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THE CANADA FARMER

Vol. III. No. 9.

TORONTO, CANADA, SEPTEMBER 15, 1871.

NEW SERIES.

The Field.

Sowing Fall Wheat.

There will probably be a large area of winter wheat put in throughout Ontario this year, and it may be well once more to repeat the oft-told tale of those principles which the farmer should ever keep in view ere he commits any seed to the soil.

There are three essentials to be regarded—1st, good seed; 2nd, good land; 3rd, good cultivation.

Good Seed.—There are four varieties of wheat now generally sown. Over the greatest breadth we may place the Treadwell. This is rather coarse, a good straw wheat, and appears to stand the winter well. We find that its yield this year has not been commensurate with its appearance in the field.

The Deihl is a pretty white wheat, and is a great favourite with all our millers; apt to be short in the straw, and to be winter killed; generally threshes out better than we should expect from its appearance in the field. It is a far superior sample of wheat to the Treadwell.

The Soules.—We should be sorry to advise the growth of this wheat, but we think it will revive very much this year in the favour of our farmers. It has a beautiful flour berry.

Old Red Chaff.—We see that some of this has been again sown this year; it has been the king of Canadian wheats; but we are afraid it has too much degenerated to be again the leading sample.

First, then, let us consider carefully which wheat we prefer, and obtain that kind. Let us then get good seed, clean, bright, plump, and sweet. We saw a large field this spring, so thin that it had to be ploughed up for barley. This was owing solely to the carelessness of the farmer in procuring musty seed that had heated during the autumn. The senses are not sufficient to trust in the matter of seed. We should prepare our seed.

If you were about to plant potatoes, would you not discard one that was rotten at every eye? Even so, discard every grain of wheat whose germinating power is gone.

Soak your wheat in a brine made of salt and water sufficiently strong to float an egg. Leave it for from four to six hours in the pickle; skim off all that rises to the top; then spread upon the barn floor evenly, and sprinkle with plaster of Paris. There are other steepings, but we consider the above to be the safest for general use. The object of this steeping is twofold—to bring the light grains to the top, and to destroy all germ of smut.

Experiments are recorded as having been made in England upon Lord Chesterfield's farm in Derbyshire, amongst which we find the following:—

The trial was made on a peck of very smutty wheat, one-half of which was sown in the state in which it was bought, and the other half washed as clean as possible in three waters, and then steeped during two hours in brine strong enough to carry a new-laid egg, and dashed over with lime. The result was that two-thirds of the wheat grown from the unwashed wheat was smutty, while that produced from the steeped seed was a full crop, without a single ear of smut.

Change your seed. Seed will deteriorate when grown too often successively upon the same soil. Get your seed from a heavier soil if your farm is light, and from a light if your farm is heavy. If possible, get seed wheat from poorer land than your own.

Good Land.—To attempt to raise crops off poor and impoverished land is a throwing away of time, labour and money. Nature's laws are immutable. A good crop of wheat cannot be raised upon poor or unsuitable land. The best wheat land is such as possesses a certain amount of consistency; therefore clays are the soils best adapted for fall wheat. Although good crops are often raised upon the lighter soils, yet the crop is uniformly good and weighs heavily to the bushel upon clay, supposing such to have been well

and properly cultivated. Indeed, we may trace nearly all failures of the wheat crop upon our heavy soils to imperfect drainage and partial cultivation. Clay land should, however, contain at least 15 per cent. of lime; and if such be not found in the soil, it will pay well to supply it.

We have seen clay land apparently rich in *humus*, so stiff as to be almost-unfit for the plough, made friable, and yield a heavy crop of wheat by the liberal application of lime. Indeed, we think that upon many clay farms lying in the neighbourhood of a limestone ridge, it would pay the owners to burn their own lime for the sole purpose of application to and incorporation with the soil.

We would not here enter into a discussion of those arguments which may be adduced either in favour of or against the practice of summer fallowing. However strenuous may be our opposition to this system as a principle or regular course in rotation, we cannot but be aware that, owing to great tenacity of soils or great foulness in the land, such a course does become necessary in certain fields; nor can we shut our eyes to the fact that a field thoroughly summer fallowed seldom yields anything but a good crop of wheat. It must rest on the judgment of each farmer whether it is necessary that he lose a year's crop upon his land for the purpose of making certain of a good crop of wheat, or whether by a proper system of rooting to clean and clovering to enrich his land, he may not with equal safety risk his wheat immediately after a stubble or young clover ley.

Often in the rotation of crops, and especially has it been the case this year, our clover seed misses upon barley. The quickest way in which to again seed down to clover is undoubtedly to put fall wheat upon such land; but it must be borne in mind that nutriment has been drawn from the soil by the preceding crop, and the farmer must endeavour to restore that nutriment ere he call upon the resources of his field to yield a crop of wheat. Barn-yard manure, where practicable, is undoubtedly the most effectual means for this purpose; and in default, we have known a

liberal application of bone-dust cultivated in before sowing, to have a most marked effect.

Good Cultivation.—The preparation of land for wheat should be thorough. If a summer fallow has been properly carried out, one single ploughing before sowing is sufficient. If wheat, however, follow a spring crop, it is well to plough lightly; cultivate or gang-plough the stubble as soon as possible after the preceding crop has been harvested. This has the effect of starting into growth such grains as may have shelled in carrying the spring crop, and also many weeds which may have been deposited in the ground.

As soon as these grains and weed seeds have been fairly started, a second deep ploughing will cover them and completely destroy them, and we are ready for our wheat. Where it is feasible, we think that the drill should always be used for fall wheat. Fall wheat seed should be deposited sufficiently deep to give it a good hold upon the ground. This depth should, however, be regulated by the nature of the soil. Upon this point we do not feel competent to lay down any arbitrary rules, but we think that about two inches is the right depth for clay; while upon more friable land, or even upon a summer fallow, we think that a greater depth would be admissible.

Where it can be avoided, as in the case of a summer fallow, we do not think it advisable to plough in our manure just previous to sowing, but rather to turn under lightly with the last summer ploughing, and thus by again ploughing with plough or cultivator just before seeding, ripping up the manure, incorporate it with the soil near the surface.

In manuring upon pea or barley stubble we should plough first, and then spreading well rotted barn-yard manure upon the surface, cultivate it in, and thus incorporate it with the surface soil before sowing.

If lime be used as a fertilizer, from 10 to 20 bushels staked per acre is the usual dose. This should be sown broadcast, and incorporated with the soil by cultivation before sowing the grain.

Bone dust is another excellent manure to be used where there is a deficiency of barn-yard manure; this at the rate of two or three cwt. per acre should be mixed with the soil as above.

It will never pay to put in a crop of wheat unless the land be rich enough to give fair promise of from 25 to 40 bushels per acre. If the land be not in good order, let it be remembered that ten bushels extra upon an acre of wheat is equivalent to at least ten dollars (for the work of the teams, seeding, cutting and harvesting is about the same, be the crop light or heavy), and that ten dollars will manure an acre very liberally.

An immense breadth of barley has been sown along the Bay of Quinte, and the Napanee Beaver says not less than 500,000 bushels will find cash buyers this season in that town.

Hints on Fall Work and Preparation for Spring Crops.

Harvest being now well over, and wheat sowing or the preparation of the land for that crop far advanced, it becomes advisable for us to consider what course is the best for another year. Most farmers throughout Ontario have become convinced of the necessity of somewhat altering the old programme of field operations, and have also had their attention turned to the growth of roots. With scarcely a dissenting voice, one and all say that they have found the benefit in a most decided manner, in spite of previous prejudice. It is true that turnips are to be taken care of in fall weather, and often in rain and snow storms, yet turnip culture and harvesting are now practically found much easier than was formerly thought possible. It was formerly a vain attempt to convince a Canadian farmer that there was any possibility of contending with ten acres of turnips; now this is an ordinary piece to sow, and many have more acres under cultivation, and few regret sowing them.

A visit to an agricultural implement depot, such as we have now in Toronto, will be found profitable and instructive, as well as amusing. The visitor will there see what has produced this revolution in turnip culture. Every species of drill, for horses or hand power, may be there seen, and even machines for harvesting turnips; and thus one great difficulty is overcome. We now have within our reach such implements as will lessen the cost of turnip growing by one-half. Manufacturing enterprise and capital have to a great extent been put in force; but these have failed to influence the farmer as much as the great falling off, for some years past, of the quantity of wheat that could be raised on an acre, taking the average throughout the country. Bad crops have forced farmers into turnip growing, and now that this year we are blessed with an old-fashioned yield of wheat—40 to 50 bushels per acre in many parts—we probably shall again fall back on wheat growing, and comparatively abandon turnips for a season. But let us beware of doing this. Do not suppose that our harvests are hereafter always to be like that of this year. Depend upon it, we shall not find our barns so well filled next season as this, and it therefore behoves us to look forward to such a contingency, and certainly not to abandon turnips for wheat. Both crops should be raised to the extent of our ability.

The present season is the best for preparing the land for next year's crop of turnips. If the manure is hauled out in the latter end of September, and, after being well spread abroad, it be covered by ridge and furrow-ploughing, the land will be dry and wholesome two weeks sooner in the spring. All that will then be requisite will be to harrow every ten days with the ridges, not across them, using the harrows that are constructed to do this to the best advantage, and there

will not be under this course of cultivation one weed where one hundred would spring up under the old system, and the labour is not one-half as much.

The same observations apply to growing sugar beet. The first great difficulty in growing root crops is to get all the manure crops in a decomposed state directly underneath the growing roots, and yet to have the manure to lie wet and solid, not dry and light as when applied in spring, when any long continuance of drought will invariably destroy the chance of a good crop. The next desideratum is to have as little labour as possible put on the turnip land during spring work, when the white crops want every day in our short season given to them. The next is to have the land rich, and ready to sow at a day's notice, when you find just the most suitable time coming, when rain may be expected to bring up the young plants in a hurry. The next is, most emphatically, to have no weeds. These conditions, and especially the first, to have the manure so directly under the plant, and in such a moist state of decomposition, that the young plant is forced on its way, and by its rapid growth escapes the fly, are all important. All these conditions are fulfilled by the plan proposed, namely, manure applied in the fall, ploughed in by ridge and furrow, whereby four acres can be well enough ploughed over in a day, and all weeds killed by surface harrowing during May. The first week in June the turnips can be sowed, after which, under this regime, a crop of turnips is almost an absolute certainty.

Increase and Intensify the Manure Heap.

A prize essay of the Illinois Agricultural Society for 1870, by R. Giddings, details the cheapest and most practical plan of increasing the farm-manure pile and saving its elements from waste, and which should be adopted by every farmer. His plan is simply to save every particle of the animal excrements, liquid and solid, with all its fertilizing elements intact, free from waste by washing, evaporation, or fire-fang. To do this, he fills a stall, or large bin, in his stable, during dry weather, with pulverized clay, road scrapings, or common soil. With this he covers the floor of each stall three inches deep, and then places the litter for the animals' bedding on it; by this means, all the urine will be absorbed, and its wealth of nitrogen saved; and such is the absorbing power of dried earth, that one three-inch flooring will not be so thoroughly saturated in a long time as to require replacing. He says his experiment required but one large bin of pulverized earth to absorb the urine of ten or twelve cattle during the stabling season; and that two men with a team filled the bin in one day. Dried clay was applied also to the pig-pen and hen-roost, with the same ammonia-saving results; and if applied to the privy or earth

closet, which is now being adopted, a great manurial as well as sanitary result would follow. The inducements for the use of dry earth are :

First—That it requires no apparatus or cash outlay.

Second—That the liquid manure of cattle is worth more than the solid, and is usually lost; but, under this practice, all is retained.

Third—The dry earth retains within it all the value, of which usually one third or one-half is lost by fermentation, leaching, or evaporation.

Fourth—It gives much larger bulk of manure, each load of which is of double the value of ordinary farm-yard manure.

Fifth—That one ton of saturated earth is of more value than the same weight of even fresh saved dung.

Sixth—That the aggregate amount of plant food thus saved from the stalls is fully double, and in much better condition for use.

His next experiment was the cheap manipulation of bones. He says :—“ Our experience in the use of pure bone-dust and genuine superphosphate is so satisfactory, that if it were not for the excessive freight rates charged by our railroad companies, we should use them more largely. Thus virtually shut off from these, we pursued the following plan to reduce bones into soluble plant-food.” To make his own bone material he got from a foundry at the cost of \$1 60 a 32-pound cast-iron sledge, by which, with the aid of a spring pole and an upright log set in the ground, he reduced bones to small pieces; then sifting out the finest, he crushed the coarsest pieces over again; these fine pieces he composted in layers with fresh horse-dung. After three weeks he forked over the pile and covered it with soil, and this was afterwards forked over until the bones were rotted and thoroughly mixed with the horse-dung and soil.

It is a great pity that our railroad corporations are not animated by the same broad principles of self-interest which governs the directors of the English roads. They carry all manure, even lime and plaster, at a mere nominal toll, well knowing that manure alone can increase the freight of those farm products, the transportation of which alone supports the road.

To save farm-yard manure from waste, and above all from fire-fang, Mr. Giddings uses both earth and water. He says “ a covering of half an inch of soil will absorb every particle of escaping ammonia, but a thicker coating is desirable.” A water-box on a one-horse cart is also used occasionally to stop a too active fermentation of the pile. There are other absorbents, rich in themselves, of plant food, which not only save but add both bulk and richness to the pile—muck, saw-dust, coal ashes, &c. Go into your hen-house on a warm morning, and you will be oppressed with the effluvia arising from their droppings; spread over them a hod of coal ashes, or a basket of saw-dust, and the air is sweetened as if by magic, and it will keep the hens in good health, besides increasing the manure, if followed up every few days.—*Cor. N. Y. Sun.*

A Valuable Farm Implement.

We have much pleasure in drawing the attention of farmers and others interested to the following certificate, relative to the working of Carter's Ditching Machine, large numbers of which we are happy to learn are being manufactured and sold in Canada and the United States :

“ I hereby certify that Carter's Patent Ditching Machine has been in operation on the grounds of the Buffalo Central Park, for the past week, and its capacity for performing the work for which it is intended was thoroughly tested on a soil composed of extremely tough clay, mixed with cobble stone. It cut 1,200 yards of ditch 2½ feet deep, ready for Bottoming and Levelling, in two working days, the same amount of Ditch left in the same shape, requiring forty and one-half days' labour for one man. I estimate the relative difference between the cost of ditching by hand labor and by Machine as thus :

Cutting 1,200 yards of ditch by hand,	
1 Man 40½ days' labor at \$2 per day	\$81.00
Cutting 1,200 yards of ditch by Machine,	
2 Days' wages of operator at \$2½, \$5.	
2 “ 2 teams and drivers at \$5, \$20.	\$25.00

Saving by Machine on 1,200yds. ditch \$56.00

This test was made upon what I consider the most difficult part of the ground, and I can add that the operation of the machine was a complete success, and therefore its best recommendation

(Signed), GEORGE TROOP,

Overseer of Work on Central Park.

Buffalo, May 29th, 1871.”

Take Care of the Straw.

If a farmer happens to be without straw for one winter, he fully realizes the value of it in his business. A good-straw stack makes a cheerful barn-yard in the winter. You will rarely see poor stock where there is a large stack of bright straw. It makes a dry and sheltered yard, soft, dry beds in the stall, and is worth a great deal to work in with better fodder. Bright straw and some grain will take farm horses that have little work to do through the cold months in health and good flesh. The same feed will suffice for store-sheep. The straw stack affords cattle a good luncheon, but milch cows, fattening stock, and those that are young, require hay and other richer food. But the straw is of so much value that it is worth while to make the stack in the best manner, so as to keep its contents bright and dry. The top should be finished with a little fine hay, or grass cut for the purpose. By raking and trimming after the machine has gone, and topping out properly, the straw will come out in the winter as bright as when threshed.—*American Rural Home.*

Hybrid Wheat.

There are various causes for the degeneration of wheat so commonly observed even in the best and most lauded varieties. Chief among these causes, perhaps, is carelessness in selecting seed. Small, imperfect grains, are allowed in large proportion, and this followed by subsequent error in cultivation, will inevitably diminish the productiveness of the seed, and damage the reputation of the variety. Sufficient attention has not been paid to the effect of a thoroughly careful selection of the best grains, and these only, for seeding, to test the permanency of good qualities in any kind of wheat that has yet been before the Canadian farming community. This is a field of experiment well worth attention. But there is another method of selection and improvement to which we have often referred—namely, that of hybridizing. Hitherto, we believe, scarcely any one in this country, except Mr. Charles Arnold, of Paris, has practically investigated this subject. Mr. Arnold, however, has diligently persevered in his experiments in this line, and some of the varieties which he has thus raised bid fair to possess permanent value in productiveness and hardihood. We were particularly struck, during a recent visit to his nurseries, a small patch of which he has devoted to this nice and difficult branch of investigation, with the marked difference, in hardihood especially, presented by varieties grown side by side, under precisely similar conditions of soil and culture. Some portions had been entirely winter killed, others partially so, and others had thoroughly withstood the severity of the season, and showed a most luxuriant growth. If this character of hardihood in certain crosses is found to be permanent and reliable, and be combined with other good qualities, a very important advantage will have been gained.

Altogether we were very favourably impressed with the appearance of several of the varieties raised by Mr. Arnold, and trust that his careful investigations will be crowned with increasing success. The productiveness of some of his varieties, a result due in part to the fact of selecting only the best grains from the best ears, and the careful manner of sowing—by dibbling—and in part also to the effect of hybridization, was truly wonderful, and should encourage others to pursue the same path of investigation.

The *Maine Farmer* justly says :—“ Weeds are undoubtedly the most expensive crop a farmer can grow. Some farmers are aware of this, and will not allow them to grow in their fields. They are subject, however, every year to the cost of destroying those which have been sown by other persons upon their lands. Every farmer who allows burdocks and thistles to grow and perfect their seeds on the roadsides against his fields, virtually sows their seeds upon his neighbour's land.

Sowing Timothy and Clover.

In answer to William Ellis, Prescott, about seeding down Timothy and clover alone upon land which has been already seeded down to grain for two years, the grass seeds having missed, we should like before giving any definite opinion to know the state in which his fields are. We seeded down this spring a field of oats; the oats were drilled in, and the grass seed was dropped by a clover sower attached to the hind end of the two-horse drill; the seed was covered with a bush harrow. For some reason the grain drill did not work well, and several of the spouts missed sowing in two or three places through the whole length of the field. In one spot the whole drill missed for some yards. Upon these bare spots the grass seeds have, notwithstanding the extreme dryness of the season, far excelled in luxuriance of growth those upon the land where the oats have grown regularly.

This goes to prove that the clover and timothy will do well when sown by themselves.

If our correspondent's grass is foul he had better not sow grass seeds; noxious weeds will undoubtedly choke them out. The probabilities are that after two consecutive crops of cereals the land will be poor.

If clover and timothy be sowed alone, our correspondent cannot cut a crop the first summer, and therefore loses the use of the land for one year; and if the land be in poor heart or dirty, he need not expect the grass seed to take well.

There are two proper courses open in such a case: One is to put the land in hoed crop next year, putting all the manure that can be obtained—barn-yard or artificial—upon it; sow the barley next year, and seed that down. Another course would be to summer fallow his field thoroughly until about the early part of July, putting such manure as he can upon it; then sow a green crop—corn, millet or buckwheat—broadcast, and plough that under for fall wheat. Seed down the wheat. We would, however, repeat our opinion that if the land be not in good heart and thoroughly clean, it will be worse than useless to sow timothy and clover alone.

Should his land, however, be in a fit state to receive the seed next year, let it be ploughed in the fall and left rough; cross-ploughed or thoroughly cultivated and harrowed down very finely in the spring, and seeded down thickly with equal bulks of timothy and clover.

If manure be used, it must be fine and thoroughly rotted, so that all weed seeds have been killed, and it should be incorporated with the soil by spreading on top, and working in with the cultivator in the early spring. A top-dressing of ashes and plaster will be of great benefit at almost any period of its growth. Or let him plough early this fall and sow timothy seed alone,

and in the spring drag with light harrows; sow clover seed, harrow again, and top-dress with fine rotted manure, plaster and ashes. Of the two courses we prefer the former as the more safe. The only advantage to be obtained from the latter course is that the first year's hay will have a good admixture of timothy in it.

Lucerne as a Soiling Crop.

The following, in the *Utica Herald*, was written by Richard Gibson, the stock manager for Messrs. Wolcott & Campbell, of New York Mills. We will only add that deep tith in the preliminary preparation, and perfect freedom from weeds, are indispensable to success in raising lucerne. No plant is more impatient of the interference of weeds:

"Respecting the cultivation of lucerne, I will give you my experience with great pleasure, as I feel convinced that it is a soiling crop which has only to be tried to be more generally grown. It is essentially a soiling crop, being ready to cut in the spring before red clover, and continuing to produce heavy cuttings all through the summer, no matter how hot or dry. Last season, though unusually dry, did not appear to check its growth, as we were able to mow over one field five times; and another, only seeded last spring, was cut four.

"There are crops that will yield a greater weight of feed per acre at one cutting—corn, for instance—and which is a crop that lucerne cannot supplant, as it yields a very heavy weight of green food at that season of the year when most of our dairy farmers are requiring such. But as a soiling crop proper, I know of none that can compare with lucerne, and it is one that few farmers can afford to be without. It yields a heavy weight of feed all the summer, of excellent quality, and one that does not require the expense of ploughing and re-seeding after each cutting, nor each year, as by proper management, on suitable soils, it will remain profitable five years.

"Its relative value as compared with corn is decidedly superior, our sheep and cattle not only preferring, but doing much better on it. In fact, corn with me has not proved a very satisfactory soiling crop—cattle fed on it generally losing flesh, until we have all about given over growing it for that purpose.

"The finest hay we have this winter, that is, the hay our calves and sheep prefer, is that with a little lucerne in it. Going on to the hay mow the other day, I saw a hole cut in it. Inquiring the reason, I ascertained that the shepherd had found where a load or two of hay with a little lucerne sprinkled through it, had been mowed away, and that he had been getting it for his sheep, as they ate it better than good clover hay.

"A rich, dry soil, with an open porous sub-soil, is the most congenial to the growth

of lucerne; but it will succeed well on any soil that will grow red clover to perfection.

"The seed may be sown broadcast, or in drills ten to twelve inches apart. In England we generally followed the latter course, so that after each cutting, or as often as might be necessary, we could run through the horse-hoe to loosen the soil and destroy weeds, &c., and by these means the crop could be grown successfully two years. But here I have generally adopted the former plan, sowing from twelve to fifteen pounds of seed per acre, as early in the spring as the season will permit.

"The soil should be thoroughly prepared in the fall by deep ploughing, and manuring with rich, well-rotted dung, or what would be perhaps better, thirty or forty bushels of bone dust per acre, there being less liability of having foul seeds introduced, as this is a crop that is easily choked or run out by weeds, &c.

"In the spring the soil may be lightened with a two-horse cultivator, or scarifier, making a fine surface mould. The latter is essentially necessary to get a good plant. The seed being very small, will only require lightly brushing in.

"The after cultivation will consist yearly of a good top-dressing of well-rotted dung in the fall, and harrowing and rolling in the spring.

"As I said before, weeds easily choke it; it will therefore be advisable to select a piece of soil free from weeds, and sow after some hoed crops, such as root crops or potatoes.

"The first season will yield a fair crop, but the second, third and fourth will be the best."

The Selection of Seed.

Nearly all the principal varieties of the cereals have been originated from a few ears of extraordinary size and quality gathered by intelligent observers at harvest time, and propagated from until large quantities of seed were obtained. The potato oats, which turned out to be a most valuable variety, was originated by a gentleman of Cumberland, Eng., from a single plant of an extraordinary size and weight found growing in a potato field. The most approved varieties of wheat bear the name of some intelligent farmer who originated them. The Chevalier barley, a most excellent variety of this cereal, was named after M. Chevalier, a French agriculturist, who originated it by selecting the finest ears in a field of barley at harvest time. A vast improvement of seed and a consequent increase of acreable produce might very easily be effected, if farmers would annually select the best ears of the cereals at harvest time and propagate from them. The acreable produce of all kinds of crops may be greatly increased by selecting and using the best seeds.—*Western Rural*.

Talk with Farmers.

SUCCESSFUL FARMING WITH LIMITED MEANS.

"What part of the old country did you come from?"

"I came from Devonshire."

"Were you farming at home?"

"Yes; I was apprenticed by the parish to a farmer, and learned the farming business from him. I staid with him till I married. I had saved a few pounds, and I determined to bring my wife and child to Canada. I had only fourteen pence a day in England, so that I could not save much; but my wife had always attended to the "gloveing" (i.e., making kid gloves for the London manufacturers,) and that helped a little, and got a few things about the house. When we landed here we had half a sovereign left, and that was all. I, however, soon got work in Pickering, and much better wages than we earned at home, so that we lived better, and that is what we came for."

"How long ago did you come to Canada?"

"Just about fourteen years."

"How long did you work out for wages?"

"Six years, and we saved a bit of money. I have been on rented land better than eight years."

"Well, but how did you come to be able to lease a farm?"

"Master had a farm that he let. He could not get any one to keep it more than one or two years, and they generally made a poor mouth about the rent, as the farm was so bad; and well it might be bad, for they sold everything off it, and never fed even the hay or straw; it was very foul, too, with weeds. At last no one would take it, and I told master that the reason no one could do well was because they did not know how to farm. I knew this from my experience in England, where we used to farm well and raise lots of stock on our turnips, and get plenty of manure. Besides, we always used there with our turnips guano and bone dust, and were sure of a good crop. So master let me the place at rather more than three dollars per acre, which is too much rent; but I was glad to get it any way. I got a team of horses, and there were enough buildings on the place to make a shift with, and master promised to put up more if I paid my rent and did the land justice; so we strapped to work; we got a little stock about us, and I worked the land as well as I could, and my wife did all she could; but for the first three years I had to work out with my horses to pay the rent."

"How long did it take you to get the land that was out of condition into a good state; I suppose you had no manure?"

"No, I had none; it took three years. I fallowed it, ploughed in green stuff as much as I could; I soon got some manure together,

and raised turnips, for I could have done nothing without them. I manure for the turnips in the fall. As soon as I got turnips I got stock, and fattened them, and sold them and made manure. Then the land began to get better, and I raised capital crops of barley, then clover, and finally I got to raise some tidy wheat. I had great trouble though to struggle on with my small means; but I have managed to get through my trouble, and I now get good crops on all the land except one piece, which is very light and poor. That piece, however, raises pretty good crops sometimes, and is getting better."

"Did you ever try growing turnips for manure only? I mean ploughing them down, and letting the frost destroy them, and then ploughing them in."

"I never meant to do so," he replied; "but two years ago the early snow caught me with my turnips out, and I never housed or pitted more than half; the others were spoiled in the ground, and I ploughed them under in the spring."

"Well, how did it answer?"

"I had a very good crop on all the turnip land; but I did not see much if any difference between that part of the field from which the turnips were housed and where they rotted on the ground."

"But, perhaps the land was as good as it could be, and that might be the reason you saw no difference."

"It was very good, and I had a capital crop after the turnips. You see I had manured the land well in the fall, and so the ground was in good heart."

I told him his experience was different from others, and that many I had talked to had told me that when the turnips and other root crops had been destroyed that fall, the crop next year was fully a foot higher than it was where the turnips had been removed.

He said it was only natural that such would be the case, but in his case it was not.

This I attributed to the ground being in as good order as it could be, and therefore bearing its maximum crop, and that it would have shown improvement had the ground wanted the manure of the destroyed crop.

I then asked him had he ever ploughed in any crop that had a particularly beneficial influence on the land.

He said he had, and that the crop was corn stalks, and that it was the first thing which brought a good crop out of the light piece of land he had spoken of. I asked exactly how it was, and he replied:

"I planted about three-and-a-half acres of corn, and with the help of ashes and plaster and manure to each hill, got a pretty good crop. I cultivated it, and kept it clean, and harvested the ears in the usual way; then I turned in the stock for a few days, and let them eat what they would, and they did well on it. As soon as they had what they wanted, I

dragged the stalks all down one way, the way I wanted to plough; then ploughed lengthwise, and ploughed them in. Next spring I sowed the land to barley, and had a good crop, which I seeded down with clover; and I never saw such a crop of clover as I got off that field. I could never have supposed that corn stalks would have done so much good as they did."

