and keep the vial well corked. The insects will creep into the sawdust, and be preserved by the spirits for many months, until they can be sent to Mr. Saunders. In counting them, Mr. Saunders will reject any insects sent with them that are not the curculio which injures the fruit of the plum.

Moving Apple Trees.

An "Enquirer" from Cannington asks for some information as to the advisability of moving apple trees that are beginning to bear, or if they can be moved without incurring the risk of losing them, and which is the best time to move such trees, winter or spring.

There is always more hazard in transplanting a large tree than a small one, and when trees have attained to bearing size it is never desirable to move them if it can be avoided.

If the circumstances are such as to make it very desirable to have the trees in another place, it is possible to move them, if the distance be not too great, and with every prospect of success. But it will require no little care and some expense.

The best way to do it is to dig a trench around the tree, at some distance, say five feet from it, and gradually undermine the tree by digging a little each day, and allowing the earth which is attached to the roots to freeze. When the tree has been thus undermined, and the mass of earth that is upon the roots has become frozen, the tree, with the earth attached to the roots, can be hoisted upon a sled, and drawn to the place where it is desired to set it, and carefully hoisted into an excavation previously made to receive it. In this way it may be transplanted with almost certain success; but if dug up in spring, especially in a light soil that will not cling to the roots, there is great danger that the tree will not survive the operation. And if the tree be seriously checked, though it be not killed outright, it will never be worth so much as a four year old tree, planted at the same time, at much less expense. The only gain to be hoped for in moving bearing apple trees instead of planting younger stock is, that if they are not seriously checked by the removal they will bear fruit much sooner. Yet it is always an expensive and hazardous operation.

How to Graft Grape Vines.

It is very desirable in many cases to change the variety of grapevines in our gardens and vineyards for the sake of testing new kinds, or improving the assortment, by adding one or more desirable varieties, and in some cases whole vineyards have been planted with varieties unsuited to the soil or location and will have to be taken up or abandoned, unless they can be changed by engrafting.

This operation has heretofore commonly been regarded as too difficult and uncertain to be practically available, but recent experience proves that this need no longer be the case and many amateur grape growers will be glad to learn how this desirable operation can be performed with almost as much ease and certainty as grafting an apple tree.

The time for doing this is any time during winter and early spring, when the frost is out of the ground, before the sap begins to move. In northern climates, where the ground is liable to remain frozen till spring has fairly begun, it is best to perform the work as late as can well be done in autumn, or during the "January thaw."

How it is done. Remove the earth around the stem of the vine down to the roots, saw it off about four inches above the roots, then split it square across, as in top-grafting orchard trees, and having cut the scions wedge-form, set them firmly into the cleft, one on each side if the stock is an inch or

more in diameter, or but one if smaller, taking care that the outside bark of the scion fits evenly with the bark of the stock; then wind around tightly with cotton twine, or other tying material, which will rot off during the following summer and need no removing. No wax or other covering is necessary, except to pack the soil firmly around the stump and scion, leaving only the bud at the top above the surface; then cover this bud with an inverted flower-pot, or something of the sort, to exclude the wet, and protect from winds, &c., surrounding it with a mound of earth, and covering the whole with litter, if done in autumn or winter, removing this covering as soon as the leaves begin to appear in spring.

The cuttings for scions should be taken off the vines in the fall or early in winter, and buried in sand or moss, if the grafting is delayed till spring. The scions should be from four to five inches long, of good hard wood of last year's growth, not over large, and cut with a bud at the upper end. If very short-jointed there may be two buds on a scion.

If the soil where grafting is to be performed is clayey and wet, it is well to have a few shovelsful of sandy soil for picking around the grafts, and if the position of the vines is low or flat, so as to be exposed to standing water in times of heavy rain, it is better to cut off the stems above the surface, then bank up around the graft with a barrow full or two of soil, and cover well with litter, if in winter.

At the late grape-growers' meeting in Sandusky, Mr. Campbell said he had practised this method of grafting, which he learned from Fuller's grape book, with good success. He had very fine growth of vines from grafts set in this way, and in some cases fruit the first season, which was a great convenience in testing new and costly varieties. Mr. Buttles of Columbus and Mr. Barney of Sandusky had also practised it with success, usually performing the operation early in spring, not in the fall as recommended by Mr. Fuller.—*Ohio Farmer.*

Culture of Currants.

I have for some years past been endeavouring to improve the growth and bearing of red currants. I tried all the ordinary means, such as manuring with old rotten manure, digging it well in, &c., but with little benefit. Our garden is a sandy soil, which suffers greatly in dry weather, and hence I found some more active means must be resorted to. Last year, although the season was so dry during a great portion of the summer, I had a most marked improvement in the bushes and crop, and this year completes as full and rank a growth of wood and crop of currants as could be desired. The amendment is due altogether to mulching over the whole surface of the ground with a large quantity of cow manure—ordinary horse manure having, as before stated, had little or no effect. The

cow manure was spread about three or four inches thick over the land, and at any time that an examination of the earth underneath the manure was made, the surface and also the soil for some inches deep was always moist and apparently rich-looking. Weed-grew, certainly, to any extent, but so did the currant trees. Of course, I pruned in the usual manner in the spring, and next year must cut away an immense quantity. I have never approved of cultivating the currant on the single stem principle, but much prefer allowing suckers to grow, having found by experience that any wounds accidentally given to the single stem tree by hoeing or otherwise, causes almost immediate decay of at least the bearing qualities, and very shortly of all the natural rank growth, without which currant trees will never produce a full crop.

The Novice's Balance Sheet.

The reader must bear in mind that I had great difficulties to contend with, no one had kindly set out fruit trees for me, nor started my asparagus and strawberry beds nor even laid out my garden. Moreover, the weather had been exceptionally *not* and dry, for it does usually rain occasionally during the summer in our climate, and several accidents had happened that can hardly be expected to take place invariably. The profit therefore, must be looked for, not in the merely vulgar material sense, but somewhat in the sensations, thoughts and experiences that were included in the results of the year's labour.

The original outlay for house and grounds was in round numbers \$15,000; my fruit trees cost \$115 50, which must be added to principal of investment, as it is not to be expected I should have to buy fruit trees every year. The strawberry plants cost \$20, and this should also be part of principal; but as they all died, it may be that this must be yearly expense, at least for the first season. The asparagus plants cost \$25, and we can hardly be able to tell where to place that item until next year shall determine what becomes of them. The baker's boy ran his cart against my gate-post and put me to an expense of \$35 for repairs; this clearly should be principal, as he could hardly be expected to renew the operation yearly. My seeds cost \$3 75, and as they never came up, I fear they must go to annual expenditure. The bean poles cost \$2, and if the neighbouring boys do not steal them, that is an item of investment. The nest eggs for the hens cost 75 cents, which I have been informed is more than they are worth; but that constitutes permanent capital. My furniture was badly damaged in being transported from the city to the country, and then from the country to the city, but as I am now suing the Expressmen for damages by reason of their negligence, it is hard to say whether this

should be included. I have laid my damages at \$250, but perhaps for the purposes of this account we might reduce them to \$25.

Pandy Jim, (the horse) cost \$150, and at about half as much in hay and oats, and smashed my waggon to such an extent that the repairs came to \$50, and the waggon was nearly ruined. I paid \$100 for the cow, and would not part with her for twice the money. The chickens cost \$105, which item must go to annual expenditure, less the value of one mink skin (The mink had killed all the fowls) The pig cost \$12, and grew finely eating not only all the kitchen refuse, but good feed of corn meal and water three times a day; unfortunately pork fell, and when he was killed he would only have produced \$12 in market, but as we intended to cure and eat him, he would have been fairly worth what we should have had to pay for salt pork by retail, had not an accident happened. (The brine was poured on hot.)

The account may be stated as follows:—

| | |
|---|-------------------|
| INVESTMENT—DEBIT | |
| Premises | \$15,000 0 |
| Fruit trees..... | 115 50 |
| Shade trees, (mostly in wrong places) | 107 00 |
| Asparagus plants (doubtful).... | 25 00 |
| Repairs to gate..... | 35 00 |
| Beanpoles..... | 2 00 |
| Dandy Jim..... | 150 00 |
| Cow..... | 100 00 |
| Nest eggs..... | 75 00 |
| Total..... | \$15,863 2 |
| INVESTMENT—CREDIT. | |
| Premises worth..... | \$15,000 0 |
| Trees, (besides improving the premises) | 350 00 |
| Asparagus bed, (if successful).... | 150 00 |
| Beanpoles (if not stolen)..... | 2 00 |
| Dandy Jim, (would be glad to take) | 200 00 |
| Cow, (would not sell her for).... | 200 00 |
| Nest eggs, (all but one lost)..... | 75 00 |
| Total..... | \$15,902 0 |
| The increased value in the trees is due to the fact that they have been standing some months. A few may die—but it is not well to anticipate misfortunes—and the expense of replacing them will, in such case, fall into the annual account of the succeeding year. | |
| YEARLY EXPENDITURE. | |
| Interest on investment..... | \$1,050 00 |
| Strawberry plants..... | 20 00 |
| Seeds..... | 3 75 |
| Damages to furniture..... | 25 00 |
| Repairs of waggon (yearly expenditure so long as Dandy Jim remains with me)..... | 50 00 |
| Chickens..... | 105 00 |
| Total..... | \$1,253 75 |
| YEARLY PROCEEDS. | |
| Expense of trip to Saratoga saved.. | \$2,000 00 |
| Proceeds from suit against Expressmen..... | 50 00 |
| Costs in the suit..... | 200 00 |
| One Mink skin..... | 25 00 |
| Total..... | \$2,250 00 |
| There may be some few items of expense, such as neglect of business, which are omitted. The Mink skin was taken at a bad season of the year for fur; it is, included in the annual receipts as an offset to the chick | |

ons. It will be observed that the costs of suit are included, although the case is not yet tried; but as it is a question involving a long account of many items, and is brought by a lawyer, the judge will probably refer it to another lawyer, who will undoubtedly perceive the justice of the claim. This is a source of profit that could only be counted on by one of the profession; a non-professional would probably find it the other way. The saving on the trip to Saratoga is fairly included, as no one would expect me to pass the summer in town.