I expressed great wonder that the stalks could be ploughed under, and that they would rot without leaving the land all hollow and light.

He said he did not know how it was, but they did; and that he had ever since followed the same course, and had now a field of corn he was going to use in the same way, and he was sure of the same results. "You know," said he, "corn stalks are very sweet, and I think there is a deal of goodness in them."

"What did you do with the corn?" I asked.

"I gave it to the horses, pigs and stock. I fed it to them while it was so soft they could grind it, and all the stock did well. Feeding it while it was soft saved going to the mill, as the cattle could bite it without difficulty. The pigs did particularly well, and I made some excellent pork, and the crop paid well."

"How did you manage that the pigs did not eat too much, and thus waste it?"

"I did not give them much, and they were glad enough to make the best of it."

I remarked that I had often seen pigs waste the corn they had given to them by its passing through them undigested, and also peas.

He said he had always found that to be the case if they had the least too much; but if you only gave them a little at a time, they would get the benefit of the whole of it. As to peas, he said, he never gave whole peas to pigs; they would waste more than half of them by not digesting them, feed as you would. He always boiled all his peas, and thus the pigs got all the good of them.

"Well," I said, "but don't you think you had better stay where you are, and are doing well, until you have paid for a new farm?" (He wanted to buy a new farm, so as to have one of his own.)

He said he had plenty of stock, and money in the bank, and could pay the cash for a new place, and go and improve it besides, and he would then own the place. He was satisfied to pay fourteen hundred dollars cash as soon as he could sell his stock and crop.

Now, this man's story is very instructive. Here is a poor parish apprentice, who had been indentured to a farmer to get rid of him as a charge on the public. He had seen and learned good farming where he was placed, though he only worked there as a labourer, and consequently was never taught anything except to work; and the farmer with whom he was no doubt made the most of him; yet, although an exceedingly commonplace person, and of certainly no more

intelligence than the general run of his fraternity, yet by the example of "good farming" before him, he had been enabled after first coming to Canada to earn money beyond his wants, to acquire the confidence of his employer so as to be trusted with a farm. The man had in the course of eight years raised himself from the mere labouring man to the station of a prosperous and well-doing farmer, and one who could acquire the freehold of 100 acres of his own, and yet have means (more or less) to work it; and whilst he was acquiring these means, he brought his farm from a worn-out state to a state of fertility by force of "good farming" alone, not by means of capital, artificial manure, and all modern usages, but by dint of sheer hard work and what he could force out of the ground, to be returned to it again, and to leave a fair profit and surplus for his skill and labour. All this he did with the smallest of means and cash capital, and chiefly by the labour of himself and his wife, and some help from his family. No doubt the man has been a pattern of saving and sobriety, and is a person of considerable natural intelligence; but to talk to him you would never suspect him of more than the most ordinary qualities. He is far from a powerful man, and I very much doubt whether he can read or write; but he can "farm" and grow turnips, and is well grounded in the fact that good farming without manure, and plenty of it, is impossible; that grain growing, without a corresponding stock to keep up the fertility of the soil, is suicidal to the interests of the farmer; and more than all, he has shown that Canada, for the hard working and industrious man, with only moderate skill in farming, is indeed a haven of success and security, and a place where a poor man, whilst he is enriching a worn-out farm by judicious management, not only benefits himself, but is rendering himself independent for life, and his family are raised from the dregs of the people to the ranks of an independent yeomanry.

VECTIS.

Salt, as Applied to the Soil.

Salt is a corrector—of this there is sufficient evidence to establish the point. It is not a manure proper, but it aids chemically and otherwise. It needs but little to have the necessary effect, and this the soil has often supplied to it by natural means, as when the location is near or along the sea shore, the air carrying the saline properties to the land. It is, therefore, to be determined by test whether salt is sufficiently present in the soil. Otherwise applied, it will be of service particularly on sandy soils, where it dissolves the silica—hence the advantage of stiffened straw without, however, increasing its bulk, rather lessening it; but the berry is improved in size and weight. The quality of growth is insured; there is a healthful effect.

On clay soils it seems under most circumstances to be of little benefit. The arena is the place for it, and there especially for root crops, but according to English accounts more particularly for the mangold. We have a table (by Voelcker) where the increase of this root from the use of salt was from five to eight tons increase per acre over land not salted. There were used from two to eight hundred pounds of salt per acre.

Salt will be absorbed entire, unchanged by the plant. It will be taken in and thrown out, passed through the plant, doubtless for some use, but what it is not clear, probably to renovate and clean the plant. Hence it improves the quality of grass and hay, and it is asserted in some cases the yield, and largely; also that of grain. Of course much depends upon the soil. We must test; that is the way to find out.—*Cor. Rura World.*

Wheat on Stubble.

There are those who still persist in sowing winter grain on stubble, and wheat at that. The lesson this teaches ought to be sufficient to cause the discontinuance of the practice; but it seems farmers will persist in having dirty wheat fields and light crops, and this when the best crops, on fallows or otherwise, pay none too well. The fallow, in addition to a good crop, will clean the land, and prepare it for seeding and for future crops. The excuse that there is no time, and that it will not pay, will not do. If the fallow pays not, how much less will exhausted stubble land pay? But some stubble land, it will be said, is rich enough. To those who have such land we wish to say a word or two, and say it principally from experience in the various ways of wheat growing.

Rich stubble land ought to be mellow, and is if not hurt by bad treatment. This treatment consists generally in ploughing, or working the land in any way too wet. This will show for years. But if the land has not been hurt to any considerable extent in this way; if the soil is mellow, and not harsh, lumpy, or to but a slight extent; if the fertility in it is old, well incorporated with the soil, and there are not too many weeds, a fair, perhaps a paying crop of wheat may be raised. If it is desired to seed down the land, this is a further inducement, as no seeding generally does so well as that sown early in the spring—on the snows, all the better. That is our experience, either with clover (which some object to) or the grasses.

It is bad policy to sow wheat after oats. Barley is better. Peas we have found best of all, especially if as much of the haulm is left as can be. The land is pretty certain to be in good condition, mellow, and apparently enriched. Great results we have known to follow such treatment. But, in all cases of stubble, if possible, harrow the land as soon as the crop is removed. Several harrowings are better than one. Then leave till just

before it is wished to sow the wheat. There will now quite likely be a growth of the shelled grain and weeds that may have vegetated. This turned down, but not too deeply, is the next operation. If possible, the sub-soil plough should follow here, answering for deep ploughing. This new growth of grain and weeds does not want to be buried too deeply, as there is much nutriment in it, and the wheat wants it near the surface, though its root will extend well down, looking after the benefit of the sub-soiling; the latter is less necessary where the ground is porous or well drained. This is important, as it will be a guard against the heaving of the frost. There is a difference, it must be considered, between summer and winter grain, in this respect.

The wheat will come up well with anything of a chance, and it will be all wheat, not the unpleasant mixture of the coarse grain with the wheat. It will have the soil all to itself; and it will grow, comparatively, a clean crop. It would be greatly helped if a thin coat of old manure were spread, evenly, and harrowed with the wheat when sown. This mainly for a good start, which is of importance. It is of importance, as it establishes the root for the winter and spring test, keeping the plant alive even if the snow and the frost have been severe, and seem to have cut it off. We see such fields, with a barren and discouraging look, yet doing almost wonders. It was so in some cases the past spring. Establish a good root in a dry soil; you are safe then.

Another thing, which is not generally inviting: Cover your field with straw. You will not like the looks; you will not like the labour. But if you have the straw it will be a paying benefit to spread it on, evenly, and not scantily; the grain will find its way through, and will seem to be lifted by it. This straw is a protection, and it will protect against many things—against the snow, which will the less smother it, the frost and rough winds, and the washing of hill-sides. Besides, it is a manure; this to a greater extent than would appear. It also keeps warm by its covering, as a blanket does, while at the same time it reflects the excess of the sun's heat. The practice is common in some places, particularly in Pennsylvania, where the farmers make it a special business to save their straw for their wheat fields.—*Utica Herald.*

PROLIFIC PEAS.—Mr. C. Bean, of Scarborough, brought us for inspection a fine sample of peas, which he had grown this season. From a single stalk, branching out into four principal stems, were produced over forty pods, the total yield of which amounted to no fewer than 250 peas, a remarkable increase, certainly from one seed. The length of the haulm was about five feet. The whole crop from which this was taken was remarkably fine, and will return, it is estimated, fully 50 bushels to the acre.

Canada Thistles—How I Killed Them.

Three years since we seeded down a very large portion of our farm, nearly 150 acres, and at that time the thistles were so thick that in many places you could hardly put down your foot without treading on them, and that for acres and acres together; in fact, seeding down became absolutely necessary, as spring grain had been grown for some years without summer fallow, and, as a natural consequence, thistles had increased to a most alarming degree. Since that time the land has been in pasture, with the exception of one year, and the thistles have almost altogether disappeared. We were led to follow this course by carefully observing that thistles did not thrive in fence corners, while close beside the line of the rails they were rank and luxuriant to a great degree.

In our land thistles do not go deeply into the sub-soil; it is level, rather wet land, and the sub-soil does not seem inviting to them. Often in ploughing I have chanced to run the plough just over or under a long line of thistle roots, sometimes exceeding ten feet in length. On careful examination I found the roots to strike upward or sideways, never downwards, or rarely so. I also found by transplanting some of these roots, and on merely removing them from their original bed, that tubers died and became rotten, especially when severed from the parent stem; whereas, if allowed to be simply turned over by the plough, and not removed, but severed from the parent stem, they always thrived splendidly and increased wonderfully, especially after fall ploughing. I therefore abandoned ploughing in the fall altogether, as being worse than useless where thistles existed and summer fallow was intended the following spring; and by leaving the ploughing until about the fore part of June, or even later, the thistles had obtained complete mastery and a most rank growth, many of them showing for flower, and all several feet high. I now went at them with a vengeance, my strength increasing as their power of resistance decreased. They had fulfilled their mission, or nearly so, and were in flower and bearing seed, and so far were decreasing in vitality or power of recuperation. The land was rather hard and turned up rough, and one day's ploughing in hot dry weather in June destroyed millions. Some, however, lived on, and the next ploughing (without harrowing) totally cleared a field of 27 acres. I was then quite satisfied that to destroy Canada thistles you must not plough in the fall or early spring, but wait until the thistles were in bloom, and then ploughing as roughly as possible, and never harrowing until after the second ploughing, thus keeping the land as rough, as possible to admit of the greatest quantity of surface exposed to the sun and dry wind. This course completely eradicated the thistles in that field. Afterwards I grew barley, the year following sowing wheat after the fallow in which I killed the thistles, and to this day that field is clear of these pests. C.

Silver Beet Again.

I have pleasure in informing my brother farmers that the silver beet sowed for seed to test practically the growth of seed in Canada, seems to promise an abundant yield. Frost or snow, so far, and heat, rain or drought, all seem alike to this hardy plant. During the last month of dry weather it never flagged, but kept continually green, and the seed appears to be ripening fast and abundantly. During the spring frosts not a leaf turned brown; nor did rainy, cold weather in the early summer, seem disagreeable to it in the least. If all goes well I shall have succeeded in growing six lbs. of seed from a small row of the plants, not more than 25 feet long, and that, too, without any planting out in the spring, or culture of any kind. Last fall the roots were simply covered with earth as protection during winter, where they grew, and when spring approached they were unearthed and allowed to do all else themselves. My anticipations may be sanguine, but I think this plant is destined to furnish an abundant supply of valuable manure for ploughing under, much better adapted than clover, and at a less expense, and at the same time better adapted for the food for fall wheat, to force on its growth. I shall be happy to furnish gratuitously a small quantity of seed to any farmer who will sow it and attend to the directions, and take the trouble to write the result to the CANADA FARMER. C.

Forest Culture.

[Extract from an essay on the importance of forest cultivation in the United States, read by D. C. Scofield, at the meeting of the Northern Illinois Horticultural Society, at Rockford, Ill.]

We show by statistical records that the manufactured pine lumber cut from our forests and brought into our markets annually, amounts to several thousand millions of feet; that nearly a thousand millions are brought to the city of Chicago alone, besides vast quantities of lumber of other wood, all of which requires the labour and skill of nearly half a million of artizans.

That the wood industry of the United States amounts to three hundred millions of dollars annually. More than 150,000 acres of the best timber is yearly used for railroad sleepers alone. That the locomotives of the United States annually consume fifty-six millions of dollars worth of the article. That more than half the internal revenue is paid for wood. One-half the gold-bearing wealth of the nation is in her forests. That within the next fifty, if not within thirty years, the last vestige of the pine forests will be carried away, and other timber lands will have shared the same destiny.

Whence then shall we look for relief? From whence draw our supplies of materials

to build machinery, cities and navies, railroads, warehouses and wharves, and all the farm fixtures of a mighty people? Whence then will come the revenue and resources of wealth of the nation? But this is not all. Terrible as are the consequences of these wants, they are of small moment compared with the meteorological influences of climate and soil. The history of timberless countries in Europe, Asia, Africa, and our own country, is a fearful one. From high antiquity Egypt is known; but since the planting of immense forests by Mahomet Ali showers have been frequent and the country comparatively productive.

Wherever countries, once abounding with forests yielding all the luxuries and producing abundantly for all the wants of man, have been stripped of their forests, they have become comparatively barren, exposed to terrible hurricanes and tornadoes, to epidemics, famines and pestilences. Such was the unhappy fate of the Cape Verde Islands, once the Elysian of the ocean; but being stripped of their forests by their improvident inhabitants, have been the scene of terrible calamities.

HOW TO IMPROVE MUSTY WHEAT.—A correspondent of *Rural New Yorker* had a lot of wheat get musty in a pile. He says:—"I put it on my hop kiln, dampened it slightly with water, put a fire under it with brimstone on the stove. When it cooled off, I found the mustiness had entirely left it. We tried it for bread, and it made as good as any wheat.

WEED SEEDS.—The seeds of cockle, chess, and other weeds that are mixed with the screenings from the fanning mill, should be carefully prevented from getting mixed with the manure in the barn-yard. We once permitted a neighbour to run a few bags of grain through our fanning mill, and gave him the run of the barn for that purpose. When he had finished, and during our absence, he—doubtless with good intentions—scattered the screenings all over the barn-yard, so that the fowls might get the waste grain. This probably was intended as a sort of recompense for the use of the mill. Alas! we never regretted more than on this occasion the doing of a favour that resulted badly for ourselves. Our manure pile was thoroughly seeded with cockle and chess, and probably ten years of labour will be inflicted on us before those seeds can be eradicated from the field on which that manure was spread. We mention this circumstance as a warning to others, and also as a forcible reminder to all that weed seeds should be consumed with fire and utterly destroyed. Don't feed them to poultry; they won't eat cockle; and the seeds seem to last forever; by hook or by crook they will get into the fields somehow. Put them in the stove and you will have seen the last of them.

CULTIVATED PATCHES ALONG RAILWAYS.—It is now no unusual thing to see potatoes and other crops planted on the strips of land by the side of railroads. When we reflect how much land could be added to the acres already under cultivation by utilizing these strips between the road bed and the fences, the plan seems both economic and desirable. Throughout England, we learn from a correspondent of one of the daily papers, gardens along the sides of railways are the rule instead of the exception. The space between the track and the fence on both sides is either seeded down to grass or laid out as a vegetable garden, unless too steep to hold soil. Often the name of the station is marked out on the bank in coloured stones or in flowering plants; or the letters are cut out of the sod, and the borders so made are gay with flowers or green with vegetables. If this plan were more generally followed in this country, it would not only tend to the benefit of railroad employes, but would give a pleasing variety to belts of land which now are generally given over to weeds or any wild plant which will grow on them.

THE WASTE OF LIQUID MANURE.—Very few barns or barn-yards are so arranged as to save the liquid manure. The loss resulting from such a want of proper arrangement is a very serious one, more so than most farmers would imagine. In the first place, the quantity of liquid matter which might be saved from a pair of horses and half a dozen cows amounts to \$0,000 pounds yearly. This is equal to about 10,000 gallons, which, diluted with an equal quantity of water, would furnish each year a dressing of 1,000 gallons per acre to twenty acres of land. Fermenting liquid manure needs this addition of water for the purpose of retaining the ammonia which would otherwise pass off and be lost. The solid matter contained in the above quantity of liquid is equal to nearly three tons, and is worth as much as the best guano. The money value would therefore be about \$200—an amount that is well worth saving. Much less than this amount would make the drains and tank required to save the manure, so that the outlay would be more than repaid the first year. Or, if proper absorbents were freely used, the whole of the liquids might be saved without any outlay at all.

MARKETING GRAIN.—We have occasionally inquiries as to the propriety of disposing of grain as soon as ready for market, or of holding for a rise later in the season. We can not with propriety advise in a matter on which so many men have widely different ideas, yet there are some circumstances in which the farmer may find himself in doubt as to which course should be followed, and make a man's interest apparent. First. A farmer should go to market without loss of time when other parties have an interest in his crop. If the merchant has been promised a part of the proceeds, it is only strict honesty to fulfil the promise at the earliest

day. Second. It is never wise for a farmer to borrow money rather than sell his crop. He will afterwards keenly regret this course. The anxiety of the speculator will consume him, and even should he succeed in gaining an advance, the cost of interest will doubtless eat it up. If a farmer has money in hand and grain in his barn, he is independent of contingencies, and can do as he pleases; but for all others, we think that the sooner they go to market the better.

SEWAGE.—The British Association Committee 'On the Treatment and Utilisation of Sewage,' which was reappointed at the Exeter meeting in 1869, have just published their report, in which is embodied information obtained from two hundred towns. This report may be consulted with confidence by all who wish to know which methods of drainage and sewage are most likely to answer in any particular locality, and to learn something about the results of sewage irrigation on farms. The report contains tabular statements in which all the details are given, as well as analyses of the air in drains and sewers. From the latter, it appears that the air of those places is less foul than is commonly supposed, and that bad smells are more disagreeable than harmful. And, further, with a view to ascertain whether (as had been suggested) the crops of sewage-irrigated farms occasioned peculiar diseases in the animals which were fed thereon, the committee have instituted a series of experiments which will at least throw light on the question. A beginning has been made with three families of guinea-pigs, and, after a course of feeding, one member of each family was killed, and examined, and "no sign of entozoic disease of any description was found, even with the help of a powerful pocket lens, either in the viscera or muscles of any one of the specimens." In continuing the experiments, one family will be fed on sewage produce only, another on the unsewaged produce, and others are to have now and then a meal of vegetables which do contain entozoic larva or ova. When these guinea-pigs come to be killed, examined, and compared, some definite results may be looked for, meanwhile, a chemist who has examined specimens of grass, carrots, turnips, onions, and lettuce from a sewage farm, says: 'I find nothing to report against any of them. They all seem to me in excellent order, and free from parasitic insects, or from fungi of any kind. Not the least important part of the report is that in which the committee give particulars of a sewage-irrigated farm near Romford. The crops there have proved surprisingly profitable. Onions fetched £36 an acre in the ground; spinach, £22 an acre; cabbage and cauliflowers, from £24 to £27 an acre; lettuce, £30 an acre. A new kind of American oats yielded at the rate of 14 quarters to the acre. Three crops of rye-grass were taken in one season from 5½ acres of meadow, and produced in all nearly 13 loads. Three sown with 'bunching greens,' a species of colwort, produced plants enough to plant 7 acres, and 470,000 plants and 3,240 full-grown roots for sale, the money value of which was £39 15s. From this it would appear that the most profitable use for the sewage of a town is to cause it to flow across a farm.

Stock Department.

Buy Cattle to Fatten in the Winter.

The liberal and constant application of manure is the grand basis upon which rests successful farming. Of manure there are three kinds—the so-called artificial manures, green manures, and animal or barn-yard dung. Each in its place is necessary to a proper enrichment of the soil, and the obtaining of all is a matter of much importance. Now, the heading of our present article leads us to a consideration of the manufacture of the latter manure. To make plenty of barn-yard manure a number of stock must be kept, and such should be richly fed; for as the fodder is rich, so will the manure be impregnated with a maximum amount of those rich elements which go to increase the growth of the plant.

While endeavouring to fat a great number of head of cattle, the question of a profitable return for the food supplied has to be considered as inseparably connected with the manufacture of rich manure. We have seen beasts put up to fatten who have eaten more than they have made. A thin beast, put up in the cold weather, takes a great amount of his food for the purpose of supplying the necessary heat to the body; while an animal in good order has a heat-producing store in his own fat, which allows all the extra food to be taken up in producing more meat. We may lay it down as an axiom that it will not pay to put up a thin beast to fatten upon stored or winter food.

Pigs should be put up to finish off as soon as they have begun to exhaust the stubbles; and cattle should be stalled when by running upon fall pastures they have got themselves in good order, and before the cold weather has nipped down the grass.

Those farmers who have now a piece of low pasture would do well to go off into the higher sections to buy cattle. In these latter parts the pasturage is much burned up, and there cattle may be bought at a reasonable figure for cash.

Take such cattle and put them upon a low-lying piece of ground, and it is astonishing with what rapidity they will increase in weight. After August the fall pasturage will be ready for them; take them off this as soon as very cold nights set in, and stall feed. They will be the very best of beef by Christmas.

In this way alone, as a rule, can winter feeding of stock for the butcher be made profitable. The animal is growing from August to December without a day's check. We have bought steers in August for \$35 cash, and sold the same before Christmas for \$65, only stall feeding for about six weeks.

Money may be made in the current year by growing and selling a large breadth of grain, but it is made at the expense of our

future income. Fattening of stock is the most profitable manner in which to apply our farm produce, for we have profit from the animals and manure to boot.

The greater portion of our produce should not be carried to town in the waggon, but should *walk off* the farm.

At the same time there is such a thing as putting more feed into a beast than his increase will pay for. If we adopt as an axiom that an animal should be always in good order before put up for stall feeding in winter, we cannot go far astray.

Gearing and Working Oxen.

There are but two modes that can be adopted with any degree of satisfaction or success in working oxen; these are the yoke and the harness. From the former being in general, not to say universal use, the inference is a natural one that some inconvenience must attend the latter. The form of the ox is one objection to harness; his belly is so much wider than his shoulders, it is embraced so hard by the iron traces as to impede his wind, as well as to be injured by galling. The yoke, on the other hand, being of hard wood, appears to be an instrument that would gall, but I never knew any injury done by it. The neck of the bullock seems by nature fitted for the yoke; the skin naturally thick, soon becomes so callous as not to be hurt by friction; it is there his strength lies, even to a proverb.

In point of economy, there is a wide disparity between the harness and the yoke; the expenses of the former to that of the latter, for eight years' wear, would be as ten to one, and the time of gearing and ungearing is as three to one; in other words, a yoke will cost only five dollars, which will average eight years' wear, and can be put on the oxen in two minutes.

A yoke which is properly made for oxen of equal size and strength will have no particular end for the near or off-ox; but the bows being sometimes untrue, will fit to the neck better one particular way. This the nice teamster will observe, and always puts them so. An ox can feel as sensibly as a man the pains of tight or unfitting accoutrements; but not being so fluently gifted, and being too noble and patient to shrink on that account from his task, it particularly behoves every driver (who cannot all day wear a key or penknife in the foot of his boot) to be vigilant that the tackle sits easy and free on his team.

When oxen are unequally matched as to strength, the strongest is apt to carry his end of the yoke several inches before the other; this makes the yoke uneasy to them, and is soon remedied by putting the staple of the yoke nearest to the end of the strong ox. It does, not, however, always follow that the stronger ox carries the fore end of the yoke. It often occurs that an inequality of

strength begets such ambition in the weaker ox as will ruin him by his overstraining himself for an even yoke. The driver should be attentive to this circumstance (if it ever occurs with him), and remedy it, as has been just pointed out.

It is unnecessary, in yoking well-tutored oxen, to lug the yoke round the yard after them, as they are easily called to that. I have often called the ox I wanted from a drove of all sorts of cattle. Stand the yoke on one end; take out the off-ox's bow; steady the yoke with the left hand, and with the right hold up the bow towards the ox, and beckoning with it, call him by name to you; slip the bow under his neck; turn the yoke down upon it; enter it in the bow holes, and put in the bow-pin; then take out the other bow, and lifting up the near end of the yoke with the left hand, with the bow in the right call the near ox also by name, who will come and "bow his neck to the yoke," and is harnessed the same as his companion.

Oxen may and ought to be so taught that by speaking to them and making a kind of beckoning motion with the goad they will come to; or, in other words, turn to the left without the trouble of an assistant on the off-side, or a rope to pull them round.

I would have one thing remembered in driving oxen (which also applies to every species of servants), I mean the impolitic habit of a uniform harsh deportment, and of keeping the goad constantly going over them; it is a needless task upon the lungs and sinews; the oxen will not do so much work for it; and, what is worse, they become so callous from this perpetual rough discipline that they cannot easily be brought to an extra exertion when it is indeed necessary.

The benefit of a calm management has been very apparent to me when I have been driving in company with these peevish geniuses; and coming to a steep hill, I would then speak sharp and determined to my team, and ply the goad pretty freely, if necessary. This treatment, so novel, would be fully appreciated; every one of them would pull as for his life, and the hill would be quickly surmounted; while the driver who has always been speaking harshly, and always been plying his goad, could not here make use of any new argument to stimulate his cattle to the exigency of the moment. The consequence was, he would often have to receive assistance from a team no stronger than his own. Drivers should acquaint themselves with the burthen of their oxen, and never load them beyond it; it discourages and hurts them.—*Cor. American Stock Journal.*

WINTERFOLD SHORTHORNS.—At the late annual sale of Shorthorns at Winterfold, near Kidderminster, England, the average price realized on twenty-four females was £78 19s.; and on nine bulls, £32 15s. 8d.

Exportation of Thorough-bred Stock.

Mr. B. E. Stewart, of Northyarnhill, Oregon, has just left Canada with a considerable drove of stock. They are to be taken to San Francisco by rail, and thence to their destination by ocean steamship. Mr. Stewart estimates the cost of this long journey, nearly 3,000 miles (of which the greater distance is by rail) at an enormous amount, but seems perfectly willing to pay it. Travelling through Canada in search of the stock, he expresses himself surprised at the deficiency of grass or other food for cattle here in comparison with the abundance of grazing to be had in Oregon, where such feed is so abundant that one acre would keep double the number of stock it would here, though certainly, as it was explained to him, this season has been a most unusual one.

The animals comprised Durham and Ayrshire cattle, Cotswold sheep, and several choice coops of poultry. For the calves, and for all the stock, he paid good prices. The animals are wanted for Mr. Stewart's own use and that of his immediate neighbours. The present stock now in use on their farms in Oregon he describes as most miserable.

The Shorthorns were as follows, purchased from Mr. Geo. Miller, of Markham:—

Markham Maid, 2 years old, got by Kentucky Champion, dam Miss Barnum; price \$750.

Miss Miller, heifer calf, got by Belle Duke of Oxford, (\$30), dam Portia by Burnside; price \$450.

Bull calf General Bell, by Bell Duke of Oxford, dam Jessie, by Young Tweedside; price \$450.

Also, four Coltswoold ewes, one year old, purchased from Mr. John Miller, Brougham.

One bull calf, Oxford Prince, by Oxford Mazurka, dam Miss Martial 2nd by Prince of Bourbon; price \$400. Also, one Cotswold ram and ewe, splendid animals.

The Ayrshires consisted of one cow, one heifer, and three calves, purchased from J. P. Wheeler, Esq., of Scarborough.

C.

Thrashers' Horses.

To the Editor.

SIR,—Now that another thrashing season has begun, there will be doubtless a great number of men trying the work who have not run a machine before, and most likely they will be using young and untrained horses.

In order to counteract a far as practicable the prevailing evil attending the commencement of the above work, and prevent a great deal of pain and suffering to the horses, I would offer the following suggestions to farmers and old and young thrashers (if we may use the term), for it is generally admitted that the horses belonging to each, and used in the kind of work under notice, suffer more or less from galled shouldera. This evil may

be prevented in most cases by either lengthening the outer tug or shortening the inner one so much that the outer end of each whiffletree shall be (say) an inch nearer the arm of the machine than the inner end of each. This counteracts in a great measure the circular travelling which the horse has to perform, thereby making it more of a straight draft. We see that where the tugs are of the same length the collar is pressed much against the side of the neck, and not back far enough on the shoulders, whilst it is drawn off the inside, and too far back on the tip of the shoulder, thereby causing scalds or galling them badly.

Those who use the short tug and chain, or the long chain tug, can readily change the lengths of the tugs; but it would be a good deal of trouble for those who use the long leather tug to have to change them every time the machine was lifted; to them I would suggest that they get a couple of hooks the right length, for each team, like the Californian "Cockeye" hook used now mostly on whiffletrees. This can be hooked into the eye of the tug, and the eye on the hook of the whiffletree; such an appendage can be easily carried on the whiffletree hook.

THRASHER.

Weight and Value of Live-Stock.

For the benefit of young beginners in agriculture, I make the following observations, says J. J. Mechi, the distinguished English agriculturist: If you are wrong in the buying, selling, and management of live stock, you may bid adieu to comfortable profits. How to buy and sell well are two axioms of the utmost importance to successful farming; therefore, if you cannot trust your own judgment, get if you can the unbiased opinion of some competent friend. It is worth even paying for if you have it not. But in the absence of both, let me commend to you the weighing machine, which will put you on a par with some of the best judges, and give you confidence in your selling, and reprove you, if in buying you pay too dear. The weighing machine clears up many doubts. You should remember that in selling to the buyers (butchers or dealers) you have to do with practised hands, who, as a rule, thoroughly understand their business, and can judge closely of animal weight, so that the odds are sadly against you, unless you know the weight, and can therefore insist on a fair market price, which you are sure always to get, either from one or another. I have known of many a rare "picking" got out of farmers who do not know what proper price to ask. The usual computation for a well-fed but not over fat beast is, live to dead weight as 21 to 12, or 100 to 59 1-7th, with such modifications as suggest themselves by appearances.

Sheep.

Some way or other agriculture seems incomplete without a flock of sheep. They are essential to the thick-set longevity of the old grass land, and all the world over and in olden times they were esteemed as most important, and in the most improved agricultural country, viz., England, they are cherished by every farmer, from the highest to the lowest. The wool is one of the incomes which cannot be dispensed with, and the flocks are so managed that the tugs cut heavier and more valuable fleeces than older sheep; in fact, teg fleeces in England not only weigh thirty per cent. heavier than those of the ewes, but make ten or more per cent. higher prices. If any tenant farmer in the regular agricultural districts of England farmed without sheep, he would soon lose his crops, and nobody would rent to a man who did not practice sheep husbandry.—*Country Gentleman.*

Highway Cattle.

Cattle in the highway are beginning in many places to be regarded as they ought to be, with indignation. Even in some out-of-the-way points cattle running at large are prohibited. Railroads have done much in keeping the country roads clear of them since the courts have decided that the owners of such cattle are liable for all the damages done to trains. A gentleman, from a neighbouring county, said to us the other day, "Why, I see all the gates along the highways are left open here, and many of them lead directly into beautiful lawns, flower-borders, &c. Are you never troubled with road-cattle?" We told him they were not allowed anywhere within the limits of the county of Philadelphia to run at large. He was much struck with the fact, and said he would get up a campaign in his own county against the very worst and most outrageous nuisance farmers had to contend against and thus far to submit to. "Why, sir," continued he, "the fear of the depredations of road-cattle prevents farmers at certain periods from sleeping of nights. They have actually to watch their crops all night, as these cattle are usually turned into the road again after being milked.—*German-town Telegraph.*

Dr. Randall, in the *Practical Shepherd*, says:—"Lambs of all breeds should be weaned at about four months old; and if drought or other circumstances have occasioned a particular scarcity of pasturage for the lambs and their dams, and the former can be put on good feed by separating them, it would be advisable to take off the lambs three, or even four, weeks earlier. The somewhat prevalent idea that it is improper to wean them in 'dog days,' has not a particle of foundation. But whatever the period of weaning, sweet, tender pasturage is indispensable for them. New seeded stubbles and the rowen of meadows are usually reserved for them in this country.

Salt the Stock.

We have lately observed many head of stock drooping, rough in the skin, and apparently suffering from some loss of appetite. We had thought that it was entirely owing to the constant irritation from flies and the long continued dry weather. Upon questioning the owners, however, we generally find that periodical salting has been neglected; while our own cattle, which have received their regular weekly allowance of salt, appear sleek and healthy.

Salt is cheap, and is absolutely necessary for the welfare of man and beast. The excuse is usually "I was so busy at harvest that I forgot all about them." We have seen farmers who take the trouble to buy salt and top dress every load of hay that comes in the barn, and yet forget their poor dumb animals.

If the practice of salting is regularly attended to at stated periods, it is no very great trouble, and occupies but little time; while if only occasionally resorted to, it is very apt to be forgotten and neglected altogether. A still better plan, perhaps, is to place in situations accessible to all the stock, lumps of rock salt. By this means all have an equal chance of appeasing the instinctive appetite according to the wants of the system, and will neither take the salt greedily so as to induce extreme thirst, and other inconveniences resulting from excess, nor suffer from the deprivation of an article of diet essential to health.

Fall Treatment of Breeding Ewes.

If the ewes have been at all reduced by suckling their lambs through the summer, immediately after their milk has dried up, efforts should be made to regain a thrifty condition by the time the coupling season commences. A sufficient reason for this is, they can be wintered easier and cheaper if put into high condition before the extremely cold and stormy weather begins. But additional reasons are to be found in the fact that they will take the ram more readily, and be more likely to get with lamb—no inconsiderable item if choice rams are used, and it is desirable to get as much service from a single animal as possible. They will shear heavier fleeces the following season, with better length and strength, than if stunted "from grass to corn."

No matter how good the pasturage, we have found it profitable to feed from one-half to one bushel of corn daily to each hundred breeding ewes, for ten days before, and during the coupling season. This was usually thrown to them in the ear, when they were through grazing, or just before sunset. We preferred this time, as the stronger animals were not so likely to injure the weaker ones by crowding, or themselves by over-eating. Under such treatment, we have from a flock

of a thousand ewes, picked out and bred as many as four hundred the first week. Following this course, lambs will drop the following spring as fast as any sheep-farmer, with but ordinary facilities, can properly care for them. "Teasers" put into the flock every morning, before turning to pasture, will, in a short time, find most of the ewes that are rutting. These can be picked out by the shepherd as fast as found, and placed in a separate pen, to be attended to while the large flock is grazing. The animals that have been bred should be marked and kept to themselves until the entire flock has been served. This saves much labour and annoyance to both shepherd and sheep.

We have always had the best "luck" during the lambing season, with the flock that was in the highest condition in the spring—losing the fewest ewes while yeaning, and the fewest lambs from lack of milk or refusal of dam to "own" them. And so it will be found, we doubt not, with flock-masters generally. Not only are the lambs from such ewes worth double as much as the increase from a flock dragged through the winter in a half starved condition, but they will not require half the labour and attention to bring them to maturity. Uniformity in the size of the different animals in a flock can be secured in no other way so readily as by liberal feeding and proper attention during the coupling and yeaning seasons.—*Western Rural.*

Keep the Cattle Growing.

The most successful breeders of horses, cattle, sheep, or swine, know from experience that although they may possess the best breeding animals, they will not be successful in producing superior stock if a continuous growth of the young animals is not kept up. In order to begin in time at this indispensable preparation for success, the brood mares, cows, ewes, and sows, are most carefully and suitably fed while with young, and as soon as the young animals make their appearance, they are taken the greatest care of, the dams being suitably fed while suckling, and when the young ones are weaned they are not supposed to want for food or drink a single hour. By this means a continuous or rapid growth is kept up, and the animals attain a large size and heavy weight at an early age. When breeding animals are not properly fed and comfortably sheltered in winter, the bad effect of such treatment is not confined to their own want of condition—it is shared by their progeny, and never can be remedied. When young stock are not well fed and comfortably sheltered in winter, their growth becomes stunted, and no subsequent amount of good treatment can repair the damage. Young animals may suffer from want of proper provender in summer and autumn, as well as in winter, and when this happens it stops continuous growth and prevents ultimate success in the object of the breeder.

RECENT IMPORTATIONS OF THOROUGH-BREDS.—Referring to recent importations of thorough-bred stock into Canada, we note the arrival of Mr. R. J. Stanton, of Birch Grove, Thornhill, township of Markham, who brings with him the following valuable Shorthorns: 1 bull, Baron Wild Eyes, bred by Colonel Gunther, of Wetherby Grange Farm, Yorkshire; 4 heifers, viz., Bettie Bacon, by Friar Bacon; La Brillante, by Reformer; Second Lady, by Lord Darlington; and Second Dutchess, by Reformer. He also brings 5 thorough-bred Berkshire pigs, from the celebrated stock of Rev. Mr. Brawley, of Wiltshire. This is his first year in Canada, as well as his first venture as an importer of thorough-bred stock. We bespeak for him such encouragement as will induce him to renew his efforts in the laudable enterprise of the improvement of stock in the Province of Ontario.

Considerable impetus has recently been given to the importation of thorough-bred stock from Britain, and it is probable that a larger number of valuable animals will be shipped across the Atlantic to this continent during the present summer than in any previous year. The principal buyers at the sales of pure-blooded stock in England, including the Royal Agricultural Society's Show, have been Americans or Canadians, and breeders have realized very high prices. Among latest importations, a valuable lot has just been safely brought over by Mr. Snell, who has returned from his recent trip to England with a beautiful yearling short-horn bull, British Baron, bred by Col. Townley, four Cotswold shearing rams, three Leicester shearing rams, and a number of ewes, besides a choice selection of Berkshire pigs—among them the second-prize boar at the Royal Show in Wolverhampton. Mr. Craig and Mr. Kirby also brought over in the same vessel with Mr. Snell's stock some valuable Berkshire pigs and Leicester sheep.

Two stock breeders—Mr. Chas. Mason, of Tuckersmith, and Mr. Joseph Fisher, of Colborne—recently arrived at Clinton station with their imported stock from England. The *Clinton New Era* says the steamer *Germany* brought out to Ontario 101 head of stock, viz:—Richard Gibson, 13 head of cattle, 1 bull, and 10 pigs; John Snell, of Edmonton, 1 bull, 15 sheep, and 8 pigs; John Craig, 10 pigs, paying as high as \$75 sterling for one pig; Jos. Kirby, Milton, 8 sheep, 1 pig and 9 chickens; Mr. Thompson, of Whitby, 8 cattle and 3 pigs; Mr. Stanton, of Thornhill, 5 cattle; William and Hugh Campbell, a cow and calf each; Charles Mason, of Tuckersmith, 2 entire horses; Jos. Fisher, of Colborne, 3 entire horses, 1 filly, also 2 pigs, which he calculated had cost him, laid down at Clinton about \$150 each!

There were 3,510 sheep exported to the United States via Kingston during the month of August.

Veterinary Department.

Foot Rot in Sheep.

With regard to the cause of Foot Rot, we are inclined to the opinion that the disease is produced by the decomposition of decaying vegetables, produced by the combined operation of warmth and moisture. The roots and leaves of the grasses are in the winter often in a state of rotteness, and the horn of the sheeps' feet being blanched and weakened by the continual moisture, is exposed to the contact of vegetable bodies in a state of putrefaction. If this be the case, we cannot doubt that the diseased matter from the feet of the affected sheep must materially assist in producing the disease when assisted by the agency of moisture. But as for the disease being always or even generally produced by contagion, such opinion is undoubtedly erroneous. Whether this theory be correct or otherwise, there cannot be a doubt of the close connection which moisture has with the disease, and the disposition which land retentive of wet has to produce it. We are aware that many whose opinions are deserving of great weight, express a positive opinion against the foot-rot being contagious, and this opinion is grounded chiefly on the fact which has come before their notice, that diseased sheep have failed to produce the foot rot in sound animals on dry lands. This, however, is not sufficient to establish its non-contagiousness, for when the horn is dry and strong, and free from cracks and fissures, and the skin above also sound and properly lubricated with the unctuous secretion which is here particularly supplied, there is no disposition to absorb foreign matters, but, on the contrary, a power of resisting their influence, and thus we cannot be surprised that the foot rot matter has no effect under such circumstances. When, however, the oily secretion is washed off, the skin in an irritable and probably sore state from the friction of the wet and dirt between the clees, the horn long at the toe and ragged underneath, and particularly the upper or coronary portion, which unites with the skin, and consequently is very thin—when this part is blanched, weakened, and probably in some degree separated from the skin above, we cannot be surprised that such a state of the parts must greatly expose them to the action of any infectious matter from without. We therefore regard the disease as infectious, and yet do not imagine that it is propagated so much by this means as by the various causes just mentioned, and more particularly by the reaction which follows on a change of weather, or even without it.

When a sheep halts, secure it, and if the hoof is too long, pare it on a level with the sole; shorten the toe; and be particular in examining the foot between the claws. If it is swollen, looks red, or has any discharge of

bloody serum issuing from any fissure, let hydrochloric acid be well applied to the part by means of a little tow twisted, or a small flat piece of whalebone, and, in the early stage of the complaint, one dressing is usually sufficient. There is nothing so much desired by the farmer as an application which will at once put a stop to this complaint. The trouble it would save is incalculable when we consider the time it takes to dress the feet every day, of from thirty to fifty or a hundred sheep. If abscesses have formed around the coronet, and burst, they usually have two or three fistulous openings. With a feather or small syringe apply the acid in the cavities. If any discharge is between the crust, pare the sole and apply as above. Twice is most commonly sufficient to apply the acid in these cases.

There are many specifics which are recommended for this disease, and all with the boast of being entirely successful. Some rely with confidence on the muriate of antimony, which is a very good application: others on a mixture which is supposed to acquire much of its virtue from the presence of gunpowder. The following is a good composition: oil of turpentine, two ounces; sulphuric acid, four ounces; olive oil, one ounce. The acid must be carefully mixed with the turpentine, and the whole well shaken before used. Remove the horn from the part having matter underneath, and then apply freely to the diseased part. It is of but little consequence which caustic is employed for the treatment of this disease, provided it be of sufficient strength. The beneficial agency of a caustic may be thus explained: it first destroys the parts to which it is applied, thus arresting the progress of the disease by substituting a more destructive though more limited action for a milder but more progressive one; the caustic not only burns the diseased part but that in contact with it, or, as Shakspeare says, "One fire puts out another burning," on the same principle as we pull down a single house to preserve a whole street from the flames. The diseased action being thus arrested, an eschar is formed which protects the parts beneath, whilst a new and healthy action on a level surface is set up. In cases progressing favourably, but still possessing sores, much benefit will be derived from the use of astringents, for instance: powdered chalk, four ounces; armenian bole, one ounce; powdered charcoal, one ounce; powdered alum, half an ounce; sulphate of zinc, half an ounce. Mix and scatter over the sores daily. It will also greatly assist the cure if the diseased sheep are put in a shed with a clean floor, on which some quick lime is spread every day.—*Prairie Farmer.*

Dosing Horses.

Drenching a horse with fluid medicines, even if the doses are of an indifferent nature, like milk and molasses, is always very dangerous; but is extremely so, first, when the

drench consists of substances,—for instance, oil or grease,—to which horses have a natural aversion; secondly, when the sick horse is suffering with a disease which is attended with fast breathing, like pneumonia, colic, etc.; and thirdly, when the fluid, as is often the case, is poured down in a forcible manner; for in such cases it frequently happens that a part of the fluid enters the larynx and goes down the windpipe into the lungs, and causes there an inflammation, which frequently becomes fatal.—"*Veterinarian*," in *Chicago Tribune*.

Treatment of Wounds in Horses and Cattle.

Many permanent blemishes which depreciate the value of horses might be prevented by careful attention as soon as the injury is inflicted. Broken skin on the knee may sometimes, for want of proper treatment, result in an ugly scar, which will reduce the selling value of a horse one-fourth or more. In farmers' stables horses are often permitted to get loose, and the consequence is that some morning the owner finds one of his animals badly kicked. A wound made by the sharpened calks of a horseshoe in winter time is a very ugly looking one, and needs some little surgery to dress so as to avoid a bad blemish; and yet it may be done by the use of such skill as is at the command of any one who can dress a cut on his own finger. In the first place, whenever an injury is inflicted, it should be attended to at once, or with as little delay as possible. If any dirt is in the wound, it should be well cleansed with a soft sponge and luke-warm water. Then with a proper needle (a curved surgeon's needle should be used) and stout silk twist, pass as many stitches through the edges of the wound as will draw them and hold them together. These stitches should not be made as in sewing cloth, but the thread is to be passed through the skin at points directly opposite to each other. The two ends of the thread should be tied into a secure knot after drawing the edges of the wound closely together. If the edges are ragged, some care must be exercised to bring the corresponding parts into their proper place. If swelling takes place, apply cold water until it is reduced, and avoid all irritating or spirituous applications unless they become necessary. Nature will generally perform the cure if assisted to make a proper start. If the wound should not seem inclined to heal, and a stimulating application becomes necessary, the following ointment has been found of great benefit: To one pound of hogs-lard take a quarter of a pint of spirits of turpentine and an ounce of blue vitriol (sulphate of copper), powder the blue vitriol very fine, melt the lard, and stir in the other ingredients, until cool; apply a sufficient quantity to the wound. A healthy action will soon ensue.

Liniments for Sore or Galled Shoulders.

A correspondent furnishes the following receipts, which we have no doubt would be safe and serviceable:—

Wash them well every night and morning with a strong solution of oak bark, made by boiling the bark in water, then rub them well with linseed oil.

Anoint them every night and morning with a salve made of three parts of linseed oil and one part quick-lime.

To make horses' shoulders tough, wash the shoulders well twice a day, for a week before working, with the oak bark solution.

CRACKED HEELS, OR GREASE.—This complaint, when neglected, becomes very troublesome. Filth is its chief cause, and without the cause being removed it is impossible to cure it. In some cases the leg is swollen to the knee, and discharges offensive matter from suppurating cracks, which are opened at every movement of the horse's foot. No careful horseman, however, would permit his beast to become afflicted to this degree, for early treatment brings about a speedy and easy cure. Carbolic soap and warm water, applied three times a day, and a little glycerine to protect the cleansed surface from exposure to the air, will effect a cure. This unsightly disease should not be permitted to exist a moment longer than necessary to eradicate it. We can not imagine a man of proper self-respect allowing himself to be seen in public driving a horse suffering from it.

"HOLLOW HORN."—A correspondent asks what is the best treatment for this "disease," stating that he had just performed the operation of boring a cow's horn for supposed "horn ail," and found it hollow. We have repeatedly protested against this practice as useless and cruel. The cavity opened is in most cases a natural condition, either one of the frontal sinuses or the normal state of the horn, according to the situation of the opening. Any injection of irritating matter, such as turpentine, would be likely to produce severe inflammation, and could be of no possible service. The temperature of the base of the horn is readily affected by the condition of the general circulation, and is no proof of a local malady, any more than hot or cold extremities indicate disease in those parts. The complaint from which our correspondent's cow was suffering was probably chronic catarrh, or some other ailment of the air passages or lungs.

EPILEPSY IN A CALF.—The malady described by a correspondent from Athol is probably epilepsy. The cause is not clear, possibly some congenital condition of the brain. If so, but little could be done by way of remedy. Careful diet and general attention to health are all that can be attempted.

The Dairy.

Dairy Farming and Principles of Raising Milking Stock.

I was lately invited to visit a dairy farm of twenty-five cows, established last autumn, and was much pleased to find it such a success. The hospitable proprietor expresses himself well pleased with the enterprise. He has a large farm of two hundred and fifty acres, with upwards of two hundred cleared, and was induced to go into dairy farming by the uncertainty of grain crops, combined with the reduced fertility of his soil, produced by the absurd notion that wheat after wheat can continue to be grown with impunity. Everything looked prosperous about the place; the dairy is constructed of plank, with clay floor, provided with boards to walk on, so arranged that they can be all removed without difficulty, and the clay surface of the floor underneath them removed every spring by shaving off about half an inch, which is supposed to be tainted with casual spillings of milk, thus exposing a fresh deodorized surface of clay instead of the old contaminated one. There is no doubt whatever that this plan is a most excellent one, and on true principles. This summer the cows were fed altogether on pasture, and the dry weather bore hard on the yield of milk in comparison with what might have been expected under less adverse circumstances. Next year green corn and clover will be provided. Notwithstanding the past unfavourable season, each cow up to the first of August has cleared a net profit of \$20, not to mention the resulting value of the hogs that are to follow towards the fall. These will no doubt pay at least \$6 a cow, if not more, and the calves raised will also be worth \$6; but of these only about fifteen were kept; the rest were from doubtful paternity, and not considered worth raising. The cows selected were of the ordinary Canada breed, with some crosses of better blood, and occasionally there were pointed out to me some fine animals; but these by no means formed the best portion of the milking stock, many ordinary cows yielding quite as much milk, and some much more, than the better class of animals. In this respect they resembled two cows of my own, one of which I bought ten years since for \$11, then a three year old heifer, and from that time to this that cow has given an average of 16 quarts of the richest milk each day for about four months, a proportionate quantity the rest of the year and would milk up to the day she calves if we had considered it advisable to allow her to do so. I have also another almost as good, and any judge would condemn her in every way for everything that was good; but she will make 7 lbs. of butter a week easily for several months during the summer, and a more cross-bred, ugly, brute never disgraced the appearance of a farm yard; so we need

never take it as a fixed fact that handsome, well-bred stock will beat others in milking properties. For my own part, I like, above all others, for an ordinary farmer's dairy stock, the Canada cow crossed with the Devon bull, and I prefer an aged Devon to a very young bull, as the stock is generally much larger. Small size is the one great fault of Devons, and about the only one in my opinion. They will make as much meat and of better quality, from a given quantity of food, as the Shorthorns; and for farmers' use, where rough or bush pastures are to be fed, the Devons will do more than any others. It is true they are only about half the size; but then, as against that, they eat only about half as much each, and there are ten months instead of one to collect the food from rough pastures. Durhams do well to make beef at two or three years old, where the feed is easily obtained; but put in a large, heavy, well-bred Short-horn cow, into Canadian woods to get a living, and you will soon see the difference between its thrift and that of a small Devon.

The true way to get a dairy of cows, and keep them up to their utmost capacity, is to get a young bull from a noted Devon milker. Use that bull as long as possible, taking care again to have a similar one to take his place, but always being careful to raise a bull from the best milking stock. It is the bull that transmits the properties wanted for the dairy to the progeny; the cow has little to do with it. Almost any one will vouch for this fact, and can call to mind that where they have with the greatest care saved a heifer from one or more particular cows, unless the sire was from a known milker also, the progeny were only ordinary, and often did not inherit the mother's tendency to extreme milk. From this cause the ten calves, the progeny from the above instance of an excellent cow, were not, with about two or three exceptions, of any special value as milkers. C.

The Cow's Intelligence.

The *London Milk Journal* says:—That cows have memory, language, signs, and means of enjoying pleasant associations, combining for aggressive purposes, has been recognized, but scarcely to the extent the subject merits. Travelling in Italy many years ago, we visited some of the large dairy farms in the neighbourhood of Ferrara. Interspersed among much of the low lying, unhealthy land, remarkable for the prevalence on it of very fatal forms of anthrax in the summer season, are fine undulating pasture lands, and the fields are of great extent. We happened to stop at a farm house one fine autumn afternoon when the cows were about to be milked. A herd of over one hundred was grazing homewards. The women took their positions with stool close to the house, and as the cows approached, names were called out which at first were, we thought, addressed to the milk-maids. Rosa, Florenza, Giulia, Sposa, and many names, which were noted by us at the time, were called out by the overseer, or one of the women, and we were astonished to see cow after cow cease feeding or chewing the cud and make direct, sometimes at a trot, for the woman that usually milked her. The practice we found was not confined to one farm; all the cows on each farm knew their respective names, and took up their position in the open just as readily as the individual members of some large herds in this country turning from their fields to take up their places in the sheds.

Butter—Washed or Unwashed.

The oily portion of milk, or the butter globules, are encased in a thin pellicle of caseine. In churning, these pellicles or skins of caseine are broken and the butter liberated. Caseine is a nitrogenized substance, very liable to putrefaction, and if these thin pellicles, which are mingled with the butter when it comes from the churn, are not, for the most part, separated from the butter, they soon begin to decompose, and are changed into a ferment which gives rise to the formation of butyric, capric, caproic, and copyric acids. The first three of these acids have an unpleasant smell, and the last a disagreeable taste; and it is on account of the presence of these acids that butter assumes a nasty, bad flavour. How then can we most thoroughly get rid of these caseine skins? Certainly not by working them over with the butter without sufficient moisture to separate from the oily particles, but by washing the butter as it comes from the churn. This is simply a common-sense view of the matter to any one who understands the philosophy of butter making, and it is a view sustained by the experience of a majority of the best butter makers.

It is said that unwashed butter contains from six to eight per cent. of thin caseine shells, while butter that is washed has only one per cent. If this be true (and we have no reason to doubt it), we have a very substantial reason why butter should be washed. It is asserted, and perhaps with some show of reason, that unwashed butter, when freshly made, has a more delicious aroma than washed butter, as the washing is liable to carry off those delicate flavouring oils to some degree; but granting that the unwashed butter, when first made, may have a slight advantage over washed butter, in this regard, if it soon begins to lose flavour and deteriorate on account of its caseineous properties, the slight gain at first is of no comparative weight with the disadvantages which follow.

Then there is another strong argument in favour of washing butter. When the butter-milk and caseineous matter is expelled simply by working the butter, there is always danger of overworking it, and thus spoiling the grain. This is especially the case, except the butter maker possesses high skill in his art, and is always on guard to do duty with perfect exactness; for as the rancid taste of butter is due to one or more of those acids which we have named, it will be seen that it must in some way be freed from the casein which gives origin to them.

We are aware there is a class of good butter-makers who are opposed to washing butter. Many of this class are very skilful, and manufacture a superior article; but their success is not due to the fact that the butter is not washed. If by their superior skill they are able to work their butter so as to free it pretty thoroughly from the caseine, it is no

argument against washing. We have made a good many experiments, first and last, in the manufacture of butter, and have tested a large number of samples of butter from the best makers, both in this country and in Europe, and from the light of this knowledge we are decidedly in favour of the washing theory.—X. A. WILLARD, in *Rural New Yorker*.

Butter from Devonshire Cream.

There is a custom of scalding cream prevailing in Devonshire, England, which is worthy of a wider extension. The product, "clouted" cream, also called "Devonshire" cream, is exceedingly rich, thick, and palatable, and is accounted a luxury wherever obtainable. The process is the following: the milk is allowed to stand in the dairy, which must be too cool to allow it to sour, from twelve to twenty-four hours—that is, the milk of one day is attended to on the following morning. It is set in tin pans about seven inches deep; these have a good handle at each side as a help to careful moving. Most of the cream will have risen at the time of the preparation, which consists in scalding simply, care being taken not to allow the milk to reach the boiling point. The best way would be to set the pan in gently boiling water. The heat must be kept up until the milk becomes very hot, and the cream thoroughly "crinkled" or clotted; the pan should then be removed carefully to a cool place, and allowed to stand undisturbed for twenty-four hours. The cream may then be removed, and, either fresh or salted, it is an excellent substitute for, many think a great improvement upon, butter. It is especially important that there should be no smoke in the apartment where the scalding is done.