The clear profit may be set down at \$1,000 in round numbers, which was entirely satisfactory, considering the unusual difficulties that presented themselves, and which more experience and less drought would probably remove in succeeding years.—*Five Acres Too Much.*

The Strawberry Crop of 1869.

In the New York market, we learn from the *Rural New Yorker*, the past year's crop of strawberries sold on the whole at better rates than the crop of 1868. The first of the season came from Charleston, S.C., on April 27th, in bad order, and sold at 6½c. per quart. The next lot arrived at New York on the 30th April, from Virginia, in good order, and sold for three dollars per quart. By May 10th the supply from Virginia had increased so much that the price of prime Wilsons was sixty cents per quart. Soft varieties sold as low as twenty-five cents. Prices from the 24th to the 30th May for good berries, were from twenty to twenty-five cents, soft fruit from ten to fifteen cents per quart. June 8th, the arrivals on that day amounted to five hundred thousand quarts. Good fruit sold then at from ten to twelve cents per quart, soft at ten cents down to five. By the 15th, Boston wanted strawberries for the great musical festival, good fruit was, in consequence, scarce at twenty-five cents per quart, and some fancy berries sold as high as fifty cents. After this date the fruit was poor and prices low. Staten Island and Long Island berries came in good order, and their Wilsons sold for about twenty cents per quart, Juncudas forty cents.

The Norway Spruce for Shelter.

To the Editor.

Sir.—The great importance of planting trees for shelter is now occupying a large share of attention, and as the benefits of such protection become more known and appreciated, we shall see fewer gardens and orchards exposed, without protection, to the sweeping winds of winter; and, as a consequence, we shall have finer fruit, and more of it.

One of the most important points in this connection is, what kind of trees to plant that will best answer the purpose intended. At the last autumn meeting of the Fruit

Growers' Association of Ontario, the first question for debate was, "The benefits of planting trees for shelter." The subject was fully discussed, creating a deep and lively interest, and but one opinion was expressed as to the great value of trees for shelter. Many kinds were mentioned, but the almost unanimous opinion was in favour of the Norway Spruce, which was held to be superior to all others as a perfect shelter, and a magnificent tree. This, indeed, may be said to be the opinion of almost every one who takes any interest in such matters, as your editorials, Sir, and the many communications that have appeared in the *FARMER* on this subject, abundantly testify. There seems, however, at present, to be one great obstacle to its general adoption, that is, the high price at which nurserymen hold these trees; an objection that was noted at the above named meeting. Hitherto this tree has been chiefly planted for ornament, but there is little doubt that, if they could be procured at more reasonable rates, the attention that is being at present directed to them would increase the demand immensely.

It is to be hoped that our nurserymen will be found equal to the occasion, and give fair inducement to extensive planting of the Norway Spruce, and thus obviate the inconveniences of farmers and others being under the necessity of raising them from seed.

I may add that Mr. W. Rhodes, of Sillery, Quebec, writing to the *FARMER*, August, 1868, on the advantages of Spruce Fir for hedges, states that he gets the plants, two feet high, delivered at his farm for five cents each. Many in this neighbourhood would, doubtless, be glad to get the same opportunity.

CULTIVATOR.

Toronto, Dec. 7th, 1869.

NOTE BY THE HORTICULTURAL EDITOR.—The *Spruce Fir* is probably a local name applied by Mr. Rhodes to some native Canadian evergreen; possibly the White Spruce or Balsam Fir, both of which grow in great abundance in many parts of Ontario and Quebec. These are pulled up from the forest, and if the distance be not great, can be delivered at one's residence, two feet high, for five dollars per hundred, and pay the seller well if he can only sell enough to keep him employed during the planting season. There is always a very great risk in transplanting evergreens of such size from the forest to the open ground, and where the summers are as dry as they are usually in Western Ontario, nine-tenths of them would probably die.

But there is no doubt there are some parts of the Province in which shelter is very much needed, where it would be, on the whole, the wisest plan to gather from the forest young plants of the White Pine, (*Pinus strobus* of Linnæus) the Short-leaved Yellow Pine (*Pinus mitis* of Michaux), the Red Pine (*Pinus rubra* of Michaux), the White Spruce (*Abies alba* of Michaux), the Hemlock Spruce (*Abies Canadensis* of Michaux), the Balsam

Fir or Balm of Gilead Fir (*Abies balsamea* of Marshall), the Red Cedar (*Juniperus Virginiana* of Linnæus), the American Arbor-vitæ, (*Thuja occidentalis* of Linnæus), and for hedges of about three feet in height the American Yew (*Taxus Canadensis* of Gray), and plant them close together in a bed where they can be watered and shaded, if necessary, and grown for two or three years and then removed with safety.

We have given the botanical names in order that there may be no doubt as to the trees intended. Much confusion prevails with regard to the names of our native evergreens, owing to local habits of calling them by names not used by writers on trees.

The name *Spruce Fir* was originally given to the Norway Spruce, which is a native of Europe and Asia, but it has since been dropped. Mr. Rhodes could not possibly have intended the now well known Norway Spruce; for it is quite impossible that any one could deliver good plants two feet high for any such money. In looking over the catalogues of several nurserymen, we see that Norway Spruce, two and a half feet high, are offered in quantities of a hundred at twenty five dollars, two feet high at twenty dollars, eighteen inches high at fifteen dollars, and twelve inches high that have been transplanted twice, at twelve dollars per hundred. No planter that does not understand how to care for them should buy evergreens that have not been twice transplanted. Raising evergreens from seed is a very delicate business. Very few nurserymen in America make it pay, and only those who will devote great care and attention to the preparation of the seed bed, and the shading and watering of the young seedlings, will make one in a thousand live out the first year. But should the demand for young Norway Spruce warrant extensive culture, no doubt they will then be offered at more reduced rates. Nurserymen some years ago were too far in advance of the public, and grow large stocks of evergreens, chiefly Norway Spruce, which were not called for, and many thousands of beautiful trees were either burned, or sold at the cost of digging. They will need to be assured that there is likely to be sale for them before they grow them so extensively again.

We close this note, which has grown unwarrantably long, by saying that the smaller sizes of evergreens are not only the cheapest but the most likely to grow. Could our planters, when once they make up their minds to plant, only have a little patience, they would buy their evergreens at a foot in height, already twice transplanted, plant them in a sort of nursery square, pretty close together, for two years, and then plant them on damp cloudy days from the middle of April to the middle of May, where they are to remain.

HARDY APPLES.—In Iowa the Siberian Crabs, Duchess of Oldenburg, and Tetofsky, are considered the best for hardiness.

Keeping Grapes

We are indebted to the Rev. E. Baldwin for the opportunity to inspect some fine Black Hamburg Grapes on Christmas Eve, which were cut from the vines on the 24th of October. They were as plump and fresh looking as if just cut from the vine, not had they become in any way affected or injured in flavour. His method of preserving them was to put them down in bran that had been thoroughly dried by fire heat, in truth almost baked or roasted, so as to expel from it all moisture. The bran was sifted carefully into the bunch, so that every berry was completely surrounded and covered with it.

We have known grapes kept by cutting off the branch on which they grew, dipping the end of the branch in melted wax, and then hanging it up in a cool cellar. In this way the berries will usually shrivel to some extent but this may be remedied by making a fresh cut at the end of the branch, so as to cut away all the wax, and then inserting the fresh cut end into a glass of wine and water. In a few hours the grapes will swell out and look quite plump and full. But Mr. Baldwin's method seems to preserve them perfectly without any shrivelling of the berry.

SABLE QUEEN BLACKBERRY.—The *Horticulturist* for October speaks well of this new blackberry, considering it worthy of a place on our list of cultivated sorts on account of its great productiveness, the good size of the fruit, fine brilliant black colour, excellent, pleasant, sweet flavour, and perfect hardiness of the plant.

FRUIT IN ALGOMA.—Apples and pears are as yet untried, but some varieties of plums, such as the egg and gage, thrive well there, and are not troubled with black knot or curculio. Wild raspberries grow there in great abundance, and of very fine flavour, from which great quantities of raspberry jam are made annually for exportation. Gooseberries do not mildew.—*Report of Fruit Growers' Association of Ontario.*

BENEFITS OF PRUNING BLACKBERRIES.—Mr Parry has been making an experiment to test the value of pruning the canes of the blackberry. He pruned six rows in an eight acre field of the New Rochelle, cutting off the top and side shoots last year closely. This year the pruned rows all ripened their fruit large, full, abundant and early. Throughout the rest of the field many berries never ripened, merely turning red. Those that did ripen were small. The inference is that to secure good crops of large, well ripened fruit it is very necessary to cut back the young canes in July to the height of four feet, and to keep the side shoots pinched off every fortnight at the tips until September. It is thought that the canes ripen the wood better for this pruning, and so endure the winter safely, and in consequence yield better crops of better fruit.

Poultry Yard.

Poultry Exhibitions.

SEN.—In a previous communication I compared the climate of England and Canada in reference to rearing poultry: I will now say a few words with regard to poultry shows and their difficulties.

The Ontario Association held its annual meeting on the 2nd December, amended its rules, and elected its officers for the next year. So far, so good, as the saying is; but what about the next poultry exhibition? This is the question put to me very often; the answer is not quite so easy.

It should be borne in mind that the object of the Association (as primarily and now constituted) was the improvement and development of knowledge in poultry matters among its members, combined with social converse, &c., on these matters. The novelty of the idea on this continent gave the society at first considerable life and popularity; but I must acknowledge that for some time past the interest has flagged; we do not now see at our meetings, birds brought to show, or hold any discussions; but still all are very anxious that an institution so important should not drop, and that an annual show, at least, should be held. I am, however, afraid that without some new energy infused into it, the enterprise will simply dwindle down into an annual exhibition. I regret this personally, as it was not, nor should it be, the first consideration; and it is to the exhibitors that I want to say a word or two.

If a fifth show is wanted, funds must be provided: no exhibitions can be held without. This, no one will deny. Can the exhibitions be held and got up as at home? There, each exhibitor or subscriber, or both, as at Birmingham, pays his entrance fee for every pen, and, in fact, except for monthly meetings and social converse, derives no special benefit as a member. This brings us the true stuff, and the cause is supported for its own sake, and not for the £ s. d., to be got out of it.

Now, charging for coops, attendance and maintenance, is not so unreasonable as may appear at first sight. It will, I presume, not be disputed that to get up a decent show, there should be symmetry in form of pens, and regularity of placing, etc. These can not be had where individuals send birds in their own coops, and there is one very important point with regard to this, that exhibitors should bear in mind, which is, that the first cost of the pen, and the charge for weight and bulk, &c., when sent per express, or even freight, come to much more than the fee for each pen at a show, and that if they would only use the proper wicker basket lined with canvas (so often advocated) to transport their specimens in, they would find them a vast improvement, and cost very much less

for transport. Unfortunately for the Ontario Society, the hall where they used to hold their exhibitions has been rented to others, the coops have been taken down, and it will therefore be necessary to re-erect them somewhere, if an exhibition is held. All this involves a considerable amount of labour and expense, and the liberality of the non-exhibiting gentlemen of Toronto, who came forward in a most handsome manner to support the movement, can not be again taxed. If, therefore, another exhibition is wanted, it must be started and kept up at the cost of the poultry breeders, exhibitors, and amateurs themselves—not to be looked upon as a mercantile speculation to obtain dollars in prizes; but to benefit the country markets, &c.

I say, that if exhibitors and fanciers will not do this, they care not for their hobby, if they have it; and they must bear in mind that they can not sell their surplus stock in any other way, and that if exhibitions are not kept up, few, if any, persons will import, or go to the trouble of keeping good birds at great expense, simply to look at. And without new importations, any great improvement in the poultry stock of the country can scarcely be looked for.

It is a great mistake to suppose poultry will not pay its keep. It certainly will, by the aid of exhibitions. Otherwise, unless very few birds are kept, and all the produce sold, loss will result; but by shows, the sale of a few at good prices pays for the food of the rest, and at all exhibitions this end is easily obtained by simply putting a prohibitory price on the birds not to be parted with, and a moderate one on their sons and daughters, for which you have not room, or wish to dispose of. A good sort will in this way always pay; a meagre lot, of course, will not. From these same birds the eggs sell at good prices; those not sold eat just as well as those of mongrels; and defective birds, or even perfect ones, if you are overstocked, do to kill for home or market. This I know from experience; I have kept poultry for many years without reckoning their cost; but when I began to have pure-bred fowls, and exhibited them, I found the cost to be no greater, and to be covered by sales of eggs, and also of birds at exhibitions and otherwise.

Getting up exhibitions is a labour of love—hard work and no thanks; but inasmuch as the work is done in furtherance of a profitable industry, at least to consumers, by providing a supply of good and wholesome food, as well as furnishing an incentive to all who keep poultry, it is to be hoped that the poultry fanciers and farmers of the Province will not let the exhibitions drop, or the public refuse their support, when they are held, by not going to see them.

F. C. H.

The number of entries in the Birmingham Poultry Show was 2,453. Of Grey Dorkings there were 300, and 180 pens of Cochins.

Canada vs. England for Keeping Fowls

To the Editor.

Sir, - I should have thought there could not be two opinions on this question, but an extensive breeder of French varieties stated that he had not found Tegetmeier correct as to the hardiness of these varieties, and attributes it to the moister climate of England being unfavourable to French breeds. The climate of Canada varies in different localities, that of Toronto approximating nearest to that of England, but with the winter much colder and later. There is no doubt in my mind when I find myself beginning my seventh winter in Canada, as to which country is best for raising poultry; it is far more difficult in Canada. In Lower Canada, or Quebec, the long winter and intense cold render it so and in Ontario the same causes are in operation, but not to the same extent. It is a very common thing in England to get chicks out on the 1st and 2nd of January, so as to be able to exhibit them as birds of that year. If you did this in Canada you would have to keep birds in the kitchen until the month of May, and even after, that the cutting winds would kill many. Now and then solitary exceptions are heard of, but it is altogether uphill work trying to get chicks very early. Another difficulty arises from the risk of the eggs getting frozen when the hen is off feeding, and nature has caused the Wild Turkey and other native birds to lay late in spring; for if they did not the eggs would be spoiled.

The cold, even in the late fall or beginning of winter, seems to have a curious effect on the wild birds. They lose their pugnacity, and herd together in quite an amiable way, eating but little for the hens around them. The result is many clear eggs in early sittings. These are among a few things I have noticed in Canada in poultry. Perhaps others may have a different tale to tell, which I hope they will do in your columns.

As a set-off to early chickens, I think you may go on hatching later, with better results than in England. Perhaps the autumn is drier; but in either climate an early frost, but especially snow, does not aid the enthusiastic fancier.

F. C. H.

Guinea Fowls

I had a pair of Guineas in the spring of the year. The hen laid about forty eggs then sat on the nest eggs for three or four days, then began to lay again. She stole her nest each time; her nest we found by watching the cock when we saw him alone, and by following on his track, when near the nest he would set up such a noise. Guineas won't set their own eggs; you must not disturb the hen off her nest, or touch the eggs while she is near, or she will forsake the nest. I put a mark on four or five eggs with pencil, and left them in the nest always; I took the fresh laid

eggs out of the nest every day, and kept them in a wooden box in the cellar. I generally managed to have three or four hens setting at the same time. I put nine or ten Guinea's eggs under each hen, and in full five days, put four hen eggs under each hen, as the Guinea's eggs are longer in hatching out. Towards the time the chickens should be out, I took the opportunity, each time the hens came off the nest to feed and water, to examine the eggs, for the skin in a Guinea's egg is so thick and tough that the chicken cannot always break through it with its bill. I take the eggs out of the nest while the hen is off, and try them in warm water, two or three days before the time is up for hatching out; and those eggs which have live chickens in will move, but the bad eggs remain still; the bad eggs I take away from each hen, and if there are only thirteen or fourteen good eggs from two hens, I put all under one hen and let the other take her chance; but if more, I let each hen hatch out. Sometimes one hen brings her chickens out a day or two or three before the others, that is owing to the one hen having more bodily heat than the other. Sometimes there will be a part of the chickens hatched out two or three days before the others. I then take the hen off, put her under a coop in the stable where she will get the morning sun, and put the other eggs under one of the other hens. All the chickens that are hatched out first by the four hens, I put under the first hen off the nest, say ten or twelve chickens, just as the case may be. Soon as I have enough chickens out to make twenty-one or twenty-two, I put all under the second hen off; she will take to the oldest chickens, but the first off won't take to the younger chickens. I let Guineas and chickens all run together.

Soon as put under the coop, I feed them with the screenings of wheat, put water into flower-pot saucers with some old rusty nails in the water, which I throw out to dry and rust more every three or four days, putting in other nails. A flower-pot saucer is shallow, and the chickens can easily get at the drink and no fear of drowning. I keep them in the stable for about a week, and then when the dew is off, I loose them out, taking care to have them in again at about four o'clock. I raised between thirty and forty Guineas the last summer, not reckoning the late hatches. The hens seem to be fonder of the Guineas than the chickens. I have two hens that have laid for some time, and yet they have the Guineas running with them still, and they are nearly full grown; they don't cluck, but when they find a bit of meat or a grain of corn, they call them just as though they were only a week old. Every morning, after a fortnight old, some clabbered milk is put down for Guineas and the other chickens; they like it very much. One year, out of 370 chickens, I lost all but nine, but since I took to put their water in iron vessels, and old iron in the water, I have not lost a dozen by disease or death. - *Can. Prairie Farmer.*

Raising Turkeys.

The following note was communicated by our esteemed contributor "Vectis" to the *English Agricultural Gazette*, and is reproduced in these columns, inasmuch as the suggestion it contains is worthy the attention of Canadian as well as English breeders of poultry.

"The turkey is a native of the American continent, and is found in the wild state all through the Western States, and often in the south western part of Upper Canada. The wild mix with the tame, and do not produce males, and are therefore, doubtless, of exactly the same species. The tame turkeys often associate with the wild and join their flocks, breeding with them, and sometimes coming home to the barn; and in the winter with some of their progeny.

"Turkeys, in their wild state, always separate after the breeding season, the males and females into separate flocks, and they seem to avoid each other; they certainly migrate to considerable distances, and there is no known rule for their returning; the separation between the sexes seems to be complete, and if they ever meet again in pairs, it is undoubtedly by chance. It has been observed that the broods of the wild bird are very large, whilst the broods of those kept in confinement are often very small. American turkey breeders assert that the cause of small broods is that the same male bird is kept year after year, and those who look to their turkeys for profit, therefore, spare no pains to change the male birds every year, replacing him by one from as great a distance as possible. Many who have tried it say that, with the same male, they get good broods the first year, poor broods the second, and very bad ones the third year. This is a piece of 'henwife lore' that may be worth putting in force in England, where, for some reason or another, they do not raise one young turkey where they raise ten in America. It can do no harm to try the experiment."

ONTARIO POULTRY ASSOCIATION.—The annual meeting of this Society was held in the Board Room of the Agricultural Hall on Thursday the 2nd inst.; the President, Mr. Graham in the chair. The President read a statement detailing the proceedings of the Society during the year, in which it appeared, among other things, that the Spring Exhibition was the most successful yet held by the Society. Several communications were also read on matters relating to the Society. A Constitution and By-laws, amending the former rules of the Association, were adopted, by which considerable changes are made in the management of the Society; chief among which may be mentioned that the Society's business will hereafter be conducted by the officers and five Directors, to be elected annually—the meetings to be held quarterly, instead of monthly as heretofore. The following officers were elected for the ensuing year:—James Graham, Esq., re-elected President; Allan McLean Howard, Esq., Vice-President; Thomas McLean, Esq., Secretary-Treasurer. Messrs. Hicks and Beswick, Auditors. Directors:—Hon. George Brown, Mr. Sheriff Jarvis, Col. Hassard, R. E., Messrs. Wood and Birchall. A vote of thanks to the Council of Agricultural and Arts Association for the use of the Board Room of the Agricultural Hall for holding the Society's meetings was accorded, and the meeting adjourned.