This is Devonshire cream, a delicious article for home consumption, but one for which there exists no market demand in this country. The chief value of the process, for American farmers, lies in the fact that it is an excellent preparatory step in the making of butter. It secures all the cream, gives it such a consistency, that skimming is much easier and much cleaner—that is, there is less milk taken, which enables it to give up its butter with remarkable ease. Indeed, it is only necessary to rub the cream with the hand for a few minutes in a smooth wooden bowl to separate the butter entirely, ready for washing. For each pound of butter there remains not to exceed a half-pint of buttermilk. This does away, almost entirely, with the labour of churning, and with the handling of an immense bulk of buttermilk, and its difficult removal from the butter by washing or otherwise. When properly made, the quality of the butter is excellent; and there is the advantage that the skimmed milk remains sweet and fit for use, or for the manufacture of "lean" cheese.

The process is an exceedingly simple one, but it needs practice to teach the exact point

to which the milk should be scalded, and to settle the question of temperature, frequency of churning, &c. The two great things to be guarded against are (1), agitation of the milk in handling the pans; and (2), too rapid heating, or heating for too long a time. The pan should be set over a slow fire, or over, or in, boiling water, and watched until the cream begins to contract so as to leave the sides of the pan; then the centre of the cream should be punctured by a sharpened stick (wood is better than metal for this purpose); if the hole made becomes larger, showing a contraction of the cream in the centre as well as at the sides, then it is time to remove the pan from the fire. The system is easily learned by a careful person, but it should not be left to ordinary hired help.—*E.c.*

Care of Milch Cows.

Mr. Willard, in a late number of the *Rural New Yorker*, has a timely article on the importance of keeping up the flow of milk during August and September by special attention to the feed of cows. If crops especially for soiling have not been provided, Mr. Willard recommends using the second growth of clover and of the first cut patches of the meadow—cutting and feeding in the stable. As a supplement for pasturage bran or ship-stuffs may be fed with profit.

As the value of corn-fodder has been doubted of late, it may be well to give the testimony of Mr. Willard, who says:

Next to green clover, there is no soiling crop so easily raised and which produces better results in milk than corn-fodder. It should be cut and allowed to wilt before feeding, as by this means it is freed from some of its surplus moisture.

Prices of Dairy Products.

The *Western Rural* reports:—

The Eastern markets for dairy products show a fair trade. Our latest advices from the dairy regions of New York indicate a good feeling, and the quotations are well sustained. At Utica the prices realized range from 11½c to 12c; the ruling figures being 11½c to 11¾c. At Little Falls the ruling figures are about the same as at Utica, though some fancy brands of prime sell at 12½c. The market is fairly active.

The New York Western Dairymen's Association hold weekly sales at Buffalo now, having recently started. At the first sale the *Utica Herald* says that fourteen factories were represented, offering about 3,000 boxes in lots of 75 to 350. The Secretary of the Association, Mr. Geo. W. Hayward, says that the opening promises success to the enterprise. The prices realized were 10¾c to 11½c.

The prices of cheese at Chicago are a little lower than they have been during the spring, and it is altogether probable that last year's rates will not be obtained this year. There

are more factories in operation at the West, and the season has been very favourable. There are fully as many cheese factories in other sections of the country this year as last, while their product will hardly be decreased. It is safe to predict that the cheese product of 1871 in this country will considerably exceed that of 1870; but while there may be a slight decline, the prices will, doubtless, still be remunerative to the dairyman. It is fair to presume that the consumption of cheese will increase, nearly in the ratio that it has for the past two years, and therefore there is little probability that any drawback will overtake the cheese interest. On the part of Western Dairymen the object should be to put the best possible article on the market, which will not only have a tendency to keep up the price, but add to the reputation they have already achieved for the excellence of Western cheese.

The Brownsville Cheese Company made a large shipment from Ingersoll a few days ago. Mr. Millar, of Ingersoll, bought from the company over fifty-six tons for exportation to England. The sum at nine cents a pound amounted to over \$10,000.

SWEDISH BUTTER.—A joint stock company, most of whose shareholders are substantial and practical Swedish farmers, well acquainted with the dairy trade, has been formed in the Province of East Gothland for the purpose of making butter on an extensive scale for exportation. They have received so much encouragement that they are already able to produce 1,000 lbs. per day. Some sample firkins of the company's butter have been shipped as a trial to London, Hull, and other English ports, where, we understand, the quality has given great satisfaction, and will probably lead to a regular and lucrative trade in this new article of Swedish industry between the two countries.

CANADIAN DAIRYING.—An American writer in the *Utica Herald*, describing a recent visit to the dairy districts and cheese factories of Western Ontario, thus sums up his observations:—"The cheese factories, judging from those we visited, are excelling themselves this season, and bid fair in quality and quantity to place their names higher than ever on the roll of merit. A scarcity of water is the prevailing trouble among them, their supply being obtained almost wholly from wells. With an equal number of sparkling springs to assist in manufacturing, the cheese of the Canadians would lap the States if not distance them. Sunday is strictly observed at the factories. No cheese is made on that day, the Saturday night's milk being made up the same night, while Sabbath morning's milk is set at home for churning. The evening's milk is taken to the factory and worked up in the morning, an example worthy of imitation by us. The only factory pursuing this method in the States, to our knowledge, is at Pratt's Hollow, Madison county. It could, and ought to be universal."

Poultry Ward.

A South American Poultry Farm.

G. F. Pearce, Esq., of Freetown, Mass., contributes the following interesting article to the "People's Practical Poultry Book," recently published by D. D. T. Moore, New York:—

I propose to describe a poultry farm, where fowls are kept by the thousand, whose proprietor counts his gains therefrom proportionately. It is situated in the southern extremity of Chili, South America, where the rainy season, of six months' duration, is as detrimental to the well-being of all fowl kind as the rigours of our own winters, and where great care and skill are very essential to satisfactory results.

Senor Don San Fuentes commenced his operations in poultry with a stock of two hundred hens and eight cocks, to which he has added, by natural increase from year to year, until now he has somewhere in the vicinity of six thousand. Their range is unlimited, as his farm covers three thousand cuadras, equal to seven thousand five hundred acres. To every fifty hens and two cocks is given a house of their own, of which there are six or seven hundred on the place. These are placed two hundred feet apart, each way, thus isolating one lot from the other.

These houses are very cheap affairs, and are made by erecting two forked posts, eight feet long, and distant from each other fifteen feet. On these rests the ridge-pole. On both sides of the centre post, ten feet distant, a trench is dug, a foot in depth. Then small poles are placed for rafters, one end in the trench and the other tied to the ridge-pole, two feet apart, then another set of poles tied crossways, also two feet equi-distant, and the framework is complete. This is covered over with thatch, which is found in plentiful abundance, and to be had for the cutting. The only framework about the house is the doors at the ends, both of which are four by six, and contain each a window pivoted in the centre of the sash, to be opened or shut as the requirements of ventilation demand. Each house has its complement of twenty boxes for laying placed under the eaves, and partly concealed by bundles of straw.

Near the family residence is a large building, devoted to the storing of grain and eggs, nursery for sick hens, a long room for hatching, and another for slaughtering purposes. In the sick room is arranged a series of boxes; each one large enough for the comfort and convenience of its solitary occupant, who is there placed, and treated for its malady with as much care as if its value was dollars instead of cents, and with such skill that the ratio of deaths has been one in two hundred and eighty.

The sitting department is also provided with boxes, some three hundred in number. Here all are brought from their respective coops as soon as their incubating propensity shows itself, and placed upon their quota of eggs. Feed, water, and a large supply of sand and ashes, are provided, and the sitting hen not allowed to leave the room until she takes her young brood with her.

The clutches are then "doubled up"—that is, two broods to one hen, and the chickenless one sent back to her coop to resume her egg laying. As soon as the young chicks are discarded by their mother they are taken to their future home, fifty in each lot, and the old ones back to their respective localities.

The fowls are fed three times per day, and their diet so arranged as to always present a variety, although oats is their staple article of food, and always before them in unlimited quantity. To-day it will be Indian-meal, made into a stiff dough, and given hot; to-morrow, barley; next day, boiled potatoes mashed and mixed with pork scraps and bran—corn broken in a coarse mill, and so on in rotation; adding from time to time a dead horse, or some other cheap and inexpensive animal food. Burned bones, pounded shells and lime, are supplied in profusion. These, with what they gather on their foraging expeditions, produce a wonderful supply of eggs.

During the rainy season they are not allowed to leave the coop, except the day be exceedingly pleasant, and then only for a short time. They appear to bear their confinement remarkably well, and with hardly any decrease in the quantity of eggs. While confined they are allowed an extra allowance of animal food.

The attendants requisite to the care of these six thousand fowls are one man and four boys. The houses are thoroughly cleaned once a week, and the interiors white-washed every three months. Every morning each lot of fowl undergoes a careful inspection, and any one found moping or otherwise indisposed is immediately taken to the hospital, and cared for; and seldom is it but what the indisposition is cured, and she takes her place back again as well as ever. At evening the boys go the rounds to gather up the proceeds of the day's labours, which will average two hundred dozen per day, the year through.

"Killing time" takes place twice during the year—in the spring, and again at the commencement of the rainy season. All the early chickens are thus disposed of at a good price; and the two-year old fowl decapitated to give room for the younger broods, as they are supposed to be past profitable service after the second year.

The profits from one year's business amounted to eleven thousand dollars. The sales were seventy-two thousand dozen of eggs, and nearly twenty thousand chickens and two-year olds. Mr. San Fuentes expresses himself as being perfectly satisfied with the result obtained, and intends to double his stock every year, until every two hundred feet of his extensive farm has its house of fifty tenants.

Management of Laying Fowls in Small Runs.

I am constantly hearing complaints respecting the almost total want of eggs and scarcity of chickens from fowls which the owners inform me are tended with every care, and fed in the best possible manner—the account concluding perhaps with such a statement as that "the fowls have a beautiful sunny run, upwards of twenty-five feet long and seven wide." The reply is always the same, namely, that want of natural fertility is one of the first effects of confinement. No food, no amount of attendance, can compensate for the fresh air and wholesome exercise fowls obtain when at large.

Look at a pen of fowls mewed up in a wire enclosure. There they stand, moping, dull, and inactive, knowing full well that it is of no use scratching in the hard soil, fetid with their own dung, which contaminates every morsel of food given to them, and in which a worm has not been seen for months.

On the other hand, observe a set of fowls at liberty. No matter how well fed they may be, they refuse to live exclusively on the corn and grain given by their owner, and pass their time, hour after hour, scratching for worms and insects, which constitute by far their most natural food, and they thus enjoy that healthy exercise which alone gives stamina and ensures fertility.

If persons want a succession of eggs in a run of limited extent, I know of but one mode by which it can be effected with certainty, and that is by continually getting rid of the old hens, and supplying their place with fresh-bought healthy young pullets. If I lived in a town and required a succession of eggs all the year round, I should relinquish the idea of keeping any particular breed. Every autumn I should purchase from a healthy country run as many early-hatched pullets as I required, preferably of non-incubating varieties—Spanish, Houdan, or Hamburgh; these would lay during the winter. In the spring, as the warm weather commenced, I would supply their places with a number of later-hatched chickens of last season, and these might be relied upon for laying during the summer and autumn, until they were exchanged for the supply for the second winter. This plan would not be an expensive one, whilst it would conduce to the health of the stock, and insure a good supply of eggs.

If the run were sufficiently large to allow it to be divided, and each part alternately dug up and planted with rape and grass seeds, it would be very advantageous; and, under all circumstances, the greatest cleanliness in the house and run, and an avoidance of overcrowding, would be found essential to success.—W. B. TEGETMEIER, in *Field*.

P. J., HAMILTON.—The price of the People's Practical Poultry Book is \$1 50, American currency. It is published by D. D. T. Moore, New York city, or Rochester, N. Y.

Large Turkeys and Turkey Breeding.

A passion for extra size is one of the weaknesses of the American mind. In the decisions given at our fairs, weight is not only an important item, but the one thing needful. In a scale of one hundred points, weight would be the equivalent of fifty, in the minds of most judges. It is the big swine, the big pumpkin, and the largest fat ox that takes the premium. Economy of fattening, or the process of production, is seldom inquired after. The same bad taste is likely to affect the decisions in our poultry shows, unless the managers insist upon a more wholesome standard. A large, well developed bird, of maximum size, is desirable. A monster is not, for any conceivable purpose, except to excite wonder and draw the crowd. We raise poultry chiefly for the table. What the producer wants in his stock is good quality of flesh, early maturity, and capacity to make the most flesh out of a given amount of food. A turkey, weighing fifteen pounds, is just as good for the table as one weighing thirty; and most housekeepers would prefer them under twelve pounds. In most markets the lighter weights would bring the higher price. It is only in the region of large hotels and boarding-houses that the very large birds bring an extra price. For what object, then, do we want large breeding birds, and how large do we want them? It takes about three years for a turkey to attain his largest weight. If at twelve months a gobbler reach thirty pounds live weight, at two years he would reach thirty-five, and at three years forty, or a little more. But it is rare to get a male bird above forty pounds, and then it is generally by some process of stuffing that destroys his stamina and oftentimes his life. This weight is excelled sometimes; but about the time one thinks he is almost sure of a forty-five pounder, the prodigy sickens and dies. It may be assumed then, that forty pounds is about the limit to which a vigorous turkey-cock may be safely carried, and from half to two-thirds of that weight is the last safe limit for the hens. With breeders of this size, and a little under, we should get large, strong chicks, that will economize food, and mature earlier than the offspring of common-sized birds. No bird yields more quickly to treatment than the turkey. The influence of a large-sized gobbler in a flock is immediately visible in the increased size of the chicks. The introduction of wild blood increases the hardness of the young. A larger proportion of the eggs will hatch, and a much larger number of young will be likely to grow up. With a little painstaking it is quite easy to breed to any desired shade of plumage.—*American Agriculturist.*

Mr. John Forsyth, Toronto, recently received from F. H. Green, Esq., Belfast, Ireland, 12 Dark Brahmas; and at same time from Mr. Henry Yardley, England, 8 Dark Brahmas, all of which arrived in good condition.

Entomology.

Entomological Queries and Replies.

MAPLE-TREE BORER.—H. Lee, Schomberg.—The handsome yellow and black beetle, somewhat resembling a large wasp, that you sent us a short time ago, is a specimen of the rather rare Maple-tree Borer (*Clytus speciosus*.) So far as we are aware, it is never sufficiently numerous to be very destructive, though a closely allied species (*Clytus robiniae* or *fleucosus*) has been the ruin of an immense number of Locust or Acacia trees in the neighbourhood of Toronto and in other parts of Ontario.

APHIDES ON CHERRY.—G. B., Toronto, complains that his cherry trees are very badly affected by Black Aphides (*Aphis cerasi*, Fabr.) and are producing no fruit at all this year; last year he was not troubled with the aphid, and had an abundant crop of cherries; the year before he had the crop of aphides, and no cherries. He not unnaturally concludes that the insects are the cause of his loss of fruit. The aphides are certainly very injurious to vegetation, but we do not think that they are to be blamed for the want of cherries, this year. So far as we can learn, there will be an unaccounted scarcity all over this portion of the Province, of both plums and cherries this year, but the absence of fruit must be ascribed to meteorological, not entomological, causes; we shall leave it to the gardeners to tell us exactly in what way. We have seen numbers of cherry trees—some in our own garden—that look perfectly healthy, and are quite free from aphides or other insects, and yet there is not a single cherry upon them. Last year, however, they bore abundantly. The best remedies for aphides are (1) drenching the infested leaves with soap-suds or diluted lye, (2) with tobacco-water, or (3) a more effectual remedy where it can be practically employed—fumigation with tobacco smoke. In many cases it would be a beneficial summer pruning to cut off the ends of the twigs that are infested, and burn them. It is comforting to be able to add that the aphides are preyed upon by a large number of other insects, to whose efforts may probably be ascribed their intermittent appearance.

THE PLUM SPHINX MOTH.—Mr. Wm. Cook, South Cayuga, Ont.—The two large moths you sent us that you found in the grass at the foot of an apple tree are specimens of the handsome Plum Sphinx Moth, (*S. drupiferarum*, Smith & Abb.) The female has laid a large number of eggs of a peculiar greenish colour, from which have hatched out some tiny pale green caterpillars, with projecting black tails almost as long as themselves. We have always considered this insect a neutral creature, since it seldom appears in sufficient numbers to do any material harm. Its larva grows to a large size, and of course eats a great deal, but then it is not often found. You will find an excellent picture of the insect in all its stages in the April number of the *Canadian Entomologist*, (vol. III., No. 1) published at London, Ont.

THE EYED SNAPPING BEETLE.—J. M. Miller, Mongolia, Township of Markham.—The large beetle that you sent us, capitally packed in a hollowed piece of wood, is a specimen of the Eyed Spring-back, or Snapping Beetle (*Alaus oculatus*, Linn.); it is so called because it possesses the peculiar power, in company with a large number of other species of the same family, of jerking itself up into the air when laid upon its back, by means of a peculiar spring on the under side of the body. The smaller species of this family (*Elaterridae*) are the parents of the destructive wire-worms, of which we gave some account not long ago. This insect, however, is not considered injurious, though its family has a bad name, as its larva lives in decayed wood, and does not attack useful vegetation. It is especially distinguished by the singular eye-like spots on the thorax, which give it a formidable appearance.

Hot Water and Peach Tree Borers.

In the *Rural New Yorker*, Mr. Chas. E. Neil inquires how to keep the borers out of his peach trees. If he is not afraid of a little labour and time, he can do it effectually by scalding them. Last year, in the spring of 1870, I had a peach tree that set full of peaches; after getting about the size of hickory nuts, they began to drop off and the leaves curled badly and began to drop off until I thought they would all drop from the tree; the ground was covered with leaves. By examination I found the trunk of the tree, just below the surface of the ground, badly bored by the worms, and a large quantity of gum oozed out on the surface. I had no idea I could save the tree, but I enclosed the trunk of the tree with a pipe, and filled it with boiling hot water; it was death to the borers, and the tree had the best and most abundant foliage of any tree on my premises—the largest leaves that I ever saw on any tree of the kind, also a good crop of peaches. Now I will try to explain the mode of applying the pipe around the tree. Procure a piece of sheet iron about the length of stove pipe, bend it around the tree at the bottom, turn up the edges, then have a piece of plank same length of the pipe, three inches wide, with a groove cut in it three-eighths of an inch wide, one-half inch deep, place the pipe around the tree, put the list in the joint, then slide the groove plank down the length of the pipe. Make the bottom fast in the ground, bank up around it, pack it hard, turn in a quart or so of water; let it stand twenty-four hours. By that time it will become firm; then fill with boiling hot water, let it stand until cool, and good-by to all worms for the season. This process will make a young tree grow beyond all imagination. I have the pipes of different sizes to fit all my trees—apples, pears, plums, &c.—*H. Dexter, in Rural New Yorker.*

Spiders.

A correspondent from Oakville sends us for identification a spider which was taken from a currant bush, among the leaves of which it had made its abode.

The specimen reached us in good order, full of life and vigour. On opening the box it attempted to rush out, and when treated to a dose of benzine it kicked about furiously, making quite a clatter for a few seconds until it received its quietus. On examination, it proved to be a large and rather formidable creature of its kind, a female with an enormous abdomen, of a creamy white colour above, and pink at the sides. Its feet are whitish, and very hairy, prettily banded with red at the joints.

We cannot give its specific name, nor can we positively designate its family position, but suspect it belongs to *Epeira*. Spiders are not recognized by entomologists as belonging to the great family of insects, and the species which inhabit this country have as yet had but very little attention given them. They are nearly all carnivorous in their habits, feeding chiefly on flies. The species sent us constructs its habitation and hiding place by drawing together a few leaves and fastening them with a web, and within this enclosure watches for its prey, darting out quickly on its hapless victims when they approach within reach. It is furnished with a powerful pair of jaws, inside of which, in common with all other spiders, is a small tube leading down to a poison-sac, from whence exudes a venomous fluid, deadly to flies and other insects on which spiders feed. This fluid is thrown into the wound made when an insect is caught, in the same manner as in the case of venomous snakes.

Although this poisonous secretion is so instantaneous in its effects on some insects, we have never heard of any serious injury resulting to man from the bite of spiders—nothing worse than a swollen and inflamed state resulting in the bitten part. There are many other very beautifully marked species of spiders allied in their habits and structure to the one we are referring to, but retreating as they do within their dens on the approach of danger, they are seldom seen unless searched for

How to Destroy the Codling Moth.

The following is the method of destroying this pest, recommended by D. N. Brown, of St. Joseph, in his essay on the codling moth, read before the Berrien county, Michigan, Horticultural Association.

"We now invite the attention of all apple orchardists to a simple, practical method of exterminating this pest from any given locality, at an expense which will not exceed one dollar and fifty cents per acre. About the first of June, take a wisp of rags, cotton or woollen, woollen preferred, which will wrinkle

and afford concealment—say about the size of a sleeve doubled—and place these rags in the lowest forks of the apple tree, or wind several thicknesses of rags about the base of the tree, or both. All the worms descending and ascending will crawl in and remain. Now we know where the apple worm is. How shall we kill him?

Take a clothes wringer, place it on a light frame, then carefully remove the rags from a tree, for some of the worms will be attached to the bark, place an end in the jaws of the wringer, and run the rag through; every worm is annihilated; after this replace the rags.

This work should be repeated every ten or twelve days during the season, and until the frost is gathered, varying according to the heat of the season. The rags should not be used unless the wringer is also, for unless the worm is destroyed, you have only given it a comfortable and convenient concealment, close to the favourite fruit it greedily devours.

Various methods are recommended to aid the orchardist to defend himself against this most formidable destroyer. Among them is that which turns our orchards into hog yards. This is not practicable; for many of our orchards are open to corn and potato fields and our strawberry and vegetable gardens. I have for the last two or three years considered it as necessary to destroy the apple worm as to look after any other interest. We often find fifty to one hundred at a time in our simple rag traps. One of my neighbours killed from a single tree over four hundred in one season. Another of my neighbours with the rag trap slaughtered in his orchard of a few hundred trees from fifteen to twenty thousand.

Evening Primrose Moth.

To the Editor.

SIR,—Herewith I send you a very pretty moth, found by me yesterday morning inside the flower of an evening primrose. The insect is quite new to me. Although almost absurd, I must repeat to you that I was told it was one of these *new insects* travelling eastward with the Colorado Potato Beetle.

W. CROWTHER.

Belleville.

NOTE BY ENT. ED.—The moth sent is a specimen of the remarkably pretty little pale yellow and pink moth (*Alaria florida*) that frequents the blossoms of the Evening Primrose (*Oenothera*), for the purpose of laying its eggs, and probably also of making a repast upon the nectar within. The moths are sometimes found entangled in the closed blossoms in the morning, intoxicated apparently with heavy draughts of the sweet liquid within. The larva of the insect feed upon the buds of the plant, burrowing great cavities in them, and destroying the flowers. Every unknown insect nowadays is believed by the general public to be either the Colorado Potato Beetle or one of its parasites. Of course, this pretty creature has nothing more to do with the invader than the man in the moon.

Apiary.

Foul-brood.

It appears that this fearful disease, so common in many districts in the United States, is making its appearance in many parts of Canada. Of late I have received several letters from bee-keepers saying their bees were badly affected with some disease, which from their description may readily be recognised as "foul brood." For the benefit of those who have never seen any cases of it I will describe it in a word by saying that stocks affected with foul-brood give forth a sickening smell as of corruption, and on examination, large patches of brood are found dead and corrupting. There is at present much speculation as to the cause of foul-brood among scientific bee-keepers, and many remedies are suggested, but as yet the disease appears to be on the increase. We had hoped that it would never obtain a foothold in Canada, and that bee-keepers would be saved from its ravages; but we are to be disappointed. One bee-keeper writes to me, saying "the moth is nowhere to be compared with foul-brood." It is contagious, and a stock will become infected by robbing honey from an affected stock, and when it once gets into an apiary it is difficult to get rid of it.

We give below an article from the *American Bee Journal*, by Edward P. Abbe, in which he describes his manner of treating it. We would advise, however, that all affected stocks be immediately taken up, the bees destroyed, the honey strained and boiled, the comb made into wax, and the hives burned, or perhaps if well boiled they might be cleansed and saved.

J. H. THOMAS.

Cure of Foul-brood.

This is my second summer of bee-keeping, and all the duties pertaining to an apiary were entered into with the enthusiasm, and shall I confess it, the ignorance and carelessness of a novice. Yes, ignorance and culpable carelessness, for in gathering empty combs from various quarters, the disease was introduced and spread among my pets. One hive, in particular, of empty comb, had the peculiar odour, perforated cells, and brown viscid fluid, with which I have since become so familiar this summer; and it seems unaccountable to me, how any person with the *Bee Journal* wide open and Quimby's instructions before him, could be so careless as to give such combs to his bees.

But such was the fact, and foul-brood spreading right and left. What shall be done to get rid of it? Shall Quimby be followed, purify the hive and honey by scalding, and treat the colony as a new swarm; or shall the heroic treatment of Alley be adopted; bury or burn bees and hive, combs and all? The latter has sent me some fine queens; but the former has always given re-

liable advice, and I shall follow his instructions with two colonies which are past all cure, and reserve the others for treatment, hoping that I may find some cure, or at least palliative for the disease, and add my mite of experience, and, perhaps, useful knowledge to our *Bee Journal*.

Accordingly, June 5th, the combs of the two condemned colonies were melted into wax, the honey drained over and scalded, and the bees, after a confinement of forty hours, were treated like new swarms; and now, September 18th, are perfectly healthy and in fine condition for winter.

I will not occupy your valuable space with all the details of my experiments and fights (which lasted through three months) with the trials of doses of different strengths and kinds, with old comb and new, with young queens and old ones, and with no queen at all, and how, in doing this, I was obliged to keep up the strength of the colony for fear of robbers and of spreading the disease to my neighbours. Suffice it to say, that after two months I had made no apparent headway, although still determined to "fight it out on this line, if it took all summer" and my last hive. In fact, I devoted my apiary to the study of this disease, and, perhaps, death.

Starting with, and holding to the theory that foul-brood is contagious only by the diffusion of living germs of feeble vitality, (and I was strengthened in my conjecture in microscopical examinations, by finding the dead larvae filled with nucleated cells,) I determined to try those remedies which have the power of destroying the vitality of these destructive germs, these living organisms.

And no remedies seemed to me more potent than carbolic acid and hyposulphite of soda. At first I used both, making one application of each, with an interval of one day, and with apparent benefit. But, attributing the improvement to the more powerful of the two, I abandoned the hyposulphite and used the carbolic acid alone, and I was so infatuated with the idea of its superiority that I did not give it up until three of the four hives had become so hopelessly diseased that the combs were destroyed and the colonies treated to new combs (as it was late in the season), and freely fed with sugar and water. These are now in good condition for winter.

The fourth hive was carried a mile away, the queen caged, and the colony strengthened with a medium sized second swarm. After all the brood, which was advanced, had left the cells, I transferred the colony to a clean hive; thoroughly sulphured the old hive with burning sulphur, and stored it away in a safe place for future experiments. I now thought my apiary free from the pest; but on thoroughly examining the whole, three new cases of foul-brood were found—one very badly affected, and two slightly so, with perhaps twenty to forty cells diseased and perforated.

This was about the 1st of August, and again hyposulphite of soda was selected for the trial; and from the first application I have had the disease under control. Three days ago I examined the three colonies thoroughly, and found no new cells diseased

in the two which had been the least affected; and in the almost hopelessly diseased one (as much diseased, in fact, as any of those that I destroyed,) an entire brood had been raised, with not over fifty or sixty diseased and perforated cells with dead larvae remaining, most on one comb, and nearly all the cells contained a new supply of eggs; this colony is certainly convalescent, and I think now, from the recent and second application of the hyposulphite of soda, is entirely cured. Still, I should not be surprised to find two or three, or even more, perforated cells after this second crop of brood has hatched, as the whole hive, honey, and comb, had been for so long a time so thoroughly saturated with the disease, and at least two-thirds of the cells had, before the medicine was used, been filled with putrid larvae. If so, I shall treat it to a third dose.