Apiary.

Wintering Bees

Almost daily I open letters and find questions as follows: "Will it do to put my bees in an upper room with a stovepipe running through it?" "Will it do to put my bees in an outhouse, woodshed, hay-loft, &c.?" "My cellar is quite damp; will it do to put my bees in it?" Now, I believe I have answered these questions many hundred times to different persons, yet I purpose answering them again, in this journal, for the benefit of all.

Much depends upon the number of stocks to be wintered, and the condition of the stocks when put into winter quarters. Although any room which is artificially heated is objectionable, yet a single stock, or even a number of stocks, if the room was large, might be thus wintered successfully, provided the temperature was never raised too high, and never fell too low; that is, if it never rose above 40° nor fell below 32°. Weak stocks will bear a higher temperature than strong stocks; yet such a room is objectionable, because the temperature will sometimes be high and sometimes low, whereas it ought to be regular. An outhouse, woodshed, &c., are even more objectionable, for this reason, when the weather becomes severe, frost will collect in the hive the same as if they stood out of doors. The bees cannot reach their stores on account of the frost among the combs; the weather continues cold, and the bees consume all the honey carried in the cluster, and perish with cold and starvation, with plenty of honey in the hives. I would rather winter out of doors on their summer stands: the sun shining on the hives will often, with the heat of the bees inside, thaw out their stores, so that they can obtain supplies; whereas, in a woodshed or outbuilding the sun cannot strike upon the hives, and they will remain frosted much longer, even until the bees perish. As regards a damp cellar, it is preferable to either of the above places, especially if it be a cool cellar. No place can possibly be better than a dry, cool cellar, and a damp one may be made to answer by giving the bees plenty of upward ventilation, which will prevent the combs from moulding, and secure the health of the bees.

Every bee-keeper should purchase a thermometer; one costing fifty cents will answer; then they can easily know the temperature of the room in which they have stored their bees, and if it rises above 40° they will find some, if not all, of the stocks uneasy and making a good deal of noise, showing that they are in commotion; whereas, they ought to be perfectly quiet, so that when the ear is placed close to the hive, a very gentle hum can just be heard, or still better, no noise heard at all. Bee-keepers who have no thermometer, may be guided by listening at the hives, and if there is great commotion they are too warm and require more ventilation.

Brooklin, Ont.

J. H. THOMAS.

Amateur Bee Culture.

Although much has been said and written upon the science of bee culture, yet few, comparatively speaking, understand it, and but few of those who engage in it meet with success. It is with bee-keeping as with every other branch of industry, those who engage in it must understand it, if they expect to succeed.

If one desires to engage in bee-keeping, he should, in order to be successful, thoroughly acquaint himself with the nature and habits of the bees. He then understands how to select a situation for an apiary, and provide for their wants. He sees the advantages of frame hives, and is enabled to select intelligently from the many placed before the public. Like a master-builder who thoroughly understands his work he commences bee-keeping knowing what to do. Such a one is sure to succeed. In my experience, however, I have found only now and then one who commences in this way. Ordinarily, almost every one commencing to keep bees is entirely ignorant of their nature and habits, and frequently all the knowledge required is gained by slow experience. Is it a wonder, then, that so many bee-keepers fail to be successful? Let any one who intends to keep bees first purchase some practical work on bee-keeping, and thoroughly read it, acquainting himself well with the theory before he commences. Let him, in commencing, purchase not more than two or three colonies, and even then he will find his bees increasing faster than his experience. It is a sad mistake that many fall into when commencing bee-keeping, to purchase a large number of stocks. It will not do for one comparatively well read up in bee-keeping, but who has not had the experience, much less for one who has no knowledge of bee-culture. A few years since a man in California, entirely ignorant of bee-culture, was suddenly attacked with "bee on the brain," and as a remedy purchased a thousand colonies, and commenced bee-keeping with visions of honey before his eyes; and the result was, he failed. Several similar instances have come under my observation in Canada, even when only fifteen or twenty colonies were purchased. Two or three stocks are quite enough to commence with, and they ought not to be purchased unless one has some knowledge of bee-keeping, or a practical work to guide him. But with a fair knowledge of bee-culture, and with the use of frame hives, rightly constructed, success in bee-keeping is certain, when proper attention is given to it.

J. H. THOMAS.

Brooklin, Ont.

A PROFITABLE APIARY.—A correspondent of the *Prairie Farmer* gives that paper an account of a visit to the apiary of Messrs. Francis, not far from Springfield, Ill. They have one hundred and twenty swarms of bees—being Italians and crosses of Italians with black bees. They think the

crossed bees are the best workers. From a hive of half Italians they have taken, this season, one hundred and sixty pounds of honey, which netted about thirty cents per pound. From the whole apiary they have taken about four thousand pounds of honey, an average of 33½ pounds or \$10 to the hive. The sale of bees paid all expenses of the apiary, leaving the honey net profit.—*Am. Bee Journal*.

Half-breed Italian vs. Native Bees.

The question, whether half-bred Italian bees are preferable to our native bees, is often asked me. My answer is, yes. I consider them even better than the pure Italians. Every bee-keeper will find it to his advantage to purchase a stock of pure Italians, or introduce into his apiary an Italian queen or two. It is not to be expected that every bee-keeper will take interest enough in bee-keeping to Italianize all his stocks, and keep only pure Italians. Neither is it necessary that he should do so. The object of introducing Italian bees is to improve the stock, and as hybrids are really more profitable than pure bees, it is only necessary to introduce Italians until the stock is thoroughly hybridised throughout the country. It may appear strange, after all that has been said in favour of pure Italians, to say that hybrids are really more profitable, yet such is my opinion. Not that Italians are not deserving of all the superiority that is claimed for them over the native bees, but my experience has been that when compared with the hybrids as honey gatherers they are hardly equal. I find my hybrid colonies are generally better supplied with winter stores than either the Italian or black bees, while they give me more surplus honey.

J. H. THOMAS.

How Italian Bees are Marked.

Many persons do not understand what the yellow bands are that distinguish the Italian from the native bees. Some suppose that when we speak of yellow bands we mean the lines round the lower part of the abdomen. This is quite a mistake, for these lines are alike defined in both native and Italian bees. The yellow bands are around the upper part of the abdomen, and are frequently more of an orange colour than a yellow. The first band is a narrow stripe next to the thorax and not always clearly defined, though it is always to be seen in the pure bees. The second may be called a broad stripe separated from the first by a hair-line of black. The third, when it appears, is perhaps a little more than half the breadth of the second, as a general thing, though sometimes it is not half the breadth, and not so clearly defined. Many persons take the broad stripe for the first band, and hence discover only two bands where three may be distinctly seen. The third line is also separated from the second by a hair-line of black.

J. H. THOMAS.

Household.

Recreation.

At the close of the year which amongst nearly all classes is usually a time of social enjoyment, and among farmers especially is a period of comparative leisure, and allows of an interchange of visiting and friendly intercourse, quite impracticable during the pressure of summer work, a few words on the subject of recreation and amusement may not be out of place.

The necessity of recreation has come to be more freely acknowledged, and a more liberal tone of feeling in regard to it prevails among good people generally than was at one time sanctioned by their rigid code. Not long ago, and even now by some worthy persons, amusements were proscribed for no better reason than because they were indulged in by "men of the world." It was thought necessary to create a fictitious distinction, quite apart from the question of right and wrong, or, to use a common phrase to "draw the line,"—often a curious one and very funnily drawn,—like a certain good deacon who saw no harm in malt liquor or home-made wines, but was scandalized at finding the more expensive foreign wines on a brother's table, and being asked for the ground of his objection, observed that "we must draw the line somewhere, I draw mine at port." So there are individuals who freely allow of such games as bagatelle or croquet, but are horrified at the idea of billiards; some see no danger in the monotony of draughts, but proscribe chess; dominoes are innocent in the estimation of others, who frown on back gammon on account of the dice; some limit their paste-board pastime to "conversation cards;" not a few condemn dancing who see no impropriety in romping; and some there are who count the whole tribe of such diversions as inventions of the devil. These last are, perhaps, more consistent than those who denounce nearly all the amusements with any piquancy or spirit in them, and confine themselves to poor imitations only, with all the spice and interest eliminated, such as an eloquent divine has designated "recreation and water."

Let it not be supposed that we would advocate an indiscriminate indulgence in all sorts of amusements without regard to their tendency or associations. If their tendency is injurious, do not hesitate to discountenance them; and if the associations are dangerous, reject, if you cannot reform them. In the case of any that cannot be indulged in apart from vicious companionship, by all means avoid them; but be convinced before you pronounce censure or prohibition that the vicious companionship is inseparable. Rest assured especially that it is a poor game that requires the excitement of betting or staking money on the issue to give it interest. When once the element of gam-

bling is introduced, the play, be it what it may, passes out of the range of recreation and becomes vice, in the character of which we know not whether most to condemn its meanness or its folly.

Let it always be remembered, also, that recreation is not the business of life, and may become hurtful by mere excess. It is properly a relaxation from arduous labour, a refreshment and resting of the powers to give them new vigour for more serious tasks and duties; when it trenches on these, and engrosses too much time or energy, it merges into dissipation, and unfits us for all the nobler ends of existence.

It is in the social gatherings of this season that games and amusements are specially valuable, to place people at ease in each other's society, and conduce to the pleasantness and enjoyment of the occasion. Few things are more lugubrious and absurd than the aspect of some evening parties that we have seen, composed of a solemn circle of unhappy individuals sitting round a room, engaged in intermittent and desperate attempts at conversation under the most depressing and difficult circumstances. Even a monkey would be an acquisition in such assemblies, if only to break up the formality and gloom of the meeting. People will talk more freely and sensibly when they are pleasantly occupied and amused than when forced to converse of set purpose.

While on the subject of evening parties there are one or two points that call for a word of caution, and it must not be more than a passing word, for we have no intention of inflicting a long article, or delivering a Christmas homily. These parties are often spoiled among people in moderate circumstances by the extravagant expense which the host and hostess think it necessary to incur in the refreshments and general entertainment. These are often on a scale quite out of keeping with the means and ordinary habits of the family, and are provided from a spirit of ostentation and foolish rivalry with those whose station or wealth is far beyond their own. Another grand evil is the lateness of the hours to which these parties are protracted. When they encroach on the hours of needful rest, and extend far into the morning, they cease to afford recreation. Instead of refreshing they exhaust, and thoroughly unfit us for the duties of the next day, or even many days after. In this respect, we are persuaded, there is need of a radical change in the customs of society. An attempt was made, we believe, sometime since, in one of our large eastern cities, to introduce a reform in this matter, but with very indifferent success. A more fortunate experiment on a small scale has been tried in another city, where for some winters past among a pleasant circle of neighbouring families a very rational and agreeable system of evening visiting has been carried out. The friends, mostly young people, meet at each

other's houses, in an informal manner, for music, dancing and various amusements, and it is stipulated that no other refreshment shall be provided than tea or coffee and bread and butter; and further, that the party shall break up at 12 o'clock. We commend the example to both city and country neighbourhoods.

The subject is a wide one of no small importance, quite too extensive in its bearings to be at all fitly discussed in a brief article of this kind. We can only throw out a suggestion here and there, and put in a plea in favour of the wholesomeness, and even the necessity of recreation—to be indulged in, with moderation certainly, but heartily and without fear. In thousands of happy homes throughout the country during these winter months, there will doubtless be pleasant gatherings, bringing neighbours together in friendly intercourse who at other times too seldom meet, binding family ties more closely, and transmuting the rigour of the season into benefaction by household joys and fireside cheer. To the inmates of such homes, and to all our readers, we would offer a cordial greeting, trusting they have already enjoyed a merry Christmas, and wishing them a happy New-Year.

Making Starch.

Everything that is grown on the farm, and which can be converted into matters of every day use, ought to be so converted by the farmer himself or the members of his family. Starch, although a trifling article of house-keeping, is an important one, and the appearance and comfort too of the linen and female habiliments of the family, in a great measure depend upon it. Besides this, when properly used in cooking, it affords many a new dish to vary the monotony of ordinary farm living, and can be made up, not only into blancmange and custards, but into the most delicious puddings and cakes.

Home-made starch is obtained from two sources, from potatoes and wheat. Most persons know how to obtain it from potatoes, but to those who do not know, a brief account of the process may be interesting. Wash the potatoes very clean with a scrubbing brush, taking care to remove every particle of dirt from the eyes. If the potatoes are very smooth and clean, peeling may be dispensed with; but if the skin is rough and coloured, peeling ought to be resorted to—the late improved apple-paring machines peel potatoes quickly and well. Grate the potatoes so peeled in a tin grater into water; taking care to grate them very fine, and not to break off small pieces. When the grating is finished, wash the pulp well in the bottom of the vessel which has received it, and when well washed and mashed with a potato masher, strain the whole through a fine muslin sieve, using plenty of water. All the starch will pass through the sieve, leaving the pulp on the sieve; the pulp may be thrown into

the hogs' tub. Let the starch settle to the bottom of the vessel until the water becomes clear and free from a white cloudiness; then pour off the water carefully, and you will find the starch in a hard mass at the bottom of the vessel; there will, most likely, be a little slime and impurity on the surface of the starch; this must be carefully removed and the surface of the starch rendered clean; a little water added will wash off the impurities, if they do not readily come off without; these impurities also go into the hogs' tub; it is not worth while cleaning them for private use, although in a manufactory all are cleaned several times. When the starch is well cleaned, stir it up again in pure fresh water, and let it settle again. When the water is clear, pour it off, and your starch will be as pure as driven snow; if it should not be, wash it up again.

When quite bright and clean, take the starch out, make it up into small parcels with the hands, or pour it into moulds lined with cotton cloth, or into cotton bags containing about a pint and slightly tapering, until the water has all drained out of it; then turn it out of the moulds, cut it into pieces about three inches square, and set them on new clean dry bricks; the bricks will absorb all the remaining water. Let them remain on the bricks until the starch loses all appearance of wetness; then place the starch in the sun, where there is a good current of dry air, or in a spent oven after the bread is done, (it must be a brick oven, the stove will not do) and dry it. It will fall into crystals, more or less perfect, and will then keep any reasonable length of time for use; of course, it must be guarded from all kinds of dust and dirt. Any kind of potatoes, even when seriously diseased or frozen partially, will make starch, and the water removes all the imperfect and diseased particles. Potato starch is very delicate for culinary use, and is very stiff and good for linen in dry weather, but it is hygrometrical, and is easily affected by damp, losing all its stiffness. It is, however, easily and quickly made, and is much used in many houses.

Wheaten starch is made differently, and is much superior, both for culinary and laundry purposes. It is made as follows. Take a quantity of the best wheat, say a bushel, soak it in water until soft; then crush it with a rolling pin, or similar implement, on a smooth board until all the grains have burst. Do this little by little; the wheat must be quite soft, so as to squirt out its substance when pressed; it will be quite sour and offensive, and yet it is not at all unwholesome; people are never ill in a starch factory. If you don't like to work with it in that state, wash the grains well before crushing; when all is crushed, let it remain mixed with water in a thick state, like cream, until it is quite sour. Then wash it in small portions at a time, in a sieve; the starch will all go through with the water, and the bran may be thrown away. When all is done, give it a

good stir up in the vessel, and then let it rest; the starch will all go to the bottom in a hard cake, if it has been well done, and the grain was properly soured. When this has taken place, which will be in about twelve hours, draw off the water through holes in the sides of the vessel, taking care not to disturb the contents, and also taking care not to go below the clear water; when the water is all off, you will find all the gluten and impurities of the wheat in a thick coating on the starch. This substance, which is called slimes, is removed from the surface of the starch, and the surface washed off; the starch is then roused or mixed up with fresh water, and allowed to settle and again cleaned off. When bright and clean and sweet, the starch must be taken out and placed in a square box lined with cotton cloth, or cotton bags, as before mentioned, the box being pierced with holes; the water then runs off, leaving the starch so hard that it will turn out of the mould, and the cloth being removed the starch may be cut into three inch cakes, and dried in the sun, or in a spent brick oven after the bread is out; but it will dry quite well in the sun and wind; it will fall into crystals, and is then fit to be put away for use. Where the trouble of crushing the wheat with a rolling pin, &c., is thought to be too great, take the meal of the best wheat as it comes from the stones in grinding it for flour, mix it with water and let it ferment and sour, using it afterwards in the same way as above. The sieves used must be very fine indeed, so as to stop all bran and other extraneous matter. Ordinary alpaca cloth makes excellent sieves, or flannel may be used for after-straining. One of the best things to use for straining the bran out is the Timothy sieve, which every farmer has; it must, of course, be well washed and dried before being put away.

Home starch makers do not get out all the starch; but as the slimes and bran, mixed, make excellent hog feed, it is not worth while to work for as large quantities, per bushel of wheat, as the manufacturer obtains; he must get out every available particle which can be had by any means.

Sometimes the starch, when not well soured, will not clean well, or get hard in the tub; when this is the case, take a little clear strong lye, such as you would for soap-making, (it must be clear, bright and pure,) mix some of this in the water which the starch is to be washed up in, and it will cleanse it at once. Do not make it too strong, or you will dissolve and gelatinize the starch. The right strength is, when you can just feel the water, when the lye is added, sharp to the tongue, it is strong enough. This treatment always makes the starch better, and it should always be used if you mean to produce a superior article. Nothing but the best fall wheat can be depended on for private starch making; manufacturers use all kinds, and also flour and Indian corn; but these articles require special skill in the manipulation.

Hints on the Use of Coal.

A common fault is to use too coarse wood for kindling, and too much of it. This, while it generally succeeds in lighting the coal, leaves a bed of ashes below the coal, which interferes with the draft, unless raked out, an operation which always retards the combustion of partially ignited coal. The wood should be of some rapidly burning variety which gives a quick and high heat, and should be split fine. It should be so placed that the coal will remain on the top of it, and not fall through to the grate, leaving the kindling on the top of any part of the coal. The amount of kindling wood required depends much upon the size of coal. A common mistake is to use too large sized coal. A good rule, where stoves and furnaces have a good draft, is to use coal as small as can be used without inconvenience from its sifting too freely through the grate.

Grates should have their bars closely set for stoves that are cleaned out daily and have fires in them each morning, while those which are intended to have fires lighted in them continuously for days or weeks will not admit of fine grates, on account of accumulation of ashes and small "clinkers." There is much difference in coal in regard to the formation of clinkers. These are nothing but vitrified, or partially vitrified, earthy matters, and they only can be formed when a little heat is maintained; they are apt to be troublesome when there is too much draft. A stove or furnace should therefore be so constructed that its draft can be perfectly controlled. The bottom draft should admit of being made air-tight, as nearly as possible to be, and there ought always to be provision made for a top draft. If, however, the draft of the chimney should be so strong that air in too great quantities is drawn in at the bottom, when the dampers are closed, a damper in the pipe, which will close it partially, must be employed, though in sluggish chimneys such a damper is apt to force the gases of combustion into the room, therefore it ought always to be avoided when possible.

The practice of putting ashes on the top of a fire to keep it, is very productive of clinkers although it answers the purpose very well in other respects. Damp coal screenings are better, and may be economically burned in this manner. If a coal fire gets very low, the quickest way to extinguish it is to rake it at the bottom. To preserve a fire under such circumstances, a little coal should be placed on the fire, and when it is caught more may be added, and the raking deferred until it has got well ignited. When the fire bricks become burned with clinkers which have fused and adhered, they may be cleaned by throwing oyster or clam shells into the fire-box when the fire is very hot, and allowing the fire to go out. The clinkers will generally cleave off without much force the next morning. From two quarts to one half peck will be sufficient for most stoves, and the operation can be repeated if some of the clinkers still adhere.—*Scientific American.*

Domestic Receipts.