The solution of hyposulphite of soda which I used, was one ounce to half a pint of rain water. With this I thoroughly washed out every diseased cell with an atomizer, after opening the cap; also spraying over the whole of the combs and the inside of the hive. The instrument I use is a spray producer, invented by Dr. Bigelow of Boston, and sold by Codman & Shurtleff of that city. There are two small metallic tubes, a few inches long, soldered together; and by placing the point of exit of the spray at the lower part of the cell, the whole of the contents of the cell is instantly blown out upon the metallic tubes. With a very little practice there is no necessity for polluting the comb with the putrid matter. Place the comb perfectly upright or a little leaned towards you, and there is no difficulty; yet, if a drop should happen to run down the comb, it would do no harm, but had better be carefully absorbed with a piece of old dry cotton cloth. I quite frequently do this with the bees on the comb, as it does them no harm, to say the least, to get well covered with the vapour.—EDWARD P. ABBE, in *American Bee Journal*.

Honey Extractor.

There is no longer any doubt as to the advantage of the honey extractor in securing a large amount of honey where frame hives are used. There is, however, a liability to take too much, and impoverish the stock. Care should be taken not to take much from such stocks as have a very prolific queen, and when the cards are nearly all filled with brood. After this season of the year it would be quite unsafe to take honey from stocks that would require to fill up again, at least in many localities.

Where there is abundance of buckwheat, or other fall pasturage, it would do well to take honey even now. But the proper time to take honey is during the honey harvest from white clover; then it is quite safe, as the bees will rapidly fill up all empty combs that are given them. Hence the honey may be extracted from all outside combs, and the combs replaced, and the bees will fill them in a very short time, seeming to labour with renewed energy. I would advise that all extracted honey be put in a suitable dish, and put on the fire and brought to a scalding heat; then put into self-sealing fruit jars, when it will keep for any length of time.

J. H. T.

Correspondence.

Two Pictures.

II. GOOD FARMING.

To the Editor.

SIR,—Having in a previous communication given an ideal picture—drawn however from actual examples and not from imagination—of bad farming as too often seen in Canada, let me now present a reverse representation of good farming.

Never was there a more mistaken idea than that the winter season was a time of leisure to the successful Canadian farmer. The man who is thorough in his occupation never can see the time that he can rest because he has no work to do. The farmer whose aim is every year to enrich his soil must study the comfort and growth of all his stock, as much in the winter as in the summer, carefully seeing that none of them receive any stint. Cattle, in my opinion, require a warmer stable than either horses or sheep; and for a Canadian winter a side hill barn is admirably adapted, if properly ventilated. The advantages it presents in stabling cattle are that you can feed each one according to its wants and for the different purposes you require of them. For instance, in the case of your milch cows, you can feed them so as to increase the quantity of milk if so desired. Say you have a new milch cow, you wish the greatest possible amount of milk from her; you give her all the clover hay she will eat, that has been cut just as soon as the blossom was out and well cured, so as to preserve all the virtue of its richness, and along with this hay feed her three bushels of Swedish turnips per day, and she will give as much milk in winter as if she was on the best of grass in summer, provided your stable is well ventilated and warm enough, so that the manure will not freeze during the coldest night. If it is the richest quality of butter you wish, feed her four quarts of good chopped corn along with the turnips and hay. The turnips will not taste the butter if you feed them always immediately after milking. Such at least is my experience. Then you can regulate the feeding of your fat cattle according to their different stages of fattening, and also your young cattle according to their condition and wants. The method which I have found cattle to thrive the best on is to feed little at a time, but feed them often, trying to give them all they will eat without wasting any. It is best to have the barn-yard enclosed, and have water for your cattle in it, so that you save all the manure in the barn-yard. The cattle are better in the barn-yard through the day, when the weather is pleasant, but stabled at night and on stormy days. The straw stack is best to be built so as to keep

the straw as dry as possible; put a good fence round it; cut some down from it every day, put it in boxes, so that four cattle can eat out of each box, and distribute those boxes over the barn-yard, so that all may have a chance to eat; and at night what they leave can be brought in to bed the stables. Always feed your best feed in the stables. Always select the best of all your stock to keep and breed from. Keep all your stock in as good condition as it is possible for you to do, for my observation tells me that lean stock means lean crops, and fat stock means fat crops; for this reason, that the rich food which you require to feed to have fat stock makes rich manure, and that manure, put out so as to have the best possible advantage from it, with the other operations being equally as well done, yields rich crops.

It is best to get all the manure out in winter that you can to the farthest off fields that you intend to manure that season. I have observed and reflected very closely with regard to manure, and I have come to the conclusion that manure does a farmer no good in his barn-yard, it is only a nuisance there; but as soon as he gets it on his fields it is doing him some benefit. I am no chemist; I cannot analyze manure in its different stages and conditions; but I feel satisfied the quicker it is out of the barn-yard and spread on the fields the better. I would not spread it when the ground is frozen, but would do so any other time during the season. The earth or ground I believe attracts all the richness of the manure for its own use when so treated. When manure is put out of the stables, all the richness of it is there that will ever be in it. Of course by rotting and fermenting it may act quicker on the first crop, but I believe some of the richness is lost by so doing. I have had the best results from using my manure as a top dressing. I think I lose none of its virtue by even spreading it in the hottest day in July, and leaving it on the grass field from one to two years before ploughing.

Every Canadian farmer, if possible, ought to have one year's firewood ahead, and that all cut and split, ready for the stove during winter. Fence timber should also be all drawn, ready in summer for repairing and making fences.

It is best for a farmer to keep a correct account of his finances, and it is also best for him not to get into debt for anything which he can possibly do without. I do not mean this embargo to include a farmer's buying land on credit, when he can do so with a good prospect of meeting his payments. It is best to have your bargain for payments extend as long as possible, and your payments as small as possible; then pay for it as fast as you can. Nor yet should a farmer be without a good labour-saving machine. He had better go in debt for it than be without it; but look out very carefully that you purchase from a manufacturer who is very

lenient to an honest industrious farmer, even though that farmer is poor, so that if your crops should fail, and you be unable to meet your payments, he will be willing to wait with patience on you, and only charge you simple or moderate interest. I should not object to your buying manure on credit.

Look well to your fruit trees. Study carefully their best mode of treatment. Keep all your implements under cover if possible, when not in use. It is a good and profitable amusement to repair implements on a wet day. Never turn your cattle or stock on the road to pick their living. The best profit a Canadian farmer has in keeping stock is in their manure. If you cannot keep them on the farm, or buy feed to give them on the farm, better sell them. Sow as much of your land to clover and grass seed as you can. Get the best grain you can for seed, and if you raise a good crop, and a friend asks you what time in the moon you sowed it, tell him you farm by the sun, not by the moon. Try to have all the operations of the farm done as well as possible. One-and-a-half acres well ploughed each day, will be more profitable to you than two acres carelessly done. The German proverb is a good one, "When late sown crops do well, father should never tell son." All hoed crops should be well cultivated and hoed, and kept free from weeds.

It is a good sign of a good farmer if he can so plan his work that it will move smoothly without jar, like a good running machine, and that every step of himself and those that help him may be made to tell on a certain focus or to a certain end.

Sheep ought to be washed as gently and quickly as possible. Many a good sheep is lost from rough usage in washing, and from being kept too long in the water.

It is best to pull all the pigeon weed or red root if possible; if you pull it, you are master of it; if you do not pull it, it will soon be master of you. The best method with Canada thistles that I know of is to with you take a hoe and oil can filled with benzine. Cut the thistle off close to the ground with the hoe; put two drops of benzine on the root, and you need never look after that root any more.

Keep a good garden, and either enclose your hens or enclose your garden, so that the hens can't enter it.

It seems in some neighbourhoods as if the old settlers established a law which must never be altered, with regard to cutting grass, viz., never to cut grass till it has lost from one-third to two-thirds of the virtue that is in it. One simple experiment would satisfy any farmer which is the best time to cut grass. Take clover, for instance; cut some when it is in full bloom, before any of the heads are dead; cure it right, and also cut some when one-third of the heads are dead; have both laid away separately in the barn in good condition; then take a steer, feed

him one month on the one, and one month on the other, and weigh him the beginning and end of each month, and you will soon find which hay is the best.

Think of Canada as the best country in the world for a farmer; and before you believe in any other being better, inform yourself well of the pros and cons with regard to it. "Far away fowls have always fine feathers." I have often felt astonished at farmers, whose farms were each year losing their fertility, investing their capital in a life insurance policy, or some other outside enterprise, with the idea of getting 8 per cent. profit; whereas if they invested that capital wisely, to increase the fertility of the soil they cultivate, it would bring them in 100 per cent., and without anything deducted from it for agents, clerks, &c., &c. Though a farmer is snug in all the other operations of his farm, if he does not feed his soil the results will be poor. The longer I farm the more I feel the benefits from book farming. What is book farming but "practice with science?" and that has told me the successful farmer must have another motto, "manure and rotation."

R. EADIE, JUNR.

Oakland.

Green Crop to Plough Under.

To the Editor.

SIR,—I notice in the issue of the CANADA FARMER, of August 15th, a most valuable communication from A. B. BALL, of Stanstead, in which he gives an account of his trials with mixed grain on turnip land, where the turnips had not been harvested, but had been allowed to freeze and die away on the ground. Mr. Ball states that he obtained nearly or about 120 bushels of mixed barley, oats and peas, to the acre, where the turnips had decayed, and that he had also a fine crop of grain where corn had been planted and cut for fodder. It is very gratifying to find a clear, lucid description of an experiment such as this, and I must say I for one offer my thanks to Mr. Ball for giving it to us. I have long been of opinion that if we are to manure at all we must do it at a cost less than that of the manufactured artificial manure. If all were to use these, the demand would greatly exceed the supply, and consequent high price be the inevitable result; whereas, if only a very few use it, and from the very poor demand the article is kept cheap in price, but few are benefited.

I have tried all the artificial manures, and kept a record of their effect, but have never been tempted from the profit to repeat the trial of any of them. Our prices for grain are too low to admit of expending such an amount as is required in this manner; whereas any crop that can be grown and ploughed under, and that will cause such a yield as we read of in the article alluded to, is quite within our reach. It is true many

would argue that to plough in a turnip crop would be more expensive than to buy artificial manure, or rather that more money could be made out of the turnips than would suffice to purchase artificial manure. In reply, I may probably urge that this may be true to a certain extent, but I hardly think so. If turnips are grown from the directions of a correspondent of yours, who recommends the land to be prepared in the fall, I believe that the cost would not exceed the benefit derived even from one crop; and your correspondent, Mr. Ball, of Stanstead, will probably favour us with a report of the next year's crop on the same turnip land. This may perhaps afford still further inducements to try the course he inadvertently was forced to adopt.

I have for some years past been trying the adaptation of the silver beet for the same purpose, and am now raising seed for gratuitous distribution directly it is sufficiently ripe to do so. I believe this plant will meet all the requirements, and I have troubled you with a short notice in this issue, stating progress and probabilities for the future and experience of the past. Silver beet would not cost half as much as turnips to cultivate, and may be sown in May or April, and be ploughed under in July or August. Nothing hurts it, heat or cold, rain or drought, or fly: whereas turnips must be allowed to remain a full season in the earth, as they do not grow fast until fall rains and cool weather set in, and are liable to be destroyed by fly. At any rate, trial costs nothing, and if we farmers are ever to raise the standard of our occupation in Canada, we must be up and doing. If one thing fails, try another, and so on until success crowns our exertions. I for one will never believe but that farming in Canada is the true end and aim and the legitimate occupation of immigrants; and it is only ignorance and want of means that prevent agricultural avocations from being as lucrative and as much sought after as any situation that any clerk could be engaged to fill, or any business conducted behind a counter. In Canada we have cheap land and good climate. There are many drawbacks, no doubt; so there are in other businesses. If one farm of 70 acres cleared will maintain and rear a family, and enable the occupant to buy it or some other, two farms ought to do twice as much. What would a large tenant farmer of England think of farming 70 acres? Why, he would not look at such a farm; and the mere cost of the labour ought not to be a legitimate barrier to any one who has the capital to buy two farms, and making both pay twice as much as one.

C:

PRIZE WHEAT.—Mr. H. Collett will find the information he wants in the CANADA FARMER for November, 1870, which contains the prize list of the Provincial Exhibition.

Farming as a Profession.

To the Editor.

SIR,—A letter with this heading appeared in your January number. I object to the use of the word "profession" applied to farming; occupation is the proper word. In the north of England I have met "mad students" engaged in idleness, though nominally studying the profession of farming. These men paid £100 to £150 a year sterling to some farmer for board, lodging and tuition. The latter could not have been of a very deep or difficult kind, seeing that their time was chiefly occupied in hunting, fishing, and such like sports. It is all very romantic to picture this and that as elegant and refined in the life of a farmer. Don't I know that Canadian farmers as a class lack gentleness, the first element of refinement. The hard, tireless industry of the Canadian farmer makes him too often a most ungenial and ungentle being. He is improving somewhat under the influence of spring waggons, pianos, crinoline and chignons. But the narrow range of his observation, and the monotony of his experience, cause him to love gossip, to reason in the narrow bacolic way, and to be one of the most selfish beings in the scale of creation. The old "Leo system" gets the start of him sometimes. He will turn out to help when required, but will expect as much in return. With all his willingness to help, he will scarcely ever make a fence unless compelled by law or self-interest so to do. I never knew one yet who would not pasture his cattle on another man's land if the law—not the law of good neighbourhood, but the law of the land—were not against him. It may be my experience is limited and unfortunate, but I can tell you that in the matter of fences the morals of some farmers are very loose. In the matter of weeds, breechy sheep and cattle, hens and turkeys, I am tempted at times to curse farming and quit it. Of course I have a remedy at law, but I am a new comer here. All my predecessors have had to put up with the same thing, and I suppose I had better do so for the sake of peace. There is a cloud of thistle seed blowing across my summer fallow, and taking nicely; there is a confounded worthless "cur" of a ram in among my Leicester ewes—nothing short of a seven foot fence will keep him out; there are my neighbour's turkeys in my wheat. One of my poor hens made her way into his cucumber patch one morning, and expiated her crime with death. I suppose my wheat is not worth as much as his cucumbers. Well, let them eat away; thank Providence, there's enough for them, for me, and the chipmunks, this year.

I like farming so well that I gave up a profession for it. I have built drains, wire fences, stone walls, and done other "high farming jinks," such as manuring with gas lime and hauling manure from a city,

and all that advanced sort of thing. I think it will pay, as I have improved tentatively, and the place will sell to advantage. When I look out for another location I'll enquire if the seller can furnish references as to the character of his neighbours.

Yes, farming in some parts of Ontario is pretty much of a mission, of a profession. Among five hundred farmers in this township, I am sure not more than a dozen take an agricultural paper. I think I shall feel called upon yet to undertake a canvass of the township in the interest of some farmers' paper, just from a religious concern for the extirpation of some great evils, which, like all great evils, are great eye-sores, hideous and detestable. Chief among these are thistles and tumble-down rail fences. Reader, do you know what a rail fence out of repair is? It is the most hideous, unsightly object in the Canadian landscape. In fact, I can conceive a man to be so finely organized that at sight of some sections of this Province he would go stark mad about what the farmers call fences. I have seen well-baited, snake fences, but at best they are a make-shift only to be put up with on a new farm. They harmonize with stumps, but not with cleared land. They take up much room, and nurse weeds. Let any one but look at two fields—one with a substantial straight fence of any kind, the other with a snake fence. Assuming the land enclosed to be of equal value, which field will bring the most in the market?

The difference between English and Canadian agriculture is want of system, and that involves everything. Poor farming has hitherto paid in Canada, and until it is demonstrated that it won't pay any longer I despair of any radical change. It is folly to dignify the work of the farmer with any high-sounding title until his work takes a higher character. To my notion, we require an appropriation from Government in aid of the dissemination of agricultural knowledge. Lecturers should be sent into every county during the winter to preach reform. There can be no improvement that has not for its basis a system that will supply manure—that does not insist upon thorough cleanliness and workmanlike skill. When the majority of Canadian farmers become something other than shiftless drudges, then it will be high time to talk of the profession of farming. As it is, bad farming is the rule; good farming the exception. These are plain truths, plainly spoken.

FRONTENAC

Kingston, 14th August, 1871.

HORTICULTURE.—In reply to the enquiries of a "subscriber" in regard to a good work on Canadian agriculture, we are authorized to say that such a work, designed especially for this country, and written by one of our most accomplished horticulturists, is about to be published, further notice of which will be given as early as possible.

Notes from Quebec.

To the Editor.

SIR,—I send you a few notes about our weather and the appearance of the crops also Quebec.

In early spring we had much rain; then a period of weather too dry. Turnips eaten by the fly three times. Wind mostly from the north.

Now in haying it is altogether wet; it was wet yesterday, wet the day before, and it is wet now. Machinery is being introduced, but not systematically. Men buy mowers, but do not follow out with hay tedders and horse rakes. The consequence is, they get too much down at once, and then the labourers laugh and chuckle to see the "results of machinery." By-the-by, I do not see any hay tedders for sale, nor any single horse mowers. Are there any of these latter made?

About beetles. We have no Colorado beetle yet. It is amusing to hear people talk about every potato pest as being this, and the way specimens are mailed (theoretically, I mean) would be enough to try the temper of an entomologist. People mix up bugs and beetles and flies altogether, knowing no distinction. I wish they would take the CANADA FARMER. Strange to say, isolated fields of potatoes, distant sometimes a few miles, have been almost destroyed by a fly about an inch long, of a dark slate colour, and very narrow. It also destroys the broad beans. Perhaps you will tell us what it is and how to deal with it.

Cabbages are a great success everywhere. I have only seen about a dozen of the cabbage butterfly. Last year there were myriads. Turnips are making up for lost time, and are looking splendid.

At last our city has woke up to a value of its rights, which it waived before, and has arranged for the coming Agricultural Exhibition to be held in Quebec. The value of this event to a town is shown from the fact that the Town Council of Montreal is said to have offered \$20,000 for the privilege to be transferred to that city. However, we were too wise to accept the liberal offer.

PHIALA.

Quebec, July 30.

Dissolving Bones.

In answer to our correspondent from Liverly, Ohio, about dissolving bones, we give the following directions:

Take 20 bushels of bones, break them into pieces from two to three inches in length, and mix them with four or five loads (not bushels) of barn-yard manure; keep the heap well covered with earth or sods, or any substance that will prevent the escape of heat, and the strong fermentation thus brought into action will dissolve the bones, and make an excellent compost for roots, and especially

for turnips. If our correspondent will apply such a compost to part of his corn and manure, an adjacent part with plain manure, he will perceive a great difference, not only in the yield of his corn, but of many succeeding crops, upon that part which shall be treated to a good dressing of the compost.

The decomposition will take place more rapidly if there be also mixed in the heap soot or unleached ashes or some rough lime. The compost will be ready for use in from one month to three months, according to the nature of the decomposing heap in which the bones are covered.

QUERY.—Can any of your readers tell the amount of pure juice that a bushel of apples will yield? Also, where one can buy malt, and at about what figure?

POTATO PLANTER.—We do not know of any implement of the kind alluded to by our correspondent from Innisfil.

HAND-GRIST MILL.—A correspondent wishes to know where he can obtain a hand-grist mill. If any are made, the manufacturer should advertise.

The Canada Farmer.

TORONTO, CANADA, SEPT. 15, 1871.

The Season and the Crops.

Another month of very dry weather, while it has been favourable for harvest operations, has told heavily on pastures, and kept back the growth of root crops to an extent which, in the case of potatoes, can hardly be recovered. With the advent of the present month, however, copious rains have been general, and harvest operations being well over, their influence, though late, cannot fail to be beneficial on fall crops of all kinds.

The reports which we receive from various parts of the Province are on the whole very favourable. Hay is nearly everywhere short and there is every reason to expect it will be scarce during the coming winter. Wheat, especially winter wheat, has yielded well in nearly every section of the country, and has been well got in, so that there will certainly be a more than average supply. The earlier spring grains appear to be somewhat light, but oats and peas are nearly everywhere a good crop.

In consequence of the protracted drought of the past month, bush fires have done serious damage, having been more extensive, and approaching nearer to the settled districts than usual. Not only has much valuable timber been thus destroyed, but crops, farm buildings, and human lives, have been sacrificed in the devouring flames. The melancholy experience of past years has not yet taught us wisdom, or led to the adoption

of any efficient and general precautions against this danger.

The harvest reports of the United States present nothing extraordinary, though on the whole they appear to have been less favoured than ourselves. A short cotton crop is anticipated in the South; corn will probably turn out well generally, and "small grains," taking the country throughout, will give an average yield.

From Britain, though the weather lately has been fine and harvest has progressed rapidly, the accounts are somewhat less cheering than last year. An inferior crop of wheat, a very good crop of barley, an average crop of oats; and peas and beans, though at one time promising an extra yield, somewhat disappointing expectations—such is the general tenor of the reports in the British exchanges. Cattle food, however, of all kinds, promises to be abundant. Turnips are confidently expected to produce a heavy crop; and potatoes have yielded well, though the wet season has shown its usual effect in producing an early development of the potato disease.

The monthly meteorological summary, which we receive from the Toronto Observatory, will show what has been the character of the weather in the neighbourhood of the city, and the record is probably a fair index of the season in other parts of the Province. The report is as follows:—

The past month has borne in general the same features of heat and aridity that marked the preceding one.

The mean temperature was 67°.4, being 1°.4 above the average, and slightly in excess of the same month in 1870.

The highest temperature was 89°.5 on the 16th, and the lowest 46°.0, on the 19th, giving a range of 43° in three days.

The warmest day was the 4th, the average temperature of which was 76°.1; and the coldest, the 31st, 57°.0.

The amount of rain, although the month may be characterized as unusually dry, in consequence of the copious rainfall of the 26th and 29th will fall little short of the average, being 2.80 in comparison with 2.03 inches; the heaviest fall occurred on the 26th, and amounted to 1.04 inches.

The amount of cloudiness was a little in excess of the usual condition, and may be divided as follows:—Clear days, 7; clouded, 4; and partially so, 20.

The wind has been very variable, and during the month occasionally blew with considerable violence, especially on the 8th, 18th, and 29th.

The Coming Exhibitions.

We publish as heretofore a list of Fall Shows to be held in various parts of the country. The list would have been more complete had the officers of agricultural societies acceded in any considerable number to our in-

vitation, and taken the trouble to apprise us of the times fixed for their respective shows. One cent for a postal card, and less than a minute's time to write down the name and me and place, would have sufficed; but very few of the societies have availed themselves of the gratuitous advertisement thus placed at their disposal.

The general prosperity of the country, the favourable season, the rapid improvement in live stock, and the increasing use of agricultural machinery, stimulating inventive and manufacturing enterprise, all lead us to expect corresponding signs of progress in our agricultural exhibitions, and many of them will no doubt possess more than their ordinary measure of interest. The importations of live stock especially, during the present year, have exceeded in number those of any previous year; and it is probable that a considerable proportion of them will be shown at Kingston, and materially enhance the attractions of the Provincial Fair.

A tendency to combine for the purpose of securing a larger exhibition and offering more tempting prizes, seems to be gaining ground. What the ultimate effect may be remains to be seen. Admitting the advantages to be anticipated from union and co-operation, these exhibitions are after all but local, few and be multiplied so as to defeat the ends desired; and if, whether avowedly or not, a wish to damage the Provincial Exhibition is a spur to the movement, it deserves to fail. With all its shortcomings in years past, the Provincial Association, and its annual shows, have done much to illustrate and promote the agricultural progress of the country. Moreover, according to the present constitution of the association, and especially from the elective character of the council, the management of its affairs is, through their representatives, very much in the hands of the county societies, and through them, of the farmers generally. It is their interest, therefore, and clearly their wisest course, to support this national organization, aiming to effect all needed reforms, but still heartily uniting to promote its influence and efficiency. No one who has the prosperity of the Provincial Association at heart, and takes a pride in the national character of its exhibitions, can regard with favour any "union show" that is clearly got up in opposition to the Provincial Exhibition. Our friends in London have formerly appeared very sensitive in regard to such imputation, and have indignantly repudiated the charge that they were actuated by a spirit of rivalry or opposition to the Provincial Show in getting up their "Western Fair;" but when they fix the time of holding it during the very same week appointed for the Provincial meeting at Kingston, the public will draw their own conclusions, and will scarcely award them the sympathy which otherwise their enterprise and energy would have secured. We are not surprised to find the course they have pursued meets with every general condemnation.

Practice and Science in Agriculture.

All the wonders of the present age have been brought about by frequent experiments, accompanied by many failures. Were we never to travel out of the paths beaten by our forefathers, agriculture would yet be in the rough primeval state that it was when the toga fell upon the shoulders of the Roman ploughman Cincinnatus. We are all conversant with the many obstacles that have been, now are, and ever will be thrown upon the efforts of the more enlightened to bring before us new improvements and well digested plans. To overcome the sneers and rebuffs of obstinacy, prejudice and ignorance, and even the evil offices of jealousy and malevolence, and to introduce new ideas and new improvements, requires a man of no small energy, perseverance, and strength of mind.

To be a leading farmer of the age we must not blindly follow in our father's footsteps, though we should never lose sight of those ancient and well established land-marks; but neither should we despise the influence of books nor of those periodicals, by perusing which we shall be enabled to interchange ideas and to record and read the experiences of brother farmers in every locality and climate, and under all the different circumstances of soil and season.

Great as has been the stride made by agriculture within the last century, no science has been slower in its progress towards perfection. Brought up with little or no education, put to hold the plough before his strength is fairly developed, the farmer's son too often acquires but a mechanical knowledge of his future profession. Unable to appreciate the improvements worked out by the light of science, or to grasp at the newer ideas of the age, even after the merits of such have been fairly tested and fully approved, he has no choice but to continue in the old groove, and thus falling behind the times, he is outstripped by those of his contemporaries who have received a more liberal education.

The sneers of practical men at what is generally called "book farming," are not always groundless, and are often justified by the ignorance displayed in many crude works published by men who have had no practical knowledge of agriculture, but are simply speculators. At the same time the fact should not be lost sight of by farmers that many works have been written, from the dawn of printing to the present time, by men who have brought to endorse the knowledge of a sound education, the experience of the best part of a life time as practical farmers.

Within the reach of every farmer is one or more of those weekly or monthly periodicals, which, edited in our own times, contain the experiences and the current ideas of our own contemporaries. A man must indeed have a poor power of adapting knowledge to his own case if he cannot find many dollars' worth

of information in a yearly volume of this character. Sanguine speculations of mere theorists, unsupported by practical results, should be well considered before they can be made of practical utility. Plausible reasoning upon agricultural topics is easily put forward upon paper, but unless accompanied by positive proof, is often found of no value when brought to the practical test. An obstinate opposition to all change, however, is the result of ignorance, and men who indulge in such have simply no judgment to distinguish between specious theory, and that which rests upon more solid foundation.

Blind prejudices are as old as the hills. In Sir Walter Scott's "Tales of my Landlord—Old Mortality"—we find the following description of the old housekeeper's objection to the use of the winnowing machine: "Your leddyship and the steward has been pleased to propose, that my son Cuddie suld work in the barn wi' a new fangled machine for dighting the corn frae the chaff, thus impiously thwarting the will of divine Providence, by raising wind for your leddyship's ain particular use by human airt, instead of soliciting it by prayer, or waiting patiently for whatever dispensation of wind Providence was pleased to send upon the sheeling hill."

On the introduction of hops into England the city of London petitioned against their use, lest they should injure the beer. The Duke of Bedford having introduced on his estate the fashion of ploughing with two horses abreast, observed one of his tenants at work in the old-fashioned mode with four horses in a string. The Duke explained to his tenant the new mode, and yoking two abreast, showed how it worked practically by holding the plough himself. The man, instead of being at all convinced by his Grace's reasoning, replied, "That such a plan might answer with his Grace, but was too expensive for him." Even to this day the farmers in one of the midland counties in England persist in having the hind wheels of the wagon preposterously larger than the fore, because "it places the body on a level going up hill," never reflecting that it will have to come down again or go on the level.