RECIPE FOR CURING MEAT.—To one gallon of water, take 1½ lbs. salt, ½ lb. of sugar, ½ oz. of saltpetre, ½ oz. of potash. In this ratio the pickle to be increased to any quantity desired. Let these be boiled together, until all the dirt from the sugar rises to the top and is skimmed off. Then throw it into a tub to cool, and when cold, pour it over your beef or pork, to remain the usual time, say four or five weeks. The meat must be well covered with pickle, and should not be put down for at least two days after killing, during which time it should be slightly sprinkled with powdered saltpetre, which removes all the surface blood, &c., leaving the meat fresh and clean. Some omit boiling the pickle, and find it to answer well; though the operation of boiling purifies the pickle by throwing off the dirt always to be found in salt and sugar.

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

TO CLEAN PAINT.—The *Coachman's Journal* gives the following simple method to clean almost any kind of paint that has become dirty, and if our housewives would adopt it it would save them a good deal of trouble:—Provide a plate, with some of the best whiting to be had, and have ready some warm water and a rag, squeeze it nearly dry, then take as much whiting as will adhere to it; apply it to the painted surface, when a little rubbing will instantly remove dirt or grease. After which, wash the part well with clean water, rubbing it dry with a soft chamois. Paint thus cleaned looks as well as when first put on, without any injury to the most delicate colours. It is far better than using soap, and does not require more than half the time and labour.

FRIED POTATOES.—Take and cut the potatoes in thin slices over night, let them stand in cold water. In the morning, shake them in a dry towel, till perfectly drained. Then drop them into very hot fat, enough to float them. (The fat from beef-suet is best.) Shake and turn them till brown, keeping them very hot. Dip out with a skimmer, and salt them a little. If properly done they will be crisp and delicious.

CHEAP WASH FOR BUILDINGS.—Take a clean, water-tight cask, and put into it half a bushel of lime. Slack it by pouring water over it boiling hot, and in sufficient quantity to cover it five inches deep, and stir it briskly till thoroughly slacked. When the lime has been slacked, dissolve it in water, and add two pounds of sulphate of zinc and one of common salt. These will cause the wash to harden, and prevent its cracking, which gives an unseemly appearance to the work. A beautiful cream-colour may be given to the wash by adding three pounds of yellow ochre; or a good pearl or lead colour by the addition of a lump of iron black. For fawn colour add four pounds umber, one pound of Indian red, and one pound common lamp-black. For stone colour add two pounds raw umber and two pounds lamp-black. When applied to the outside of houses and to fences, it is rendered more durable by adding about a pint of sweet milk to a gallon of wash.—*Scientific American*.

Poetry.

While Snows are Falling.

The spring time came—the spring time went,
With shimmering cloud and shiny weather,
The golden glory of June was spent;
On hills and fields we roamed together;
We walked through autumn's purple haze,
The future's dream of bliss forestalling,
And shuddering thought of winter days,
With snows a-falling.

For earth was all so wondrous fair,
And heaven smiled down so blue above it,
Each wandering breath of balmy air
But made us learn snow to love it.
What wonder if with all so bright,
And wild birds through the woodland calling,
We sighed to think of winter's night,
And snows a-falling.

But when at last the world was dressed
In shining robes of ice-mail gleaming,
And calm white silence lulled to rest
The pale dead flowers beneath it dreaming—
Behold, we woke to find made true
The hope our hearts had been forestalling,
And life grew fairer than we knew
While snows were falling.

Ah well! the days of youth fly fast:
Their suns grow dim, their blossoms wither,
And all the dreams that made our past,
Fly fast and far, we know not whither:
But when we tread life's wintry slope,
We hear again their voices calling,
And Memory clasps the hand of Hope,
While snows are falling.

Miscellaneous.

The Durability of Timber.

The following statements, taken from one of our exchanges, illustrate the comparative durability of timber:

The piles sustaining London Bridge have been driven 500 years. In 1845 they were critically examined and found to have been but slightly decayed; these piles are principally of elm.

Old Savory Place, in the city of London, is sustained on piles driven 650 years ago they consist of oak, elm, beech and chestnut, and are perfectly sound.

The bridge built by the Emperor Trajan over the Danube affords a striking example of the durability of timber in a wet state. One of these piles was taken up and found to be petrified to the depth of three-quarters of an inch, and the rest of the wood had undergone no change, though it had been driven 1,600 years.

Sparrows in Quebec.

The English sparrows imported into Quebec have thus far made themselves at home, and apparently thriven in their new quarters. The gentleman who imported them offers to supply winter food for their use to those parties whose premises they frequent, if they will take the trouble to feed them. This friend of the race, at least, is fully convinced of the value of these birds as insect destroyers, and has no fear of their multiplying to an inconvenient extent—a result which some others predict from their English reminiscences, and the accounts received from Australia. For ourselves, we have a large amount of faith in the useful and indispensable mission of birds.

SMALL V. LARGE FARMS.—It is stated that the Duke of Sutherland has it in contemplation to make an entire change in the letting of his larger class of farms, by breaking these down into smaller holdings, all combining arable with pasture ground.

Mr. J. Harris says in the *Agriculturist* that he does not know how he could get along without petroleum. He keeps the wood-work of his farm tools and implements saturated with it, to keep the rain, sun, and air from swelling and shrinking and ruining them.

LESSONS OF THE SEASON.—The *Agricultural Gazette* draws the following practical and oft-repeated lesson from the experience of the past season in Britain: "With regard to the late crop, we have in the different results on different farms additional proofs, if any were wanting, that high farming—which includes underdraining and deep culture—will, to a large extent, counteract or neutralize the effects of an unfavourable season. It is a fact, that on most of the lands highly cultivated the crop has been good, and on some farms nearly equal to that of last year; while on lands tilled and treated in the ordinary way, and undrained, there will be a considerable deficiency."

Agricultural Intelligence.

Agricultural and Arts Association.

A general meeting of the Agricultural and Arts Association took place at the office of the Association, Agricultural Hall, corner of Queen and Yonge streets, Tuesday morning, Nov. 3, Mr. Mallory, the President, presiding. The minutes were read and approved.

A petition from the Entomological Society was read and a deputation heard on the subject.

A communication from Messrs. Harris and McGee, referring to the suit of the bandmaster was read, and after a discussion it was resolved to defend the suit.

The statement of the Agents of the Association from the 18th March to 30th November, 1869, was laid on the table. It shows receipts, \$34,347 77—expenditure \$29,254 28, exhibiting a balance to credit of \$5,093 49. The items on account of receipts include \$15,000 Legislative grant, \$16,535 proceeds of sales of Exhibition tickets and sundries. Disbursements include prize account \$12,121 50, Exhibition expenses \$6,528 78 and sundries.

Mr. GLACKMEYER was introduced, and being requested to state the nature of his business, said he was anxious to see the Council on the subject of his claim against the Board for providing a house and accommodation for the Prince while His Royal Highness was in London. He added:—I left a statement with the Council of what the sum would be, but I since find it is not correct, and I now bring an amended account. It is a long document, and I would respectfully recommend the Committee to look through it before they decide.

The "amended account" amounted to \$1,800, and a lengthened discussion took place in regard to various items of expenditure and other particulars of the claim, Mr. Glackmeyer maintaining that he included in his charges nothing that he had not actually paid out, or become liable for. The discussion was brought to a close by Mr. Skead who suggested that the amounts, together with the views of the Board, be submitted to a solicitor in the morning, with instructions to settle them; and, finally, a resolution was passed appointing the Chairman, Mr. Skead and Mr. Whitem a Committee to see counsel on the subject this morning, and report to the Board to-day at noon.

An intimation to the effect that an offer having been made of \$1,000, in London, which had been refused, the Council were not then prepared to make any other offer, was then conveyed to Mr. Glackmeyer. The following is an extract of the minutes explaining the offer then made:—

Extract from Minutes of the 24th September, at London.

"Resolved—That this Council receive with astonishment the enormous account of Mr. Glackmeyer, demanding two thousand five hundred dollars for the use of his house and other accommodations furnished for the reception of His Royal Highness Prince Arthur, during three days of the Provincial Exhibition, at London: Be it therefore resolved, that the account be not entertained, but that the sum of one thousand dollars be tendered Mr. Glackmeyer as full compensation for such house, hire, furnishing, &c. &c., in silver at par."

The sum of one thousand dollars was therefore offered to Mr. Glackmeyer by the Treasurer and refused by the former.

After some other business the Council then adjourned.

The Council met again the following morning for the purpose chiefly of receiving the report of the Committee appointed to see counsel on the subject of Mr. Glackmeyer's claim.

The Committee having made their statement; after very brief discussion, it was resolved:—

Moved by Mr. RYKERT, seconded by Hon. D. CHRISTIE, and carried, "That in the opinion of this Board no further communication should be held with Mr. Glackmeyer in reference to his outrageous demand against the Association."

The remainder of the sitting was taken up in certifying accounts and matters of minor importance.

Free Grants.

From the returns presented by the Provincial Secretary, on Monday, Dec. 6, respecting the number of persons located on free grants, from the 1st January to the 1st November, 1869, with the number of acres and names of townships, and also with the number of acres sold to locatees under the Homestead Act during the same period, we gather the following results:—In the nine townships of Muskoka, Draper, Macaulay, Watt, Humphrey, Cardwell, Stephenson, Brunel and Monck; in the district of Muskoka the number of persons located during the time specified is 276, the number of acres located is 27,877, the purchasers of land number 40, the number of acres bought being 539. In the townships of Foley and McDougall, county Simcoe, 29 persons have located, with number of acres located 2,819; purchasers of land, 3; number of acres, 10. In the townships of Chandos, Cardiff, Austruther, Minden and Stanhope, county Peterborough, 40 persons located on 3,995 acres, with one purchaser of 17 acres. In the townships of Carlow, Dungannon, Herschel and Monteagle, county Hastings, 15 persons located on 1,485 acres. In the township of Anson, county Victoria, 5 persons located on 395 acres. In the townships of Gratton, South Algona, Alice, and Buchanan, county Renfrew, 11 persons located on 955 acres. In the township of Hagarty, district of Nipissing, 10 persons located on 1,000 acres. In the counties of Renfrew, Victoria and Hastings, and in the district of Nipissing, there were no purchasers, and consequently no lands sold. The total figures show the number of persons settling on free grants during the eleven months of this year was 386; the number of acres located, 38,539, and the number of purchasers, 44, the acres bought being 566.

SOUTH AMERICAN CATTLE FOR ENGLAND.—The high price of meats in England has resulted in another effort to bring upon the market the stock of countries where the supply exceeds the demand, and a line of steamers has been built expressly to carry cattle from Buenos Ayres to London. The first of these steamers, the *Ariadne*, 1,400 tons register, 200 horse power, was to sail from London Nov. 16th. Every appliance for the health and safety of her intended ear-

goes is said to have been included in her design. She is expected to bring back her first load of cattle in February, and the result will do much to solve the question of the practicability of carrying this kind of freight so far, and the profit it will afford.

Provincial Exhibition of 1869.

Statement showing the amount offered in premiums in each class, the number of entries, and the amount actually awarded.

| CLASSES. | AMOUNT OFFERED. | | NUMBER OF ENTRIES. | AMOUNT AWARDED. | |
|--|-----------------|----|--------------------|-----------------|-------|
| | \$. | c. | | \$. | c. |
| 1. Blood Horses | 293 | 00 | 20 | 183 | 00 |
| 2. Agricultural Horses.... | 341 | 00 | 137 | 363 | 00 |
| 3. Road or Carriage Horses | 449 | 00 | 312 | 440 | 00 |
| 4. Heavy Draught Horses.. | 340 | 00 | 74 | 897 | 00 |
| 5. Durham Herd's Prince of Wales Prize | 60 | 00 | 3 | 60 | 00 |
| 6. Durham Cattle | 491 | 00 | 131 | 503 | 00 |
| 7. Devons | 467 | 00 | 76 | 427 | 00 |
| 8. Herefords | 467 | 00 | 25 | 306 | 00 |
| 9. Ayrshires | 467 | 00 | 50 | 495 | 00 |
| 10. Galloways | 467 | 00 | 55 | 372 | 00 |
| 11. Grade Cattle | 178 | 00 | 76 | 178 | 00 |
| 12. Fat and Working Cattle | 154 | 00 | 52 | 154 | 00 |
| 13. Cotswold Sheep..... | 252 | 00 | 90 | 350 | 00 |
| 14. Leicesters | 252 | 00 | 306 | 252 | 00 |
| 15. Southdowns | 156 | 00 | 70 | 156 | 00 |
| 16. Shropshire, Hampshire, &c. | 158 | 00 | 18 | 96 | 00 |
| 17. Merinos | 156 | 00 | 60 | 156 | 00 |
| 18. Fat Sheep | 48 | 00 | 26 | 48 | 00 |
| 19. Pigs, large breeds..... | 126 | 00 | 64 | 126 | 00 |
| 20. Suffolks | 126 | 00 | 49 | 126 | 00 |
| 21. Improved Berkshire Pigs | 126 | 00 | 94 | 177 | 00 |
| 22. Essex and other small breeds | 126 | 00 | 53 | 126 | 00 |
| 23. Poultry | 265 | 00 | 418 | 265 | 00 |
| 24. Grains, Seeds, &c..... | 608 | 00 | 614 | 581 | 00 |
| 25. Roots, &c..... | 263 | 00 | 633 | 161 | 00 |
| 26. Fruit, Professional List. | 223 | 00 | 84 | 179 | 00 |
| 27. Fruit, General List.... | 269 | 00 | 501 | 257 | 00 |
| 28. Garden Vegetables | 133 | 00 | 760 | 156 | 00 |
| 29. Plants and Flowers.... | 191 | 00 | 261 | 187 | 50 |
| 30. Dairy Products, &c.... | 249 | 00 | 193 | 247 | 00 |
| 31. Implements, large..... | 955 | 00 | 372 | 595 | 00 |
| 32. Implements, hand..... | 302 | 00 | 237 | 252 | 00 |
| 33. Cattle Food, Manures, &c. | | | 3 | | |
| 34. Cabinet Ware, &c..... | 208 | 00 | 61 | 152 | 00 |
| 35. Carriages, Sleighs, &c.. | 262 | 00 | 144 | 251 | 00 |
| 36. Chemical Manufactures. | 95 | 00 | 20 | 56 | 00 |
| 37. Drawings, Engravings, &c | 238 | 00 | 82 | 182 | 00 |
| 38. Fine Arts in Oil &c.... | 474 | 00 | 124 | 346 | 00 |
| 39. Fine Arts in Water Colours, &c..... | 370 | 00 | 168 | 231 | 00 |
| 40. Groceries and Provisions | 124 | 00 | 76 | 94 | 00 |
| 41. Ladies' Work | 117 | 50 | 212 | 124 | 50 |
| 42. Ladies' Work | 99 | 50 | 151 | 82 | 50 |
| 43. Machinery, Castings and Tools | 489 | 00 | 116 | 415 | 00 |
| 44. Sewing and Knitting Machines | 84 | 00 | 27 | 65 | 00 |
| 45. Metal Work—miscellaneous | 363 | 00 | 161 | 224 | 00 |
| 46. Musical Instruments .. | 181 | 00 | 23 | 73 | 00 |
| 47. Natural History..... | 124 | 00 | 19 | 112 | 00 |
| 48. Paper, Printing, &c.... | 98 | 00 | 30 | 42 | 00 |
| 49. Saddlery, Leather, &c.. | 266 | 00 | 70 | 161 | 00 |
| 50. Shoe and Boot Work, Leather, &c..... | 162 | 00 | 91 | 115 | 00 |
| 51. Woollen, Flax, and Cotton Goods, &c..... | 417 | 00 | 203 | 321 | 00 |
| | | | 13423 | 7649 | 11419 |
| | | | 50 | | 50 |

Five counties in California are said to have produced 110,000 tons of wheat the last harvest.

The total value of all the horses in twenty-one Northern States in 1868 was over \$300,000,000.

California has developed a new industry. It ships bales of chapparal leaves to China, where they are boxed up and sent back as tea.

The total crop of the United States is estimated at some 1,400,000,000 bushels of grain, of which wheat is 350,000,000 and corn 800,000,000.

Mr. O. B. Irvin, of Orange Co., New York, recently sold a number of road horses, stallions, and breeding mares at public sale. Two stallions and two stallion colts, all by Ryedyk's Hambletonian, sold for 8,875 dollars; the two colts selling at \$2,000 each. Of twenty-five head of various ages sold, but one brought less than \$200, but five less than \$300 each, while ten brought \$500 or more each.

Careful estimates place the sugar crop of the United States at one million hogheads this year, against eighty thousand in 1868. Although the acreage was much larger this year than last, the season thus far has been less favourable. The sugar crop of Cuba is put down at eight million three hundred and thirteen thousand boxes of four hundred and fifty pounds each, a reduction of about one-eighth as compared with the crop raised just before the revolution in the island began.

HIGH PRICES FOR SHORT-HORNS.—According to the *Country Gentleman*, Mr. Jas. O. Sheldon, of Geneva, N. Y., has sold the following animals, which are to be taken to England: To E. H. Cheney, Gaideby Hall, Leicester, 9th Duke of Geneva, at 800 guineas, 11th and 14th Duchesses of Geneva at 1,000 guineas each; to C. W. Harvey, Walton-on-the-hill, near Liverpool, for Messrs. Downing and Harward, 8th Duke of Geneva at 800 guineas. The animals to be shipped about the 16th of December. The average price of these four animals in currency is about \$6,000. Mr. Sheldon has also disposed of one half of his entire herd to Messrs. Walcott & Campbell, New York Mills, Oneida Co. The number comprises thirty-seven head, six of them, Duchesses and three Oxfordas. The six Duchesses, without respect to age, averaged Mr. Sheldon seven thousand dollars each.

PREMIUM WHEAT.—The Michigan State Agricultural Fair offered \$400 in special premiums on crops of wheat. The first prize, says the *Western Rural*, was awarded to H. E. DeGarno, of Oakland Co, for a crop of 495 bushels of Diehl wheat, from a field of 15 acres 46 rods. The competitor stated that he purchased his farm nine years ago, when it was so run down that it afforded only three bushels of wheat to the acre. At the present time, with no fertilizer but plaster and clover, he raises from 20 to 35 bushels, best quality white wheat, per acre. In his prize crop of nearly 500 bushels there was not a gill of rye, cockle or chass, though his land was full of both of these pests at the time of his purchase. His method of improving the land is to grow as heavy a crop of clover as possible, and let it lie as a mulch on the land. He sows 1 1/2 bushel of wheat per acre, and 50 lbs. of plaster.

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

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

Markets.

Toronto Markets.

"CANADA FARMER" Office, Jan. 7th, 1870.

FLOUR AND MEAL.

The market generally has been unusually dull, owing in part to the holiday season, partly also to the absence of shipping, and still more to the prevailing inactivity of business.

Flour has been selling at from \$3 75 to \$3 85, and at \$2 75 for lower brands.

Oat Meal, but little doing; highest price, \$3 75.

GRAIN.

Wheat—Prices continue to rule low. Fall Wheat selling at from 85c. to 87c., and Spring at 82c. to 83c.

Barley.—Car lots, 56c.; on the street, 60c. to 63c.

Peas—A slight tendency to rise, but average prices from 52c. to 56c.

Oats—Not much coming in—80c. to 81c.

Eye—85c.

HAY AND STRAW.

There has been a pretty good supply. Prices continue to rule low. Hay selling at from \$8 to \$11, and Straw from \$4 to \$7.

CATTLE MARKET.

Beves—1st class may be quoted at \$6 50, the top being \$7; 2nd class, \$6 00; 3rd class, nominal.

Sheep—Rather scarce, and worth from \$4 to \$5 50.