Unforeseen circumstances and casualties in the ordinary management of the farm often arise to baffle our experience, and in many cases the farmer who relies solely upon his own practical knowledge will be at a loss for expedients, which might be supplied by a knowledge of the practice of others. All will admit the great benefit to be derived from seeing what others do.

Instead of travelling about, which is an expensive operation, we can in this age of cheap periodicals read what others are doing, while we sit by our warm firesides in the long winter evenings.

It is almost necessary, in Canada, where labour is dear and often hard to obtain, that a man should at least know how, if occasion

should require it, to turn in with his men; and we would earnestly advise any young man, be he an immigrant or a native, who has not been brought up to the calling, and wishes to pursue this life, to turn in with some farmer and learn how to perform all the manual operations of the farm hand. If he should never use that knowledge practically, as "it" which is hardly probable, he will yet, by his own experience, be able to form an idea of what work he is receiving for his wages, and be able to teach men who are ignorant upon any point of manual labour. On the other hand, it has been well said that "*attendance and attention will make any man a farmer.*" While the young man who would farm should ever bear in mind that it is of great benefit to be able and willing to lead the hands in the field, it is not necessary that he convert himself into a daily drudge. "*A good head is worth four pairs of hands;*" and it is well ever to remember that agriculture is a science, and not mere mechanical art.

The progress of agriculture as a noble profession has made great strides in Canada during the last few years. In the superior quality of our stock, in the husbandry and improvement of our soil, in the rapidity with which stock raising is superseding the exhaustive cropping system, we may see the germs of a more enlightened mode of working our land than has yet been in vogue in this naturally rich but much impoverished country. Let us all, as farmers, work together to elevate the science of farming to that place which it should maintain amongst the many professions and pursuits around us. We can always further educate ourselves, by a liberal and constant interchange of ideas, by farmers' clubs and the support of agricultural papers. Let us, moreover, bring up our children to regard our calling with respect, and to look upon the farmer, not as a drudge, but as a member of that profession upon which depends the progress and prosperity of the nation at large.

Intellect in Farming.

Although a very marked change of opinion in regard to the business of the farmer has come about in recent times, and the husbandman, as a rule, neither is nor is considered an illiterate boor, a mere labourer, whose avocation does not call for, if indeed it does not preclude mental cultivation,—although this extreme disparagement of the farmer's calling does not now prevail, still the true dignity, scope, and noble independence of his position are scarcely sufficiently appreciated either by society at large, or by the followers of the plough themselves. The more thoughtful and intelligent fully recognize the science and practice of agriculture as one of the "professions," but too many still regard the farmer as belonging to a class below the city man of business or the members of the learned pro-

fessions. Now, there is nothing in the calling itself to justify such an estimate. If the "rustic" is inferior to the man of the city, it is not the fault of his occupation. On the contrary, it is because he is not educated up to his business. There is scope in farming, not merely for practical skill in labour, but for the exercise of forethought and judgment, and the full play of the higher mental faculties. To be successful in turning his labour and capital to profit, he must, in this, as in every commercial undertaking, be a good man of business. Depend upon it, the well-to-do farmer, especially if he has been, like most colonists, not the inheritor of paternal wealth or acres, but the architect of his own success, is a shrewd man of business, who would have made his way and reaped the reward of his toil as a merchant, or in almost any trade, had his lot been cast in that direction.

It is in its intellectual aspect, however, that the pursuit of agriculture truly rises above that of the mere trade. The farmer's daily avocations bring him into familiar contact with the marvellous operations of nature. In the cultivation of the soil, in the care of animals, and in all the branches of his calling, he not only may, but if he would intelligently perform his work he must, become acquainted with some of the most interesting sciences. Some knowledge of chemistry, and still more of animal and vegetable physiology, are necessary to any one who would rise above the position of a labourer on the farm—no one would order or conduct its operations as a master. When a man of well furnished and cultivated mind enters on this pursuit, he finds in it ample scope for the application of all his knowledge, and abundant materials for fresh thought and study; whereas very much of the stores and attainments of a liberal education are comparatively lost in ordinary trades, and the man of culture who is engaged in such must seek for mental recreation altogether out of his business. Hence it is not surprising that agriculture has become the favourite pursuit of men of wealth, of leisure, of education, and of the highest social position. This growing popularity of a once despised occupation is a well deserved tribute to the real interest and dignity of the husbandman's calling, and should make the farmer not only well contented with his lot, but proud of it, and ambitious so to study his profession that he may enter fully into its intellectual character, and while turning it to good account as a means of gaining a livelihood, seek to elevate it to a foremost rank among the industries of mankind.

Our Tolled Roads to Market.

In looking at a farm, with an eye to the purchase of the same, among the most important advantages to be considered is that of a good metal or gravel road, such a road

as a man may depend upon for at least a solid enough bottom to bear a load of grain in bad weather, when the common mud roads become very deep and heavy. To obtain a good road there are few farmers who would not agree to pay a high toll. The traveller in England is struck with the excellent condition of her roads; but in this country the conviction is too often forced upon us that, proud as Canada may well be of her institutions and general progress, her roads are a standing disgrace.

Any one who has had much experience of late years on the leading roads of Ontario will doubtless endorse the statement that the worst of her tolled roads are those owned by private individuals or private companies. A private individual owns a road, and farms it somewhat on this principle: I shall collect, he says, the highest toll the law allows, the people must use my road in certain seasons going to town, for it is the most direct, and I shall shall put upon that road just as much labour as will prevent the authorized engineer from taking off my tolls.

Occasionally, the people rise *en masse*, and by proper petition obtain the removal of tolls. This is not what the farmer wants, however. If he is to have a poor road without toll, he can take his choice of those worked by statute labour. But if a road be metalled and owned by a private individual or company, the farmer is anxious to have that road kept up, and willing to pay his fair share of the expenses, be they high or low, of keeping such in good order. The private owner has nothing to consult in the matter but his pocket, and has no check acting upon his behaviour to the public. He seldom devotes his whole time to the supervision of the road.

The best tolled roads in this Province are those in the hands of a Council—instance the Garafraka road leading out of Guelph to the village of Erin. There are also many other roads in the counties of Wellington, Grey and Bruce, and that section of the Province, which, under the management of County Councils, are far superior to our older roads in the more southern parts of the Province.

Farmers, it is for you to agitate this question, and adopt some plan to get these roads out of the hands of private owners. A Council could appoint a salaried superintendent, who would devote his whole time to the improvement of the roads, and we should then at least know how much of our cash goes to the maintenance of the road, and how much has hitherto been breached in the pockets of the private owner. If it were found even that the existing tolls did not support the road, and this may in some instances be the case, we should know that any money which we might pay by private subscription or municipal assessment, was directly used for the benefit of the road, and for no other purpose. But, after all, per-

haps the best reform in this important matter would be that adopted in England, namely, the abolition of tolled roads altogether. Tolls are felt by every traveller to be a nuisance, and the burden of the expense falls very unequally, while the whole country, dwellers in cities as well as residents and travellers in rural districts, are benefited by good roads, and suffer by mismanagement and defects in these means of transit. A large sum for the purpose could be raised, without pressing heavily on any particular class, by general taxation, and the whole matter be kept under better control than by the present system. A reform, and a radical one, is loudly called for, and there is no class more interested in the needed change than farmers.

Beet Root Cultivation.

Our German friends in the neighbourhood of Welesley are greatly encouraged in the growth of sugar beet, which they have planted to a considerable extent (experimentally) in that neighbourhood. We have been assured by one of the most intelligent men in that section that during the late July frost, when the potato tops and other tender plants were cut off, and when even the tops of the weeds growing among the beet plants were frozen, and their growth stopped, the leaves of the sugar beet plants were entirely uninjured; and the farmers who have beets say that if they can only reduce the roots into sugar, the beet crop (being uninjured by the summer frost) will be the crop of all others to help the farmer. A spirited machine manufacturer in that neighbourhood has offered to manufacture the necessary machinery for sugar making from the beet for any company who will start a factory, and either take his pay for the machinery in stock, or let the payment for it depend on the success of the operation.

Facts like these show that the project of Canadian beet sugar is progressing.

HEARTH AND HOME.—We noticed some time ago that this excellent and popular periodical had passed into the hands of Orange Judd & Co., the well-known publishers of the *American Agriculturist*. Under its new proprietorship it maintains its deserved reputation as a first-class family paper. It is well printed, beautifully illustrated, and in addition to its general news department contains excellent articles on agriculture, horticulture, and household affairs. It is issued weekly. Terms of subscription for single copies, \$3 (American currency) per annum, with liberal allowance for additional copies or clubs. If taken jointly with the *American Agriculturist*, the annual subscription is \$4 for the two. Publishers, Orange Judd & Co., New York.

Horticulture.

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

Gooseberry Mildew.

To the Secretary of the Fruit Growers' Association of Ontario:

Sir,—At the last meeting of our Association, held at Hamilton, I was requested to give some explanation of gooseberry mildew. I had not then given the subject those close microscopical observations which I have since done. These are quite at your service in case you feel disposed to include them in your annual report; they are as follows:—

I have frequently been defeated in securing a crop of gooseberries of the foreign sorts free from fungus. These frequent failures, and the request before mentioned, determined me to proceed to a more searching study of the phenomena connected with its last development; therefore, on the 5th day of July last, I placed minute pieces of the fungus (taken from a berry just plucked) on the field of a powerful microscope, commencing at its lowest diameter, and from thence gradually increasing its power. I found this fungus to be composed of a well organized cryptogamous plant, exhibiting a vegetable growth many degrees lower in the organic scale than the berry from which it derived its supply of food. It consisted of a dense net-work of filamentous texture, interwoven in every conceivable way; along these filaments or threads were disposed vast numbers of minute seed vessels or conceptacles, each containing from 4 to 8 sporangia, within which lay numerous germs. Now, these conceptacles were constantly maturing, bursting open and sending forth germ life to the air in vast numbers invisible to the naked eye, possessing the power to increase to a marvellous extent, and in a very short space of time. It is quite credible that in this way it might soon form an environment, in which the surface of every berry and leaf would become bathed, for by the slightest motion of the air these germs are wafted. When we consider them capable of sustaining vitality under extreme heat or cold (for this has been verified by the experiments of both German and English scientists in their recent experiments to test spontaneous generation), it would almost appear from this to be a law that the more elementary the organic structure, the more difficult it becomes to destroy its vital properties under extreme conditions.

Now, our gooseberry cryptogam increases its size and form by extension of filia on extremely fine threads, branching, overlapping, and reaching in all directions, where food is most abundant and suitable, not unlike the spread of mushroom spores, so that in

fact the depth of net-work or the density of fungus will entirely depend on the thickness of the medium through which it passes and the quantity of suitable food supply. Mildew, therefore, in itself is not the cause of disease, but acts as a mere scavenger in the removal of matter unsuitable for the development of higher organic forms. It can only lay hold of refuse matter. I consider fungi as important in the economy of nature as the higher organic forms, and I would not willingly be guilty of charging those simple structures with the crime of creating disease in the more complex organism any more than I would the crow for the death of the horse upon which he feeds.

Mr. J. N. Jones, of Charleston, ten years ago observed that before a "fungus made its appearance, and before any trace of it could be observed under a high magnifying power, the surfaces put on a peculiar glazed appearance." Now, this in the case of the gooseberry, arises from its own exudation becoming condensed upon the surface. Fruits, like leaves, undergo continual evaporation. If from any cause this exuded gooseberry vapour, which contains the elements of sugar, becomes condensed at the surface, it forms into a glaze (constituting the essential food), which soon becomes, when exposed to the action of sunlight and air, chemically decomposed; the thickness of the glaze will depend upon the quantity of vapour and period of condensation. I have observed that when mildew makes its appearance both fruit and leaf often appear affected, condensation taking place when the air becomes suddenly raised in temperature; all cold bodies which it surrounds are at once converted into condensers in the same way as a tumbler of ice-water will condense aqueous vapour held in the air, and deposit it upon its outer surface on a hot day. The operation of this same law would cause the berry (all other things being favourable) to be covered by its own excretions, which deposit would differ in point of quality, essence, and chemical composition, from ordinary air condensation, and also to an appreciable extent in one variety of gooseberry from another.

I cannot now dwell on any further explanation of this, but must proceed to explain the further appearance of things under the microscope. Upon submitting a small section of tissues of the inside of the skin of the berry, I also observed it to contain a net-work of filaments, with their conceptacles attached, some as that which overlay the berry; but no doubt the juices of the skin of the berry had by this time become involved in the chemical change. I am therefore satisfied that fungus does in no manner act as a parasite; but that its spores do nothing more than seize upon and take advantage of the most favourable conditions presented to them, feeding upon such excrementitious matters wholly unfit to supply the requirements of the fruit.

Frequent syringing of the leaves and fruit at critical changes of atmospheric temperature, with warm water, might possibly remove the food of the fungus, or make it unsuitable. It is a mere suggestion, worth a trial however.

W. H. MILLS.

Onion Culture.

One crop that is considerably raised in Connecticut, and made quite a specialty of in Wethersfield, so much so as to give the town the nickname of the product, is onions. There is a peculiarity in the cultivation of this crop that is the reverse of nearly every other crop raised, and that is the succession of crops on the same field, which proves exceedingly beneficial, while with most others it is directly the reverse, prejudicial; so that while most crops prefer a healthy rotation, the successive croppings of the onion is beneficial, in that from the continual cultivation of the same field much labour is saved, if care is taken for the first few years to eradicate every foul plant, so that none shall be allowed to seed upon the field to furnish plants for the succeeding year. In the selection of a field for the cultivation of this crop the soil should be a light sandy one, so situated as to be thoroughly drained, and capable of becoming dry at the earliest possible time after the frost leaves the ground. When a new piece of ground is selected, the result not unfrequently proves a partial failure, notwithstanding great care and pains may have been taken in the cultivation.

The failure usually consists in an excessive stock growth at the expense of bottoming, so that a beginner need not be discouraged even though the first one or two efforts do not prove successful or remunerative. In no case should a field be taken for the growth of this crop that has not previously been under thorough cultivation and become well pulverized, and also in a high state of fertility. It is also very desirable, though not absolutely necessary, that the manuring and principal ploughing be done in the autumn, just previous to the freezing of the ground, since thereby the manure becomes more evenly distributed in the soil, and not only that, but being so loosened and more exposed to the action of the frost, is more easily communicated in the early spring. The manure used is not so essential, if it is well pulverized; some prefer horse manure, others that from the hog yard, and still others any that is well decomposed. The ploughing in the spring need not necessarily be very deep if the same was thoroughly done in the fall, since the onion is a root that grows and flourishes best on the surface. As soon as the frost leaves the ground, if previously manured, it should be lightly ploughed, say from three to four inches deep, and then thoroughly scarified, so that it shall be evenly and thoroughly pulverized; a great auxiliary to manure of whatever kind, and which appears

to assist in the bottoming, is a good supply of ashes; in fact, good crops have been grown from soil in good condition fertilized by ashes alone. If ashes are used, they should be upcast on the surface after being smoothed, and then thoroughly raked in, at which time the surface should be raked smoothly. If ashes are not used after the surface is scarified, guano, superphosphate, or some other commercial fertilizer, should be evenly distributed upon the surface and raked in as before. When thus prepared, the field is ready for the seed. Formerly, this was sown by hand, which was a slow and wearisome process; but since the advent of seed planters, of which there are various kinds, the labour is comparatively easy.

The manner depends upon the choice of the cultivator, whether it be in drills or in hills; if the former, then any of the various drill machines will accomplish the result; if the latter, the Wethersfield sower will accomplish its success, and drop the seeds in hills at such distance in the rows as may be desired. If sown in drills, from four to five pounds of seed will be required for an acre; if in hills, from three to four will suffice.

The distance apart of the rows varies among different cultivators from six to eighteen inches; a medium distance of about twelve inches is probably preferable, giving ample room for cultivation and the growth of the roots. If sown in drills, the seed should not be dropped so thickly as that the bulbs will be too much crowded, as the result will be smaller onions, but at the same time sufficiently so to cover the space in the rows when the onions are nearly matured; if sown in hills, these should be about six inches apart, as several onions being in each hill, room must be allowed for their spreading.

After sowing, nothing further remains to be done until the little plant has made its appearance above ground, and then should commence the labour of destroying all weeds as fast as they make their appearance. Clean cultivation is absolutely necessary, as the growth of the onion is greatly retarded by the infringement of any foul and unnecessary growth of weeds. The soil should be kept loose by repeated hoeing, until the bulbs are so far advanced in growth as to render cultivation inconvenient, when it may be abandoned, with the exception of hand pulling of any weeds that may make their appearance.

As soon as the bulbs are so far matured as that the tops begin to turn yellow and lop to the ground, pulling may be commenced, as the roots will ripen much more expeditiously than if allowed to remain in the ground.

When the tops are thoroughly dried they may be cut off, and the onion is then ready for market or for storage.

The above has been written descriptive of the mode of cultivation of the onion from the seed. There are other varieties of onion, such as top or Egyptian, Potato onion, &c.,

and the raising the same from seed, which require a different mode of procedure, which will not be considered in this article.

Of the varieties of seed to be used each individual must decide for himself. Very many prefer the Wethersfield large red, from the large size of its growth and the surty of a fair crop. Others, more especially some portions of Massachusetts, prefer the Danvers Yellow, with the claim that it is nearly as prolific as the former, and a good keeper; still others prefer the large yellow, which in size and growth is very much like the large red, while occasionally one prefers the white or silver skin, from its early maturity; but this does not keep as well as any of the other varieties.

This much is certain, that the cultivation of this crop has usually proven very remunerative.

WILLIAM H. YEOMANS.

Columbia, Ct., May 22, 1871.

A Barren Seedling Vine.

"I have a seedling grape vine, five or six years old. This spring it formed grape clusters, as usual, five days earlier than the Concord, Diana, or Hartford Prolific, upon the same ground, and gave every appearance of growing an abundance of fruit. The clusters were full and complete in their formation; yet forty-eight hours after blooming, the stems were entirely bare of fruit appearance, and my fond anticipation for testing the quality of the seedling fruit blasted. The ground underneath the vine was nearly covered with the fallen bloom from the fruit-stems, not a vestige of fruit remaining.

"The vine served me in the same way last year and the year before. I then resolved to spare the vine another year. This year, after the clusters had fully formed, as an experiment, I sprinkled sulphur over three-fourths of the vine, and when in bloom also sprinkled powdered hellebore over one-half of it, two days after the sulphur, in order to distinguish the difference in the results produced by this application. Neither one had any effect towards saving the fruit.

"I cannot perceive any insect upon the vine, and therefore am surprised that no fruit has ever grown upon it. I have several young seedlings growing, and must I expect the same result from them? What shall I do—destroy it?—or is there a remedy? Will you, or some of your intelligent, practical readers, give an explanation through the *Rural New Yorker*.

As some of the readers of the CANADA FARMER are interested in the raising of seedling grape vines, and may have already met with a like experience, or if not, are very likely to do so, we copy the foregoing letter in order that they may understand the nature of this correspondent's difficulty, and may be saved the unnecessary labour and conse-

quent disappointment. In a batch of seedling grape vines it is a very common occurrence that some of them shall be deficient in the organs of reproduction. In some the stamens are imperfectly developed; in others, as probably in the case mentioned in this letter, while the cluster is perfect and the blossoms seem to be abundant, the fruit fails to set, not for want of stamens or well developed anthers and an abundance of pollen, but because there is no pistil, or one too imperfectly developed, to receive the pollen; hence the ovary is never fertilized, and consequently can never develop into a grape.

The annexed sketch will illustrate our meaning:



Fig. 1.

Fig. 2.

a. is the pistil, b.b. are the anthers, and c. is the ovary. Such is their appearance when the organs are perfect. But where the pistil is wanting, or is only rudimentary, as shown in *fig. 2*, there is no fully developed organ to receive the pollen, and when the flowers put on this form there will never be any grapes.

Hence it may be seen at a glance that neither sulphur nor hellebore, nor any other application, can make the vine fruitful. It is all labour lost, and the sooner the vine is rooted out the better, for it will never bear fruit.

Notes on the Principal Roses of 1870.

Mr. Curtis's notes on the new Rosas of 1870 have just reached me. He is a very frequent and very successful exhibitor. Even whilst I have been here he took prizes at Teignmouth, and just previously he did likewise at Clifton when contending with other great rose-growers. Let me add for the benefit of amateurs this extract from his experience:—"I find guano and soot the best fertilisers for roses." And now for his notes:

Abbe Giraudier, H. P. (Raised by Levet). Deep rose colour, somewhat in the way of Madame Charles Wood.

Albion, H. P. (Liabaud). A large, well shaped, bright red rose, but of moderate growth.

Alexander Humboldt, H. P. (Charles Verdier). A free bloomer, of the prevailing crimson colour.

Auguste Neumann, H. P. (Eugene Verdier). Dark rich shaded crimson, with thick petals. Good.

Baron Chaurand, H. P. (Liabaud). Very dark shaded crimson, with stiff Bourbon-like petals and rosette centre. Medium size and strong growth.

Belle Lyonnaise, T. (Levet). Fine shaded yellow, of vigorous, climbing. Gloire de Dijon habit, and, as far as I have seen, having more yellow with less of the buff tint than our invaluable old friend.

Blanche de Meru, H. P. (Charles Verdier). A small blush Rose of medium growth.

Catherine Mermet, T. (Guillot fils). Full size, distinct flesh rose colour, beautiful. The bud well coloured and graceful.

Countess of Oxford, H. P. (Guillot père). Carmine, very large. Rather deeper in colour than Victor Verdier.

Ducher. A good white China.

Edward Morren, H. P. (Granger). Light carmine rose, of fine form and very double; of extra size. Rather uncertain, specimens sometimes occurring truly magnificent. A good grower.

Eliza Boelle, H. P. (Guillot père). Light pearly blush, in the way of Mlle. Bonnaire, but a stronger grower.

Ferdinand de Lesseps, H. P. (Eugene Verdier). Rich shaded crimson. Large and of fine form, of the Madame Victor Verdier type; fragrant and superb. A fine exhibition rose.

General Grant, H. P. (Eugene Verdier). Dark maroon crimson, globular. A strong grower.

Jeanne Guillot, H. P. (Liabaud). Lilac rose, medium size. Not much to recommend it but its strong growth.

Jules Scurre, H. P. (Liabaud). Red, the old colour. No acquisition.

La Motte Sanguine, H. P. (Vigeron). Bright cherry crimson, very large and effective. Rather more massive than Glory of Waltham, of the same shade and colour.

Le Mont Blanc, T. (Ducher). White, tinted yellow, medium size.

Louis Van Houtte, H. P. (Lacharme). Rich shaded crimson maroon, deeply cupped, fine form. In the way of Louis XIV., but a stronger grower, very fragrant. A fine exhibition rose.

Louisa Wood, H. P. (Eugene Verdier). Light vermilion crimson, often very striking in colour, and brighter than Madame Caillat. Of fine form and highly scented; will be found a great acquisition as a pillar rose.

Madame Ducher, T. (Ducher). Pale yellow, pretty. Of medium size.

Madame Dustour, H. P. (Pernet & Co.). Brilliant cherry crimson; of fine half-globular shape, in the way of Victor Verdier. Good, though of medium growth.

Madame Le Francois, H. P. (Oger). Rosy pink. Habit and shape of Chabillant, but not so good.

Madame Levet, T. (Levet). Shaded yellow and buff. Very evidently a seedling from Gloire de Dijon.

Madame Liabaud, H. P. (Gonod). Light pearly or rose blush, nearly white; of beautiful circular shape to its centre. In the way of Virginal, but of rather stronger growth. A decided acquisition. We could wish this gem rather larger for our exhibition stands.

Madame Trifle, T. (Levet). Yellow, shaded salmon and buff; large, of good dark foliage and habit. A Gloire de Dijon seedling.

Mlle. Eugenie Verdier, H. P. (Guillot fils). Beautiful flesh blush, very large and showy. Of somewhat more expanded form than Madame Rothschild, and like Victor Verdier in growth.

Marquis de Castellane, H. P. (Pernet & Co.) Clear brilliant cherry rose colour; very large, striking, and beautiful. Of good habit, and a great acquisition.

Marquise de Mortemart, H. P. Beautiful light flesh blush; of good size and circular outline, but of dwarf growth.

Paul Neron, H. P. (Levet). Full rose colour; immensely large and massive. A very strong grower.

Princess Christian, H. P. (Paul). Fine shaded flesh rose colour. Habit and foliage of Victor Verdier.

Perle Blanche, H. P. (Touvois). White, delicately tinted flesh; globular and massive, style of La Reine. A hard opener.

Reine des Beautés, H. P. (Gonod). Light blush; a very strong grower. The plants have not yet flowered sufficiently to be proved.

Souvenir de Baron Rothschild, H. P. Dark purplish crimson. Not much of an acquisition. A free bloomer.

Susanna Wood, H. P. (Eugene Verdier). Rose colour, of medium growth.

Thomas Methven, H. P. (Eugene Verdier). Brilliant carmine; growth strong.

Thyra Hammerick, H. P. Light flesh rose, large and circular; of medium growth.

Tour Bertrand, T. (Ducher). Yellow, shaded buff and flesh. A seedling from Gloire de Dijon, which it much resembles.

Unique T. (Guillot fils). Flesh, edged and tinted with rose. Peculiar and distinct.

Clemence Raoux, H. P. (Granger). Flesh blush tinted and bordered. Of flat, expanded, massive form. Poor habit.

Those forty varieties were all proved in the Devon Nursery, and the notes record Mr. Curtis's opinions. I will add that I saw several specimens of Mr. Curtis's new Rose "Bessie Johnson." I can attest that it is a large, fragrant, pale pink flower, and of vigorous habit. Mr. Curtis says of it, "It is superior in perfume to most of the full-sized blush roses, with the exception of La France; decidedly superior to Reine Blanche; is distinct, and a very free autumnal bloomer, of the fine habit and growth of Abel Grand." —G., in *Cottage Gardener*.

Manuring Fruit Trees in the Fall.

To the Editor.

SIR,—It is essential in placing manure around fruit trees in the fall to do it on or about the first day of September, as it is about this time that the branches cease to grow in length and form their terminal buds, and the wood-producing forces of the tree are assuming a state of rest. It is now that I believe the fruit buds are developing most rapidly, and if the manure be applied at this time they get the benefit of it during the fall. If the manure be allowed to remain on the surface all winter, which I am sure is advisable in our climate, it will serve to protect the roots in a great measure from severe freezing. Besides, in the spring, if not disturbed, it will cause the frost to come out of the ground beneath it more slowly, and so retard the blossoming of the tree, possibly until the late spring frosts are over, and those chilly north-east winds which often do so much damage to our fruit crops when the trees are in blossom. It is important that it should be well rotted manure, in which is no straw or coarse material which will afford a harbour for mice, else these vermin may make their nests in it and gnaw the bark off the trees. Then if allowed to remain on the surface all summer, so as to form a mulch, it will protect the roots from the extreme heats of summer. Indeed, if the depth be increased by throwing over it a little grass cut from the fence corners or the door yard, it will help very much to keep the roots moist and of a nearly uniform temperature.

SUBSCRIBER.

Brighton, August, 1871.

English Ivy.

The use of English ivies for the purpose of decorating living rooms, is more extensive every year, and cannot be too highly commended. Being very strong, they will live through almost any treatment; but study their peculiarities, and manifest a willingness to gratify them, and they will grow without stint. Most houses are too hot for them, as indeed they are for their owners. Neither plants nor people should have the average temperature over sixty-five degrees Fahrenheit. Take care and not enfeeble your ivies by undue heat or excessive watering, and you will find that they will not seem to mind whether the sun shines on them or not, or in what position or direction you train them. Indeed, so much will they do of themselves to render a room charming, that we would rather have an unlimited number of them to draw upon, than anything else in nature or art. Do you wish the ugly plain doors that shut off your tiny entry from your parlour to be arched or curved, like those in the drawing rooms of your richer neighbour? Buy a couple of brackets, such as lamps for the burning of kerosene are sometimes placed in, and screw them on the sides of the door. Put in each a plant of English ivy, the longer the better; then train the plants over the top, against the sides, indeed any way your fancy dictates. You need not buy the beautiful but costly pots the flower dealer will advise; common glazed ones will answer every purpose, for by placing in each two or three sprays of Coliseum ivy, in a month's time no vestige of the pot itself can be discerned through their thick screen.—*Journal of Horticulture.*

The Importance of Mulching,

A sagacious fruit grower, near New Brunswick, N. J., mulches his place heavily, and never removes it from one year's end to the other. His soil is always cool and mellow, and his trees and vines never suffer from heat; his fruit is large, fair and delicious, and his produce is extraordinary in quantity. For all newly planted trees in the spring of the year, mulching is the only safe guarantee of their success; without mulching many will fail; with it, not one should be lost. The practice is also a saving of labour, and if the mulch is applied two or three inches deep it will keep down all weeds. Mulching can also be used to retard the ripening of fruit from three to ten days. Upon light sandy soil, currants cannot be grown without it. Pears dropping from the trees are safe from bruises. Tomatoes well mulched will double their produce. We scarcely know of a single objection to mulching, and in our experience it has proved to be one of the most economical and efficient aids to fruit culture ever brought to the notice of the public.—*The Horticulturist.*

Dutch Method of Fertilizing Fruit Trees—Fruit at Owen Sound, &c.

To the Editor.

SIR,—As I have never yet seen any notice of the Dutch method of applying liquid manure to fruit trees in any of our agricultural papers, I now send you an account of it, as I think it may be a useful way of watering trees, even when no liquid manure is desirable. An iron-shod stake of about three inches diameter, with a piece of wood nailed on one side to place the foot on, is used to make a circle of holes just under the ends of the branches, about eighteen inches or two feet apart, and from twelve to fifteen inches deep, and the liquid manure poured into them; then the holes are easily filled up again, so that the liquid cannot be evaporated, or the earth baked hard by the heat of the sun. In wet weather the liquid manure is applied alone, but in dry weather an equal quantity of water is mixed with it. This is used about once a week. Two precautions are necessary; first, not to use the liquid manure till the fruit is well set, otherwise the leaves will grow too strong, and rot the fruit, causing it to drop off; and secondly, to discontinue the use of it at the first signs of approaching maturity. I have used this plan on applying liquid manure to vines, and also in watering cabbages, or anything else either in the flower or kitchen garden; but in these cases a common walking stick will answer.

Two years ago I used superphosphate of lime (obtained from a manufacturer in your city) at the rate of 260 lbs. per acre for both oats and barley. One ridge of each was left without any, to show the difference; but, to my great disappointment, difference there was none, either in quantity, quality, or time of ripening. A few yards of one ridge, where the superphosphate was applied much more liberally, was of ranker growth, but later in ripening, than would have followed an application of farm-yard manure. Now, was this result owing to the superphosphate not being suitable to my soil (a stiff clay loam) or to the inferior quality of the article used? At any rate, it was so much money thrown away. Having a lot of bones on hand last year, I procured a couple of tar barrels, and placed most of the bones in one of them, then threw in some salt and plaster mixed, and filled up the barrel with fresh hardwood ashes, and poured on at different times soap suds, urine, and liquid from the manure heap, expecting the bones would become softened. Late last fall I took out the ashes, and found the bones as hard as ever; so I filled up again with fresh ashes, soap suds, &c., &c., and allowed them to remain till the spring, when I found the bones still hard. Now, to what cause may their not becoming soft be attributed? I also threw some bones into another tar barrel sunk in the ground, and used for the reception of liquid manure, but they are not decomposed yet.

About six years ago I planted out a lot of apple and pear trees—both dwarf and standard—procured from a Rochester nursery, which grew well on the whole; but I consider I was very unfairly treated. I directed they should be of such varieties as would be most suitable for this northern climate; but I found some of the dwarf apple trees were Raule's Janet; and on referring to the catalogue of the nurserymen who sent the trees, I found Raule's Janet described as succeeding well in the south, but not adapted to the north. I had no fruit from them till last year, when two of them fruited; they are a small apple, and keep long, but are not worth much when kept. The dwarf pears grew well, but I think I took too much care of them in the way of manure, and neglected to prune them. They produced a great deal of wood, but no fruit for some time. The smallest tree of the lot produced a few large fall pears, three years ago, resembling in size and shape the Flemish Beauty; but as that variety does not succeed on the quince, it must be some other sort. The next year that tree set no fruit, and last year a few pears, but smaller than before. This year it was covered with blossoms, most of which set well; but fearing it might be injured by overbearing, I pinched off a great many, leaving only one, or at most two, on one spur. A neighbour, who has had a longer acquaintance with fruit raising than I can boast of, blamed me for doing so, as he said the wind would thin them off fast enough. You will perhaps say if I am right. Another dwarf tree, which two years ago bore some small pears, large year produced some large ones, which proved to be winter pears, not fit for use till December; but although eight large ones were produced on one branch, others in different parts of the tree were smaller, although not so close together. To what is the great difference in size—at least one-half—attributable? Taking the tree altogether, there were not many on it, the one branch being an exception. I have thinned out these trees considerably, having cut off several large branches, and this year several of them have set fruit for the first time.

One of the trees, of the Passe Colmar variety, was very severely pruned by a neighbour's cow three winters ago; but instead of being killed, as I feared would be the case, it has borne fruit every year since, although the fruit is small and of a poor quality.

The dwarf apple trees did not shed their leaves well in the fall of 1868, many of the leaves remaining on the trees all winter. The next spring the leaves came out very late, and these were small and curly, so that I feared the trees would die out. The next fall they shed their leaves well, and the following spring the leaves came out as fresh and healthy looking as ever. Many of the leaves remained on the trees last winter, and this year they presented a strange appearance—a bunch of strong leaves at the end of every branch, then for eighteen or twenty

inches no leaves at all, farther down leaves enough, and some of them appeared to have more blossoms than leaves. The fruit set well, and they have all fruit more or less on them, some heavily loaded for the first time. How do you account for these seeming vagaries? Two of the Rochester trees were cherries, which grew much faster than the apple trees; in fact, were becoming quite large, when the premature winter of 1869 killed all the branches on one tree, though a strong shoot came out above the graft, which is now growing well. The other tree had the branches on the south side killed, whilst those on the north side are growing well.

A few trees were destroyed by the mice that winter, and several others had the bark split near the ground, and consequently they looked so unpromising last summer that as several had thrown up suckers, I allowed the strongest to remain, and cut off the others; but, to my great surprise, most of them appear to be quite recovered this year, and are bearing fruit for the first time. The split bark of course decayed and fell off, though no new bark has yet been formed, and as they are looking so well I cut off the suckers, as I shall hardly want them now. I may add that although the orchardists in the immediate vicinity of Owen Sound have often sustained severe injuries from late spring frosts, I have never lost a tree from that cause. The soil around Owen Sound is of a sandy nature, and the orchards better sheltered; whilst my orchard is a clay loam, and open to the north and east, sheltered from the south by a belt of second growth young timber, and from the west by higher ground and the forest, besides being open to the Georgian Bay, so that the late spring frosts never affect us much, probably because the sap does not rise so early.

I have tried the Lawton blackberry, but it is worthless, although the Red Antwerp raspberry stands the winter well. I have also tried the Concord vines, which grow well, and require no other protection than to be untied from the trellis in the fall, so that the snow may cover them; but I cannot depend on the grapes always ripening, as in the most favourable season we have had since they began to bear (1868) the grapes were not ripe till the first week in October, although I have a close board fence on the north side of the trellis; so I intend trying the Clinton, as it ripens earlier. The first year the vines fruited I did not allow them to bear much; but since then I have let them alone. They bear very abundantly one year, and very moderately the next; but I have not given them any liquid manure for the last two years, as they seem to grow too rank, and I can hardly restrain them within due bounds. As I would rather not send money out of the country for anything I can get as good and cheap in it, I gave an order nearly two years ago for a lot of dwarf apple and pear trees, and a few of the Orange

quince, from Hamilton. They were set out a year ago; but I avoided what I was told was an error in digging the holes about twenty inches deep, and dug them about nine inches deep, planting each tree on a small mound of surface earth, and banking them well up, taking care not to have them deeper than when they were in the nursery. Nearly all of them came on well. The quinces stood the winter, and this spring were covered with blossoms; but only three have set. Although none of the trees made a vigorous growth last year, yet some of the apple trees, and still more of the pear trees, produced blossoms last spring; but I pinched them nearly all off, only allowing two or three on each tree to remain. Some of the pears have fallen off, and but two—a Seckel and White Doyenne—have any now. Is it a good or bad sign when trees commence bearing so young? I have given them no manure of any kind, only mulching well, both last year and this, with straw. Would you recommend my giving these or the older dwarf trees now bearing either liquid manure or water in the Dutch manner? I am only a tyro in fruit raising, although I have been more than sixty years fruit eating, and I find many useful instructions from more experienced cultivators in the CANADA FARMER. It was by following the instructions given in the two first volumes of the CANADA FARMER that I succeeded so well with my vines, and I hope to obtain many useful hints from the same source yet.

We have had a remarkably severe drought this season, and the hay crop is very light. The fall wheat is good, scarcely any having been winter killed. Spring wheat about average. Potatoes looking very healthy, but suffering from want of rain; as are also beans and corn. Peas short in the straw, but well filled.

No Colorado Potato Beetles have made their way so far north yet. Next year we may look out for them; but if they do come I shall use no Paris Green. I intend on their first appearance to mow off the potato top, cast them out of the field, and burn them; then run the plough along the drills, and cover the potatoes with an inch or two of earth. They will soon sprout again, and although the tubers will be checked in their growth, yet I would rather have a lot of small ones than none at all. Besides, if this plan were universally adopted, the beetles might be starved out, unless they take to feeding on something else. I have received a paper, from Mr. Miller, of Montreal, full of testimonials respecting several carbolic acid preparations; but are these preparations to be fully relied upon?

Whenever our windows are left open in the warm evenings, several species of moths fly into the room, attracted by the light. Though I have hitherto refrained from destroying them, as I do not know friends from foes. Can you tell me if all the night-flying moths ought to be destroyed, or are there any exceptions?

I think I have spun you a sufficient yarn for once; but if I notice anything at any time which may be of use to others, I will not fail to communicate it, as we all ought to be as ready to give as to receive useful information.

SARAWAK.

It will take a long article to reply to all of "Sarawak's" inquiries. His letter is quite long enough for once.

Fruit Near Owen Sound.

To the Editor.

SIR,—The Eumelan grape I received from the Fruit Growers' Association, I am happy to say, is doing well; it had quite a number of blossoms that formed fruit, which I cut off; and the pear, Clap's Favourite, is doing remarkably well, as well as the raspberry and blackberry, which were received from the Fruit Growers' Association last spring. The plum crop is an entire failure in this part of the country. If the fruit buds formed they never blossomed, and consequently there is little or no fruit, a very remarkable thing here; the trees generally bear too much fruit. I have about forty bearing trees, and I don't think there is a quart on the whole of them; still they are looking well and healthy, considering the very dry season, no rain of any account having fallen since May, and the ground is now dry two feet in depth where I have been digging celery trenches. The apple crop looked very promising when in bloom, but a good many got frozen; still there will be, I think, a fair crop, but small, owing to the great drought. Pears seem to bear better this year than usual, especially those that are healthy; but none can come up to the Flemish Beauty that I have seen in vigour and bearing. The slug don't seem to trouble it much; and with all my care there are some varieties that I can scarcely keep the leaves on; worst of all in this respect is the Lawrence, [Winter Nellis next, Louise Bonne de Jersey in the lower limbs, and some other varieties I do not know. It seems to me all those with thin, tender leaves are most attacked. The following varieties as dwarfs I planted: Bartlett, Vicar of Winkfield, Brandywine, Ruffam, Oswego Beurre, Doyenne White, Glout Morceau, Louise Bonne, Beurre Diel, besides a number unknown. I have not less than five of each, and of some others a good many more. Dwarf pears are now no favourites of mine. I have cared for them well, and they have grown well, and I kept them as low as possible by pinching and pruning; yet, notwithstanding when a hard blow comes after a heavy rain, they are apt to be all but rooted out, owing to the small roots of the quince. The Flemish Beauty, as a standard, bore earlier than any of the dwarfs, and bears every year. The following varieties I planted as standards: Washington, Flemish Beauty, Seckel, Beurre Clairgeau, Lawrence, Winter Nellis, Beurre Easter.

The only kinds that I would plant again amongst all of them: 1st, Flemish Beauty; 2nd, Doyenne White; 3rd, Oswego Beurre; 4th, Ruffam. Of the Glout Morceau I am doubtful. Tenderness and blight are the worst enemies. Some of my discarded are marked hardy in some catalogues, yet they will not stand the test here. If there be any others as hardy as Flemish Beauty, I should like to know them. I might mention that I effectually kept the mice off my trees last winter with roofing felt tied around them, the mice being in great numbers owing to the nature of the land, and quite a quantity of stones on it, with crevices in the limestone

rock under the surface. I had formerly tried the mixture of cow dung, lime, soot and brimstone, and it failed. The snow lies deep all winter, and when spring came it was all washed off the trees. As a proof of the felt being effective, I observed two trees on which the felt did not entirely meet at the bottom; they were bark-eaten between the openings of the felt, but nowhere else; and one young tree that was planted to make up for a failure, the earth not being frozen, the roots were entirely eaten, the smaller ends cut through, till the felt stopped their upward progress.

JOHN McLEAN.

Owen Sound, July 22, 1871.

Arsenic for the Canker Worm and Other Leaf-Eating Insects.

In the March number of the *Pomologist* appeared a valuable article on the canker worm. As a preventive of this orchard pest, the information there given is all sufficient; but as this pest is constantly spreading, and making its appearance annually in new localities, no doubt many of your readers will, in the month of May, find it for the first time upon their trees, while many others, familiar with it in years past, will have neglected to use the proper preventive early in the season. For the benefit of such I will give my experience in ridding my trees of the worms.

Some years ago my orchard was nearly destroyed by this worm before I could learn how to protect my trees from its depredations. I at last used the bandage and tar process with perfect success; but in the spring of 1868, in the hurry of other business, I omitted it. The consequence was, my trees soon after putting out were alive with worms. It occurred to me that an application of hellebore or some other poisonous substance thrown over the trees in a liquid form, might check, if not destroy them. I made the experiment on a small scale with hellebore, arsenic and strychnine. A half pound of arsenic and a bottle of strychnine were dissolved in about four gallons of water, in separate vessels, and each applied to ten large trees. I also used two pounds of the crushed hellebore in the same way. In a few days the trees to which the arsenic and hellebore were applied were entirely clear of worms, and putting out new foliage; but the strychnine had no visible effect. As the hellebore and arsenic seemed to be equal in effect, and the former costing fifty cents per pound, and the latter but twenty cents, I determined to dispense with the hellebore on the score of cheapness. And now for my operations on a larger scale.

Take a large iron kettle, holding twenty gallons or more, hang it on a pole in the orchard; to twenty gallons of water add a half pound of arsenic, build a fire under it, stir the water, and by the time it comes to boiling heat the arsenic is dissolved; empty into barrels, or a large cask, and add thirty gallons of clear water to each twenty.

I used a hand force pump or garden engine to sprinkle the trees, the nozzle of which I

hammered flat-wise, so as to cause the water to issue in a fine spray. I screwed the pump to the bottom of a kerosene barrel, and so fixed the handle as to work it like a common pump, the handle resting on the side of the barrel for a fulcrum. This was placed in a two-horse waggon, filled with the arsenic water, and a close fitting lid or cover put on to prevent slopping out. With hose in hand, a steady team and driver, and a man at the pump, I moved slowly along on one side of a row of trees, and then turned on the other side, wetting the trees thoroughly. I found that one application did the work, for every worm was on the sick list within two hours. Within two days I found it difficult to find a single live worm. One gallon of the arsenic water is sufficient for a tree fifteen inches through the top, if properly applied.

It is necessary to be careful about inhaling the steam of the arsenic water when preparing it. Care should also be taken not to get wet with the poisonous water. Have the hose of the pump long enough to reach above the head. The best time to operate is when the largest worms are about two-thirds of an inch in length. At that stage of growth the worms are nearly, if not quite, all hatched out.

I believe that arsenic water prepared in the way I have used it, can be used successfully in destroying all leaf-eating insects, for with one single application to my orchard the canker worm was most effectually exterminated.—*Western Pomologist*.

Concrete Garden Walks.

We have been frequently asked whether there is a cement that will be durable on walks, that will keep the grass from growing through them. There are so many different methods of making concrete or cement walks, that it is a difficult matter to decide which one is the best. The cost of materials that enter into the construction of walks also varies greatly, and that which is the cheapest in one locality may be the most expensive in another. All these circumstances must be taken into consideration whenever reading of or attempting to lay down cheap and durable walks. Where coal tar can be obtained, a good, durable walk can be made by filling in 4 to 6 inches in depth of broken stone and gravel. Make the surface level, and spread on a thin coat of hot coal tar; sift on fine sand or coal ashes; repeat the operation until three or four coats of tar are applied; roll or beat down each coat, and sift on as much sand or gravel as will adhere.

Another method:—Take about equal parts of coal ashes and old slacked lime, (from an old wall will answer); sift into a heap; make a hole in the centre and pour in hot coal tar, and mix as you would mortar. Let the heap remain a few days, or until it begins to stiffen, and then spread it upon the walk-bed 2 to 4 inches thick; roll down and sprinkle the surface with fine sand or gravel. If applied when first mixed, it will stick to the shovels and spades used, and it is quite difficult to handle, but after a few hours it becomes more like mortar.

A cheaper walk can be made as follows:—Take two barrels of freshly slacked lime, and one of good cement, and mix with water, as for mortar. Spread this over a good foundation of broken stone and gravel. As it hardens, roll down smooth.—*Ec*,

Experience in Strawberry Cultivation.

Having been engaged in cultivating the strawberry for market for a few years, perhaps my experience might be of benefit to some of your readers.

In the spring of 1868, about the first of May, I set one acre of strawberries—forty rows of Wilson, and thirty of Agriculturist: rows three feet apart, eighteen inches in the row. The plants all lived; did not lose one in a thousand. As soon as the blossoms appeared, they were all clipped off except two rows, which were left for experiment. The plants in these two rows nearly all died before fall, and the survivors were not more than half the size of those from which the blossoms were cut. The runners were watched and kept cut, and the plants grow very large, so that the leaves touched each other from different hills. The cultivation was mostly done with a common corn-cultivator, with the occasional use of a half mould-board plough, and the hand-hoe around the hill. No weeds were allowed to go to seed; in fact, as soon as the weed could be seen, the cultivator was started. This I consider the secret of success. About the first of December, the field was covered with buckwheat straw. The next spring the straw was parted over each plant, and allowed to remain until after the picking, when it was removed, and the ground cultivated again. The quantity of berries picked was about five thousand quarts—sold at an average of fifteen cents a quart. If the patch had been all Wilsons, there would have been at least a thousand quarts more.

In the year 1869, about the 20th of August, I set an additional half acre of strawberries, mostly Wilsons, in rows three feet apart, and plants one foot in the row. All lived and grew well for a month or two, when the grubs began to destroy them. As soon as this was discovered, boys were sent into the patch every few days with garden trowels to dig up every planted affected, and kill the worms. With the next damp weather, other plants were set to fill the rows. Cultivation same as the last year, except the runners were not trimmed quite as closely, and the earth was drawn more to the plants, occasioned by the plants being too close in the row, not being convenient to pass the hoe between to level down.

The plants were covered with straw in December, same as last year. In the spring, about the first of May, the straw was removed, the patch cultivated, and straw replaced around the plants. This was labour lost, as the patch did not yield as well as the old one, which was not disturbed. The two patches, containing one and one-half acres, yielded, this year, 6,700 quarts; sold at an average of fifteen cents per quart.

From my experience, I feel confident that seven thousand quarts may be raised on an acre of ground, although half that quantity is more than the average crop. I consider hill culture decidedly the best, producing as much fruit, and better quality, at less cost.—*Hone, Farm and Orchard*,

Early Rivers Cherry.

It is now many years since the Early Purple Guigne Cherry was distributed by the Horticultural Society among its Fellows. I have had it more than twenty years, and always noticed with interest its earliness and excellence; but its delicate habit, it being liable to canker and gum, prevented its extensive cultivation. It is but a few years since it occurred to me to improve it by raising seedlings from it, and then again I found difficulty in procuring fruit thoroughly ripe, for the stones from unripe fruit would not vegetate. This is a common thing with early fruits; the pulpy covering ripens, but not the seeds. At last the orchard house came to my aid, and in the hot summer of 1865 some stones from very fine ripe fruit were sown. In 1866 they made plants from 1 to 2 feet high. In that summer their tops were cut off, and their buds placed in some Mahaleb stocks. In 1867 they made a fine growth of some 4 to 5 feet. In the autumn of the same year they were potted; in 1868, in the orchard house, they formed blossom buds; in 1869, Early Rivers bore its first crop; in 1870 and 1871 the tree bore abundantly, and its fruit were as large as those of its parent, a trifle later, but very rich and good, and the tree luxuriant and healthy.

There are other seedling trees of the same race; all have given fine fruit, and one of them is remarkable for its earliness. Early Rivers in 1870 ripened with its parent; in 1871 it was three or four days later.—THOS. RIVERS.

[This very excellent cherry has been very appropriately named. It possesses merits of a high order, and, we feel satisfied, will become one of our most popular varieties. The fruit is produced in large clusters of ten to twelve, two to four on a very short common peduncle. Fruit 9-10ths of an inch in diameter, roundish heart-shaped, and somewhat uneven and "hammered" on the surface, slightly pitted on the apex, and with a distinct style point; suture not well defined. Skin black. Stalk 1½ inch long, rather slender, green, with a small, rather deeply embedded disk. Flesh very tender, sweet, and agreeably flavoured. Stone extremely small, perhaps the smallest in any cherry.]—*Cottage Gardener*.

New and Old Roses Under Trial.

Lately I gave a list of roses under trial. Some have not yet given satisfaction, but I will only speak of successes.

The following I can highly recommend:—1, Perfection de Lyon (Ducher); 2, Madame Chirard (unknown); 3, Edward Morren (Granger); 4, The Duke of Edinburgh (Messrs. Paul); 5, Marquise de Mortemart (Liabaud). The first three are first-rate in every respect. 1 is the finest rose I have seen for many years; 2 is quite fit to go with it; 3 is magnificent, and a great improvement on Jules Margottin; 4 is of a most lovely colour; 5 is not surpassed in delicacy of colour. Its growth, however, is only mo-

derate. 4 is a free grower, but the first three are strong growers, and will long stay in a good catalogue. These are all I can speak of at present.

There are some old roses that deserve a word of praise—Madame Guinoisseau, pale rose; Triomphe de Caen, a velvety crimson purple; General Jacqueminot; Madame Emile Boyau, variable flesh, but often marked like beautiful Madeline. They are moderate growers, abundant and free bloomers, and admirable for hedders. The last two have been overlooked by the "fast coaches." They are beautiful roses.

A few words about Souvenir de Poiteau. The blooms of the true sort are very even and smooth in aspect, the colour is a salmon-rose. I have two plants under this name from another firm, but they are Marie Cirrodde, and their blooms are as rough as those described by Mr. Pochie. I cut down twelve plants of Marie Cirrodde, a fine grower, on account of its rough aspect, and budded them with the Duke of Edinburgh, which, though very beautiful, has as yet been hardly full enough. Eleven plants survived the winter, and are blooming nicely.

The roses are wonderfully fine here, and abundant. Over one thousand people have visited the gardens since Whit-Tuesday. I allow rich and poor to come when they like.

I have overlooked a most beautiful white Bourbon, Margaret Bonnet; it is a good grower, has fine foliage, and wins ladies' hearts.—W. F. RADCLIFFE, in *Cottage Gardener*.

Small Fruits for Market.

We notice that there is a very general complaint that the prices obtained for small fruits in the cities of the United States for the past two or three years, are not sufficient to pay for their cultivation. On this point the *Rural New Yorker* says that there are some kinds that are yet scarce and bring good prices; that while the market is glutted with such sorts as are easily grown by anybody, those that require more skill in cultivation, are scarce, and command good prices. The Black-cap raspberries, for instance, are easily grown, and the market is glutted with them, so that the growers are not able to realize even the most meagre profits, while the red raspberries of choice sorts bring much better prices. Skilful growers are advised to leave the cultivation of the common sorts, and turn their attention to the production of those varieties which require skill, in the belief that fruits of superior size and quality can be made to yield a fair profit. Whether this will be found to be the result or not, can only be ascertained after a fair trial; but the advice given by the *Rural New Yorker* to cover the ground over the roots of the finer varieties of raspberry with an abundant mulch, is too valuable to be lost, and that not only in summer, when the weather is hot and dry, but in winter when cold and frosty. A good thick mulch will often save the plants from injury in winter, and enable them to start in spring with great vigour, and during the summer will keep the roots moist and cool, and make the fruit larger in size, and the crop much more abundant.

Strawberry Culture—"Rows vs. Hills."

On the twentieth of March, a year ago (1870), we set on a piece of light clay soil—which had been previously well prepared by ploughing twelve inches deep (by the way, some would object to this on clay soil) after having given it a good heavy coat of short stable manure—three thousand Wilson's Albany strawberry plants; fifteen hundred we kept in hills, by pulling off the runners every time we hoed them, and the remainder we cultivated by the "matted row" system. We kept both thoroughly hoed and cultivated (*notwithstanding the exceeding dry weather*), until about the middle of November, when we began mulching. Half of them we mulched with straw, one-quarter with coarse stable manure, and one-quarter we did not mulch at all. Now for results: Those kept in hills and mulched with straw were decidedly the largest and finest berries; those kept in rows and mulched with straw, were very fine; those in hills and mulched with manure did not yield more than half as many berries—of an inferior quality—as those mulched with straw; and those that were not mulched at all were hardly worth picking.

We realized more from those kept in rows and mulched with straw, than those in hills, from the fact that this market will not pay the difference between extra large berries and those of a fair quality; but the less expense of cultivation (which was four dollars and seventy-five cents) and the pleasure and satisfaction of marketing good fruit more than paid the difference.

Those kept in hills did not begin to ripen until two or three days after the others, and I am still picking from them; while those in rows and mulched the same are all dried up, vines and all. I will leave it for some of our theoretic minds to theorize.—*Small Fruit Recorder*.

Borders for Cold Graperies.

Dr. Nichols, of the *Boston Journal of Chemistry*, made an analysis of the ash of some cuttings of a Black Hamburg Grapevine, with the following results: Potash, 29 parts in 100; phosphate of lime, 19 parts in 100; carbonate of lime, 13 parts in 100; soda, 3 parts in 100; magnesia, 4 parts in 100; with small quantities of iron, manganese, silicic acid, etc. The fruit evaporated to dryness, and ignited to obtain the ash, gave of—potash, 34 parts in 100; phosphate of lime, 11 parts in 100; carbonate of lime, 9 parts in 100; with small amounts of earthy substances. From these results we find the mineral food, which the vine and its fruit require in the largest quantity, is, first, potash; second phosphoric acid; and, third, lime. For a border of thirty vines, at least a barrel of bone dust and six to eight of ashes, should be used; about three pounds of Epsom salts, (sulphate of magnesia), and five of sal-soda (carbonate of soda), will be required for each barrel. A layer of soil should be placed between each two layers of the bone, ashes, and lime. The layers of ashes should be thicker than of the bone dust.—*The Horticulturist*.

Laura Beverly Grape.

Our exchanges are circulating the following paragraph:—

"The *Ontario Farmers* say: Laura Beverly, a grape produced by one of the Niagara District Vineyardists, is very highly spoken of by Mr. Beadle, Horticultural Editor of THE *GLOBE*. We have not yet fruited it, but on the recommendation just referred to, it has found a place in our garden."