Lambs—From \$2 50 to \$3.

PROVISIONS.

Hogs—The market has been very fluctuating for the past few weeks, and large quantities of pork continue to arrive. So far, prices have favoured the seller, but are now somewhat lower, though extra good bacon or hogs bring considerably over quotations, which are \$8 50 to \$8 75 per 100 lbs. for fair hogs of 200 lbs. and over.

Bacon—11c. to 12c.

Lard—14c. to 15c.

Butter—Light receipts, poor quality and unchanged prices—quite beyond the worth of the article—have ruled, the average being 20c. to 25c.

Cheese—12c. to 13c.

PROVINCIAL MARKETS.

Montreal.—Flour—Extra, \$4 50 to \$4 60; Fancy, \$4 30 to \$4 35; Superfine No 1 Canada wheat, \$4 05 to \$4 20; No. 1 Western, \$4 05 to \$4 10; No. 2 Western, \$3 60 to \$3 70. Bag Flour, 100 lbs, \$1 90 to \$2. Wheat—No quotations. Oats, per 32 lbs., 25c. to 26c. Barley, per 48 lbs., 50c. to 60c. Butter, dairy, 15c. to 20c.; store-packed, 17c. to 18c. Pork, Mess, \$23 to \$23 50. Dressed Hogs, \$9 to \$9 50.

Ottawa.—Flour—Extra, \$5 75 to \$6 75; No. 1, \$5 to \$5 50; Bag, per 100 lbs., \$2 75 to \$2 87. Wheat, Fall, \$1 17 to \$1 20; Spring, \$1 10 to \$1 15. Peas, 60c. to 70c. Oats, 30c. to 32c. Pork, \$9 to \$10 50. Bag, \$5 to \$6. Turkeys, 90c. to \$2. Geese, 50c. Ducks, 50c. to 65c. Poultry, 50c. to 90c. Butter, 30c. to 22c. Potatoes, 40c. to 45c. Hay, \$8 to \$10.

Hamilton.—Wheat—Fall, 90c. to 95c.; Spring, 80c. to 82c. Barley, 45c. to 55c. Peas, 60c. to 65c. Oats, 30c. to 31c.

London.—Wheat—Fall, 70c. to 90c.; Spring, 70c. to 80c. Barley, 40c. to 50c. Peas, 40c. to 50c. Oats, 25c. to 26c. Corn, 65c. to 70c. Buckwheat, 40c. to 50c. Beans, 40c. to 50c. Pork, \$8 70 to \$9. Hay, \$8 to \$10. Potatoes, 35c. to 50c. Carrots, 20c. Butter, 15c. to 22c. Cheese, 12c. to 13c.

Advertisements.

ROYAL DOMINION COMMERCIAL COLLEGE, HAMILTON, ONT.

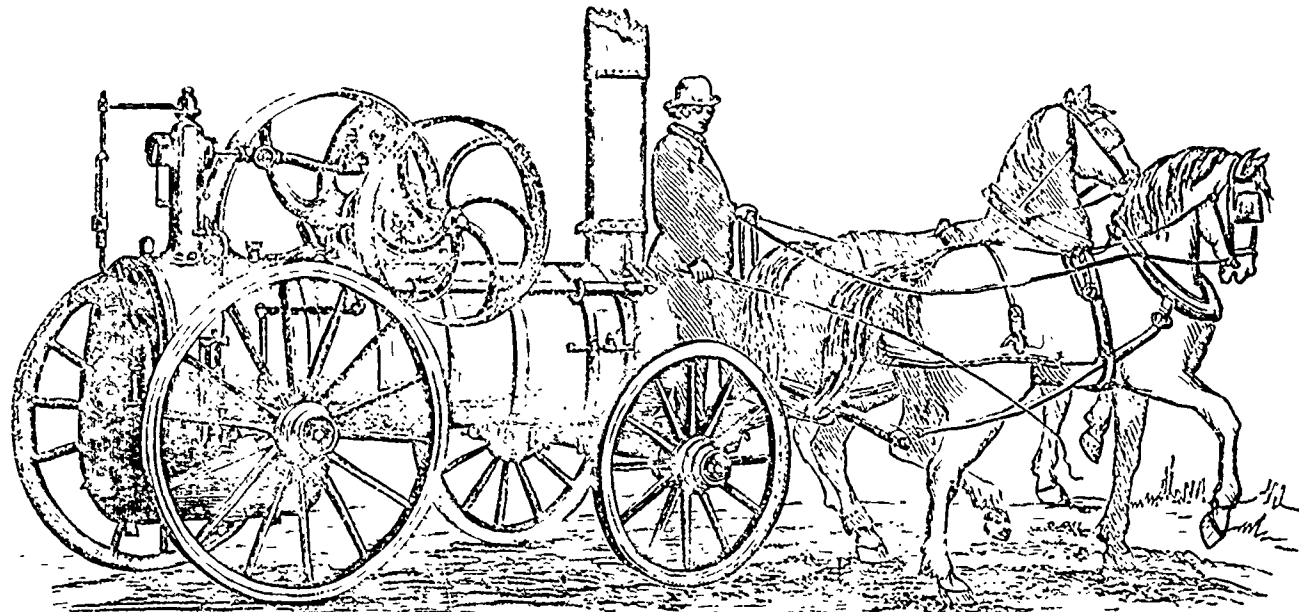
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HAMILTON'S BALANCED ROTARY ENGINE. PATENTED IN CANADA

THE SUBSCRIBERS after two or three years' successful use of this new Engine all who have tried it pronounce it a complete success. IT COMBINES IN SMALL SPACE AND SIMPLE FORM ALL THAT IS REQUISITE IN A GOOD ENGINE, Power, Cheapness, Lightness and Durability—it will do away with the usual heavy bill for repairs—and when used up can be replaced at less cost than the repairs of an ordinary Engine. It requires no skill to work it—turn on the steam and away it goes—any child can do this, as nothing can go wrong. It has been ascertained beyond cavil that it uses less water and fuel than any other Engine.

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Toronto, January 3rd, 1870

(2111)

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BEE KEEPERS in Canada may rest assured that B. J. H. Thomas' First Prize Bee Hives are the best made in America. They are cheap, durable, and perfect in construction. They have a world wide reputation. Last season I received orders from England, Nova Scotia, New Brunswick, and many of the States and from every part of Canada. The demand is increasing yearly. Since they were brought before the public a number of other hives have been brought forward, many of which are entirely worthless, some are good, but not one possesses as many advantages as the Thomas Hive, nor is yet as simple in construction. In a word, as a Beehive, it is unsurpassed. Send in your orders, always accompanied with the money, and they will receive prompt attention.

I shall continue to furnish Hives at the following rates, which include an individual right to make and use both Double and Single-Boarded Hives, with a full printed description thereof:

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- 2 sides \$7
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- 2 sides \$8

All persons purchasing a Hive at above rates, which always include the right to make, and referring to

order Hives from me rather than make, will be supplied at the following prices: Double-Boarded, \$5.50, Single-Boarded, \$4.50, or, if ordered in lots of three, to one address, Double-Boarded, \$3.25; Single-Boarded, \$2.25; in lots of six, Double-Boarded, \$3; Single-Boarded, \$2. Individual rights, without the Hive, \$3. Hives sent singly, is freight, by rail to any part of Canada. Three Hives sent to one address for the same freight as one Hive. Bee-keepers would do well to form clubs, and order three or more Hives sent to one address, and thereby save freight.

Hives at the above rates are made with one honey-box. Persons ordering Hives made with two honey-boxes must send 25c more for each Hive, with three honey-boxes, 50c more for each Hive.

"THE CANADIAN BEE-KEEPER'S GUIDE" always on hand. No Bee-keeper should be without it. Price, post paid, 25c. For parties wishing to purchase territory, I make this offer: Any person sending me ten orders for the Single-Boarded Hive at \$5 each, from any one Township, will receive in return the ten Hives to fill his orders, and the right of the Township for himself. Now is your chance.

J. H. THOMAS,
Brooklin, Ont.

V2171

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V2172

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V2144

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What are the practical suggestions? Many. Let every subscriber renew his subscription, and urge his neighbor to do the same. If a man cannot afford to pay two dollars, let him raise a club, by inducing his neighbors to subscribe, and we shall send him a copy gratis for his trouble. No newspaper so large and complete as **THE WEEKLY TRIBUNE** was ever before offered at so low a price. Even when our currency was at par with gold, no such paper but **THE TRIBUNE** was offered at that price; and **THE TRIBUNE** then cost us far less than it now does. We have solved the problem of making the best and cheapest newspaper in America—perhaps in the world. Let us see if we cannot give it a million weekly circulation.

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1870 PROSPECTUS 1870

OF

THE CANADA FARMER.

THE Publishers of THE CANADA FARMER in acknowledging the gratifying support extended to that journal in its new form, during the past year, are in a position to announce that it will be sustained in the coming year with still greater efficiency. The Editorial Staff will include the following able and experienced Agricultural writers:

OFFICE EDITOR—J. E. ELLIS, Esq., M. R. C. S., England.

HORTICULTURAL EDITOR—D. W. BEADLE, Esq., St. Catharines.

ASSOCIATE EDITORS—J. McKELCAN, Esq., and E. L. CULL, Esq.

SPECIAL CONTRIBUTORS—PROFESSOR BUCKLAND AND J. A. CULL, Esq.

DRAINAGE EDITOR—ALLAN MACDOUGALL, Esq.

ARCHITECTURAL EDITOR—JAMES SMITH, Esq., A. M.

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VETERINARY EDITOR—ANDREW SMITH, Esq., V. S. Edin.

APIARIAL EDITOR—J. H. THOMAS, Esq., Brooklin.

The conductors of THE CANADA FARMER will continue to labour earnestly for the following ends:—

- | | |
|--|--|
| <p>To arouse attention, by frank and temperate discussion, to all questions, scientific, commercial, legislative or otherwise, specially affecting the farming interests.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> | <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> |
|--|--|

THE CANADA FARMER will continue to be issued on the fifteenth day of each month,—the form will be the same as now—and each number will contain

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