In the *CANADA FARMER*, for Feb. 7, 1869, page 72, we stated that the Laura Beverly, introduced by the Rev. Alex. Dixon, of Port Dalhousie, so very closely resembles the Creveling that good judges of grapes are disposed to believe them to be identical. It is of the same colour, time of ripening, size of fruit, and subject to the same fault of forming straggling and imperfect bunches.

Since that time we have had further opportunity of comparing the Creveling and Laura Beverly growing in near proximity in our own grounds, and are fully convinced that Mr. Dixon was labouring under a mistake when he sent out the Laura Beverly under the supposition that it was an entirely new and distinct variety. Before giving the variety a name, Mr. Dixon exhibited the fruit at one of the meetings of the Fruit Growers Association of Ontario, stating that it was from a vine growing in his garden, and that he believed it must be a chance seedling, having no recollection of planting any vine in that place. The grape was not known at that time to any of the members present. Subsequently the writer saw on exhibition a sample of the Creveling, and, struck with the resemblance in appearance and flavour to Mr. Dixon's grape, obtained a cluster of it, and with it in hand made a visit to Mr. Dixon's garden. Mr. Dixon was not at home, but permission was kindly given to examine the grape vine, and on comparing the straggling bunch of Creveling with the bunches on Mr. Dixon's vine, which were then wellfilled out, and believing also the berries on Mr. Dixon's vine to be somewhat larger, we came to the conclusion that Mr. Dixon's was a larger grape, setting its berries well on the bunch, and though closely resembling the Creveling in flavour, superior to it in these particulars.

The following season, however, on visiting Mr. Dixon's vine, the bunches were found to be very imperfectly set, and the resemblance of this vine, which he had meantime named the Laura Beverly, to the Creveling, was mentioned to Mr. Dixon, and the inquiry started if there were any possibility of the Creveling having been planted by him. His reply was that he had but very recently heard that name applied to any grape, and had certainly never received any of that name, and to this day Mr. Dixon is unable to make out how this vine came into his premises, though himself convinced that it is identical with the Creveling. Here, then is an instance in which a grape vine came to be re-named and re-introduced to the public, without any intention to deceive, through the lack of a wider acquaintance with the varieties already in cultivation.

Whoever may have planted this grape under the name of Laura Beverly, supposing that it is anything different from the Creveling, will be disappointed; but if it has not been already planted under its true name, it will be a welcome addition to the list of early grapes, notwithstanding its defect in not perfecting all its berries.

Poetry.

An English Home.

A tranquil English home, grown old and grey;
Embowered and shadowed by ancestral trees,
Where leafy summer branches stir and sway
With every scented breeze.

Dark cedars piled with foliage thick as moss,
Keep a green twilight through the sultry hours;
And showers of white rose petals drift across
Bright beds of scarlet flowers.

And clear bird-music, tremulously sweet,
Rings through the bosky shades from early dawn
Till even-tide, while busy childish feet
Traverse the level lawn.

And faithfully, the church bells' blessed chime
Repeats the ancient message soft and blest,
Saying, "Look upwards to a fairer clime,
For this is not your rest"

Yet here awhile may human hearts forget
The world's wild tumult and low sordid gain,
Here may the chafing spirit cease to fret
Against its fleshy chain.

The face may wear the old, old smile of youth,
The eyes call back their child light, dewy clear;
Ay—the grave lips may dare to speak in truth
The soul's own language here!

The polished words that hide the inward thought—
The smooth world-platitudes—are cast away;
Here the free spirit talks as Nature taught,
With simple "yea" and "nay."

But still "look upward" chime the solemn bells;
Look upward, even from these cloistered bowers
So beautiful with morning's golden spells,
And evening's dew-soaked flowers.

Above the windy tree-tops, far above
The fair clouds, white as ocean's drifting foam;
Above the tremulous star-gems that ye love—
There is the soul's true home.

Here are the Eden bowers that He hath blest,
The earthly paradise of joys and fears;
There is the city of eternal rest,
A land unstained by tears.

FROM DAWN TO DARK.

I.

Of mornings, when I draw my blind,
And fill the chamber with the sky,
Through welcoming roses comes a wind
I've known for many a year gone by:—
"Up and away!" It seems to say,
The world is full of joy and light
And I'll attend you all the day,
Till night."

II.

Of evenings, when the new moon beams
Above the garden's sycamore-tree,
A bird, awaked from leafy dreams,
Begins its whispered song to me:—
Notes, that like a crystal bell,
Beating in the airy deep,
Seem to say:—"Sleep—'tis well—
Sleep—sleep."

III.

Such are the muses who inspire
The happiest hours existence brings
The wind of morning wakes my lyre,
The bird of evening stills its strings
Brief is the life we have to live,
Soothing our cares on Nature's breast,
With song; and waiting death to give
Us rest.

T. C. IRWIN.

Agricultural Intelligence.

The Royal Agricultural Society's Prize Farm.

The *Gardener's Chronicle* gives the following account of the farm which this year received the distinction of the Royal Agricultural Society's first prize for the best farm in the district in which the show was held:

We have again to report the triumph of the four-course crop rotation—this year pure and simple. The prize farm in the Royal Agricultural Society's Wolverhampton district has been cultivated by its present tenant for more than twenty years upon this principle; and no variation from it, for the safety of the clover crop, has been permitted. There has been no such device as an eighth in peas or beans in order to create a double interval of time between successive clover—hardly anything in the way of a catch crop, such as the management of last year's prize farm sanctioned, in order to vary the rapidly recurring monotony of cultivation under the four-field course of cropping. Wheat, turnips, barley and clover, have been the almost invariable succession; and the land at Sherlowe, the farm which has been this year decorated, looks as if it liked it. The wheat, indeed, is only fair; but the winter had destroyed so much that a great deal had to be re-sown, and it is very creditable to the management that it looks so well. The mangel-wurzels, swedes, and common turnips, are all first-rate. The barley is magnificent. The second growth of clover, with rye-grass among it, is giving a good bite to lambs and yearlings, though the crop of hay from it has not been very good, and a good deal of the second year's growth had been kept on, owing to a difficult seed-time and consequent loss of plant last year. "You will see nothing very remarkable in the cropping," we were told, "but the live stock is undeniably first-rate." The country generally thereabouts is well cropped, and that may account for the judgment given us of this year's produce; for, as regards the half occupied by the barley and the green crops, the land was covered as one rarely sees it on the best of soils at this season of the year; and the quality of the land at Sherlowe is not by any means of the best, although the soil is such as presents no difficulty to the cultivator. The decision of the judges this year, unlike that of last year, has no doubt been materially influenced by the quality and management of the live stock of the farm. A better herd of Herefords, a better flock of Shropshires, one rarely sees. So far as derived from them—the annual meat produce of the land (rather more than 400 acres, of which less than 300 are arable) may be put at 25 to 30 two-and-a-half to three-year-old Herefords, sold at from £30 upwards each, derived from about as many cows, which, with their produce up to this age, make up

the Sherlowe herd; and some 200 fat shearlings, fed up to 15 months, and then fetching 50s. and upwards as mutton—the produce of 150 to 160 capital Shropshire ewes, which, with their lambs, make up the Sherlowe flock—as compact, tidy, and symmetrical a lot of sheep as if they were pure-bred Southdowns. We do not see that these are equal to the consumption of 70 acres of such a green crop as is this year awaiting them—but of any further purchase of stock for winter keeping we have no information. Besides these there is a varying quantity of pork and bacon fed, not bred, upon the farm. The grain produce may be put at 4 to 4½ qrs., or sometimes more, of wheat, over some 70 or 75 acres, and from 44 to 50 bushels—this year certainly more—of barley over a similar extent. This, it must be remembered, is the produce of only second-rate, and for the most part light and easily worked, red land. It is a produce due not merely to natural fertility and good tillage, but to the large purchases of oil-cake and manures which are annually made. Four pairs of horses, with an odd one, accomplish all the work at Sherlowe Farm—easily accomplish it, for everything already is done, and the horses are all at grass. The mangolds and earlier swedes already nearly cover the land; the later swedes are being singled; kohlrabi is a capital plant, all singled; the common turnips are ready for the hoe. Seventy-two acres are thus covered with a most promising plant. All the farm is as clean as possible; we saw no couch nor any weed that we remember, unless the plantain among some imperfect clover-plant be considered one. Some 20 tons of Proctor and Ryland's, and Griffin and Morris's turnip manures, and two tons of nitrate of soda are applied every year; and a large quantity of farm-yard dung from cake-fed beasts is made in stalls and yards. The landlord has done his part as effectually as the tenant. The farmhouse is a mansion, and the buildings are as well equipped and complete a homestead as any one would wish to see. The roads are good, the land is drained, the fences are well kept, the lines of Thorn as clean, and tilled each year as carefully as any other crop upon the farm. Credit is due, we understand, to Mr. Forrester, for much of the present arrangement of the land. It was formerly subdivided with great irregularity—and the larger fields and straighter fences are his handwork. A large field of rough and marshy pasture-land has been lately drained, and is being gradually got into better cultivation, partly by paring and burning, partly by ordinary arable tillage, prior to laying it down again. A large extent of a most promising crop of oats standing on this temporarily broken up land is one of the features of this year's cropping. Sherlowe may be taken, on the whole, as a sample of clean and business-like, comparatively small farm management, where no great difficulties exist, but where, by liberal treatment; the soil has been made to yield much beyond the produce of its natural fertility. We are glad to see, from the extra prizes which they have been able to award, that the judges have had their eye upon the profitable character of the management as the main test of its merit. Mrs. Sankey, who receives one of these extra prizes, farms not far from Sherlowe. We can congratulate her upon magnificent crops of wheat and beans, a flock of useful large-framed Shropshire sheep, and well-kept fences, all of which we saw upon our way. And we can congratulate Mr. Forrester upon a success

achieved apparently by long continuance in well-doing according to the ordinary rules of management proper for light-soil cultivation, upon a moderately-sized farm of mixed arable and pasture-land. A hamlet, with the parish-church, lies at some little distance, on the northern or north-western side of the farm; large and open fields, with occasional woodland, slope southwards from it; and Sherlowe itself, so liberally and handsomely equipped, looks out upon a smiling English landscape, the morning shadow of Wrekin stretching over it, and the distant Welsh hills bounding it upon the west. It is the very ideal of a gentleman farmer's home.

The Game Laws.

Mr. T. G. Coursolles has written the following to the *Ottawa Times*:—

Sir,—As the game laws of Ontario have been again amended during the last session of the Local Legislature—for the third time since Confederation—will you be so kind as to publish, for the benefit of my brother sportsmen and that of the public, the following synopsis of the game laws as they now exist both in Ontario and Quebec:—The prohibition time for the killing of ducks and teal has been extended in Ontario, by the last amendments, to the 15th of September, that is, one month longer than it was by the former law, but my opinion is that it would have been better to fix it at the 1st of September, as is now the case for Quebec. The step made was too long, as formerly the shooting season opened, for ducks, on the 15th of August, which was too early, as many young ducks were not then full-fledged yet.

As for snipes and woodcocks, the shooting is made to open too early, 15th of July, and it might have been deferred with advantage to birds and sportsmen for three weeks or one month longer. I have killed snipes in the latter end of August, last year, which had not attained all their growth, and had not finished to change their first plumage. Woodcocks are earlier, but the 12th or 15th of August would be soon enough for them.

The deer shooting has been extended, in Ontario, from the 1st to the 19th of December, which is quite right; and the shooting of quails is entirely prohibited for three years from the 15th of last February, which, I hope will have a good effect on them, as they were fast disappearing from the Western part of the Province.

1. In Ontario, deer or fawns, elks, moose, or caribos may be hunted, taken or killed between the 1st of September and the 19th of December—34 Vic., ch. 35.

In Quebec, from 1st September to 1st February following—31 Vic., ch. 26.

2. In Ontario, wild turkey, grouse, pheasants and partridges may be killed between the 1st of September and the 1st of January—31 Vic., ch. 12.

In Quebec, between the 1st of September and the 1st of March following.

3. In Ontario, no quail shall be taken or killed for three years from the 15th of Feb-

ruary, 1871, and thereafter they may be from 1st October to 1st January—34 Vic., ch. 35.

In Quebec, from 1st September to 1st of March—31 Vic., ch. 26.

5. In Ontario, black ducks, gray mallards, teal and wood ducks, may be killed from the 16th of September to the 15th of April; other kinds of ducks, wild swans or geese, from the 15th of August to the 1st of May following—34 Vic., ch. 35.

In Quebec, from the 1st of September to the 1st of May for all of them, west of Three Rivers, and from 1st of September to 15th of May following east of that city, except in the lower St. Lawrence, east of "Brandy-Pots," where they may be killed at all times for food—32 Vic., ch. 38.

6. In Ontario, beavers, minks, sables, otters and fishers, may be trapped or killed between the 1st of November and the 1st of March following; muskrats from the 1st of February to the 1st of May; hares between the 1st of September and the 1st of March following—32 Vic., ch. 12, 34 Vic., ch. 35.

In Quebec, wild cats and martens may be killed or trapped between the 1st of November and the 1st of April; skunks from 15th of October to 15th of April; otters from 1st of November to 1st of May; muskrats from 21st of October to 1st of May; hares from 1st of September to 1st of February.

7. No traps or snares are allowed for any of the feathered game above mentioned, nor for any of the protected wild animals, except beavers, muskrats, minks, sables, otters, and fishers, in Ontario, to which hares are added in Quebec; nor the use of poisonous substances, nor spring guns, batteries, night lights, or sunken punts in the hunting of wild geese or ducks.

8. Destruction of eggs and nests is entirely prohibited. Night shooting is also entirely prohibited.

9. Possession of any game is prohibited within the periods during which shooting or killing is not allowed; and sales of animals or game protected are not allowed after fourteen days from the close of the shooting season.

10. In Ontario, offences against the law shall be punished by a fine of from \$2 to \$25 with costs, or by an imprisonment not exceeding thirty days. Any one may prosecute the offender before a justice of the peace, and the fine goes to the informer.

In Quebec, the fine may be from \$1 to \$50, and the imprisonment three months. One single witness is sufficient to procure the conviction of the offender before a justice of the peace, and the whole of the fine goes to the informer.

11. By the 27-28 Vic., ch. 52, insectivorous birds are protected from the 1st of March to the 1st of August, under a penalty of from \$1 to \$10. Eagles, falcons, kingfishers, wild pigeons, rice birds, and crows may be killed at all times.

At the Illinois State Fair, to be held at DuQuoin, two prizes are offered of \$250 and \$150 for steam ploughs and road engines.

The "Point Peter Cheese Company," of the township of Athol, having complied with the statute, has been incorporated.

The crops around Merrickville promise abundance, and farmers have not had such cheering prospects for many years.

An Industrial Exhibition of Manufactures, Arts, and Products, is to be held at Cincinnati during the month extending from Sept. 6th to Oct. 7th.

Hay is selling at \$28 to \$32 per ton in Bangor, Maine. The drouth has caused a very short crop; but at present prices corn is cheaper per pound than such hay. Why don't horse-keepers feed corn and straw?

The local committee of the Provincial Exhibition held a meeting at Kingston on Saturday. It is estimated that it will take \$1,427 to place the Crystal Palace and grounds in proper order. The City Council is expected to furnish this amount.

There is said to be a most abundant harvest in Spain this year, much more so than there has been for some years past. The harvest is so good that it is calculated she will be able to export about fifty or sixty millions of dollars worth of grain.

The grape crop in Missouri is said to be immense. Ripe clusters received by rail are now selling in St. Louis at three cents per pound, and the grapes brought in by vintners in the neighbourhood sell for four and five cents, and retail at six and seven cents per pound, unusually low rates.

The post of U. S. Commissioner of Agriculture, vacant by the resignation of Hon. H. Capron, has been conferred upon Judge Watson of Pennsylvania, who has long taken an active interest in agriculture, and has held the office of President of the State and other agricultural societies. The appointment seems to give general satisfaction.

The first purchases of the new wheat now coming in to Parkhill are of superior quality, and in excellent order. Mr. W. Shoults, our enterprising grain merchant, has already shipped two carloads of the new white of superior quality. The new crops promise to reward the farmers handsomely this year.

The crops of all kinds in the township of Missouri far exceed anything that has been in this township for many years. Fall wheat will average at least 30 bushels per acre; spring wheat, oats, barley, Indian corn, potatoes, &c., will yield a proportionate amount per acre. The fall wheat is mostly harvested and the farmers are now nearly all engaged cutting barley and hay.

Though hay is light in the county of Simcoe it is said to be of excellent quality. The *Barrie Gazette* says the fall wheat may be said to be the heaviest crop garnered for years. One field near the town will turn out forty bushels to the acre. Spring wheat and oats will turn out a light crop; but nearly everything else will be beyond the ordinary yield.

GOOD SEASON FOR MILK.—From conversations with patrons and from accounts in papers in various parts of the North-west, it seems certain that the present season is an excellent one for dairymen as far as yield of milk is concerned. Grass started early in the spring, and the supply has been abundant. Not only has the amount of milk been very large per cow, but it produces proportionately more and better butter and cheese than is usual.

Mr. John Corrie, of Dereham, has just received direct from Stewart and Gloucester, England, three pigs, one boar, and two sows of the improved Berkshire breed, from the sow that took the prize at the Royal Agricultural Society—very fine specimens, 9 months old. He intends to exhibit at the Provincial Fair. This is the second importation he has made within the last 12 months.

The *Kingston News* says the wool season just closed has been one of the best for some years past, both in the additional amount of the clip, the greater proportion of superior quality produced, and the improved condition in which it has been brought into market. A cargo of 25,000 lbs. shipped to Oswego by a buyer last week, averaged an advance price of six cents per pound over that of last year.

The *Richmond Hill Herald* has had several visits from neighbouring farmers who have had the threshing machine at work in order to make room for other crops. One of them reports that from 10 acres of fall wheat he has received 400 bushels; another from five acres, 212 bushels. From what it learns fall wheat will run from 35 to 45 bushels per acre in Markham and Vaughan, with a few exceptions. The barley in most cases is housed and will be a much better crop than anticipated, and the sample very superior.

LARGE CHEESE FACTORY.—The *Wells (Minn.) Atlas* gives a description of the Wells Cheese Factory, which went into operation May 18, 1871. It is claimed this is "the largest and most complete establishment of the kind in the United States." The building is of brick, three stories high, 32 by 82, with a wing 20 feet by 30 feet. It is claimed to have a capacity for working up the milk of 3,000 cows. At the time this description was written the milk of 225 cows was being received, but this number was expected to be largely increased the present season. The superintendent of the factory is Mr. O. S. Martin, formerly of Vermont, lately of the Sycamore, Ill., Factory.

In the section around Galt the *Reporter* is sorry to learn that the apple, pear, plum and other fruit crops will almost be a failure this year. The blossom, which was abundant, set beautifully, and the trees in the spring gave every promise of bearing very heavily, but the continued dry weather that has visited us this summer has ruined our bright prospects, the apples, particularly, being small, full of worms, and not at all numerous.

BUTTER TRADE OF CORK.—A recent mercantile circular from Cork, Ireland, states that place the greatest butter market in the world. During the season just closed, 1870-71, the year's supply was 389,393 firkins, of an estimated value of nearly £1,500,000. The Cork butter market, under its present system of management, was established, it seems, in 1769, 102 years ago. The records show a constant advance in successive decades, in the value of the article, although of course prices fluctuate from year to year. Thus the general average value for the ten years, 1861-71, was 116 shillings per cwt., against 104 shillings in the preceding ten years, and 81 shillings in 1841-51. Indications seem to be that the rise will continue, or at least that any falling off is quite unlikely.

The *Embros Planet* says that Mr. Honeyman has about 300 acres of flax, which looks very promising indeed; it is perhaps the best show of a crop that appears in the west. The superiority of the crop is attributed to the fact that the seed was imported direct from Russia, from a town near St. Petersburg. Mr. Honeyman has five flax pulling machines at work, besides about 100 acres set to pull by hand. The flax business which has hitherto been so discouraging a branch of industry in the village through bad management, is now looking up through the able and business-like conduct of Mr. Honeyman, who will, with his pushing industry and practical ability, make the flax trade conducive to the prosperity of the village.

EFFECTS OF MIXING CREAM.—That the cream of different cows when mixed does not produce butter at the same time, with the same amount of churning, has been nicely illustrated in the family of Mark Hughes, at West Grove, Pa., recently. They had an Alderney heifer in good flow of milk, and an old cow, a stripper; their cream, worked together, it was observed that they did not make butter enough for the bulk of the cream. The buttermilk also looked rich, and seemed to collect a cream upon it. They put the buttermilk in the churn again, after having the butter first to come, and make about five pounds. They churned again for a few minutes, and found from two to three pounds more butter in churn: showing that the heifer's cream had made butter first, and that the cream of the old cow needed several minutes more churning.

STEAM ENGINES FOR COMMON ROADS.—Lord Dunmore, says the *Irish Farmers' Gazette*, has introduced a Bill into the House of Lords to remove the restrictions imposed by the Act of 1865 on the use of steam engines on the common roads, and to revert to the more liberal Act of 1861. It is stated that goods can now be regularly carried by means of Thomson's road steamers at less than half the cost of horses, and both the manufacturing and railway interests of the country (the latter being involved to the extent to which the road steamers could be introduced as feeders) demand at least the removal of such regulations as can be shown to be useless and mischievous. In nearly all parts of the world these steamers are attracting attention, as affording a solution of the main difficulty of conducting an inexpensive traffic.

The Kincardine Reporter is sorry to note that the valuable pineries of Messrs. Dagg & Hewitt, covering about 150 acres, have been destroyed to a large extent by the fire fiend. Many of the trees have been entirely consumed, and the rest of them killed or thrown down, so that what remains must be got out very soon to be of any value to the owners.

Mr. Ruxton, of Farnell, Scotland, has sold his Clydesdale stallion, "Young Richmond," the winner of the Angus Agricultural Association's prize this season, to Messrs. Simon Beattie and W. M. Miller, Pickering, for two hundred guineas. "Young Richmond" will be shipped from Liverpool in a few weeks, along with eight other Clydesdale and Suffolk stallions, one of the Clydesdales being "Blooming Heather," a three-year old colt, purchased from J. Drummond, of Blacklaws, Fife, for one hundred and twenty guineas.

During a short visit to the Niagara district the Hamilton Times found a most bountiful harvest. Wheat will be over an average crop; oats are most abundant; barley good, and very bright sample; corn has improved wonderfully, and will be a fair crop, although on some of the clay soils it has not done so well; peas quite equal to last year; hay crops not so heavy as anticipated, but well saved and cared; potatoes, every prospect of a large yield, no complaints of the Colorado bug having injured them. The working class will feel thankful at the prospect of plenty to eat, at reasonable prices, during the ensuing winter.

Agricultural implement swindlers and their victims still live. The latest is from the Fergus News, which states that Roberts & Meeks, the cutting-box swindlers, made a good haul in that neighbourhood, having obtained notes representing \$750 from five farmers in the five townships adjoining Fergus. The following are the victims: Alexander Carroll, East Garafraxa, \$150; Thomas Cleg-horn, West Garafraxa, \$150; Peter Armstrong, Eramosa, \$150; R. Jack, \$150; Robert Wilson, Nichol, \$150. If the rascals have done anything near as well elsewhere they must be in pretty good circumstances.

The Chatham Banner says Messrs. J. & F. Wixson, of Blenheim, sold some thoroughbred sheep to Mr. D. D. Wallace, of Michigan, last week, at prices which should encourage our farmers to engage in the breeding of good stock. A South Down ram was sold by Messrs. Wixson for \$30; and one pair of ewes of same breed, at \$40. The sheep was shipped for the West on Friday last. In connection with this subject, would it not be well to consider if Michigan farmers find it profitable to come to Canada and pay such prices for improved sheep, whether our own breeders would not find it profitable to devote their attention to the raising of improved stock and stop the breeding of the commoner kinds altogether. If it pays to raise first-class sheep in Michigan, why should second-class be the rule (not the exception) in Canada.

Agricultural Exhibitions for 1871.

CANADA

QUEBEC PROVINCE	Sept. 12-16
FRUIT GROWERS' ASSOCIATION	Sept. 15
Goderich (Horticultural)	Sept. 15
OXFORD EAST	Sept. 19
HUDON (NORTH)	Sept. 19-21
Brookfield and Edzabethtown	Sept. 19-20
Unionville	Sept. 19-20
Elizabethtown	Sept. 19-20
Toronto	Sept. 19-21
BRENSVILLE SOUTH	Sept. 19-21
Prenton	Sept. 20
Ronaldson	Sept. 20
ONTARIO SOUTH	Sept. 20-21
Whitby	Sept. 20-21
OTTAWA	Sept. 20-22
Ottawa	Sept. 20-22
East Zorra	Sept. 21
Tavistock	Sept. 21
HERON (SOUTH)	Sept. 21-22
Seaforth	Sept. 21-22
OXFORD (SOUTH)	Sept. 21-22
Ingersoll	Sept. 21-22
WELLINGTON CENTRE	Sept. 21-22
Elora	Sept. 21-22
Cheese Fair	Sept. 21-22
Ingersoll	Sept. 21-22
Farmersville	Sept. 21-22
Farmersville	Sept. 21-22
Woolford	Sept. 22
Easton's Corners	Sept. 22
Blandford	Sept. 22
Plattville	Sept. 22
Nottawasaga	Sept. 22
Duntroon	Sept. 22
Vespra	Sept. 22
Midhurst	Sept. 22
Darlington	Sept. 22-23
Bowmanville	Sept. 22-23
Newboro	Sept. 23
Newboro	Sept. 23
PROVINCIAL	Sept. 23-25
Kingston	Sept. 23-25
Gifford	Sept. 26
WESTERN UNION	Sept. 26-29
London	Sept. 26-29
McNab	Sept. 27
Balmer's Island	Sept. 27
Muskoka	Sept. 27
Bracebridge	Sept. 27
Scott	Sept. 27
Sandford	Sept. 27
Tweed	Sept. 27
Tweed	Sept. 27
WELLINGTON, N.	Sept. 29
Huriston	Sept. 29
Kimlos	Sept. 29
Lucknow	Sept. 29
Proton	Sept. 29
Ronaldsay	Sept. 29
Saltfleet & Binbrook	Sept. 29
Stoney Creek	Sept. 29
Sydenham	Sept. 29
Daneden	Sept. 29
Southwold and Dunwich	Sept. 29
Iona	Sept. 29
Wellesley	Sept. 29
Crosshill	Sept. 29
Posanquet (Union)	Sept. 29
Forest	Sept. 29
Crosby	Oct. 2
Phillipsville	Oct. 2
Peel	Oct. 2
Glenallan	Oct. 2
SMOON NORTH	Oct. 2-3
Barrie	Oct. 2-3
Stephen & Osborne	Oct. 2-3
Exeter	Oct. 2-3
Ancaster	Oct. 3
Ancaster	Oct. 3
Bothwell	Oct. 3
Thamesville	Oct. 3
Eramosa	Oct. 3
Centre Inn	Oct. 3
RENFREW (SOUTH)	Oct. 3
Beaufrew	Oct. 3
East Wawanosh	Oct. 3
St Helens	Oct. 3
Elderslie	Oct. 3
Paisley	Oct. 3
Logan	Oct. 3
Barnholme	Oct. 3
Luther	Oct. 3
Luther	Oct. 3
Mornington	Oct. 3
Milverton	Oct. 3
Mono	Oct. 3
Orangeville	Oct. 3
Raleigh	Oct. 3
Dealtown	Oct. 3
Wallace and Elma	Oct. 3
Listowell	Oct. 3
Thurlow	Oct. 3
St. Vincent	Oct. 3
St. Vincent	Oct. 3
BRANT (NORTH)	Oct. 3-4
Paris	Oct. 3-4
PERTH (SOUTH)	Oct. 3-4
St. Mary's	Oct. 3-4
WATERLOO (SOUTH)	Oct. 3-4
Galt	Oct. 3-4
ONTARIO, NORTH	Oct. 3-4
Uxbridge	Oct. 3-4
YORK, NORTH	Oct. 3-4
Newmarket	Oct. 3-4
MIDDLESEX, NORTH	Oct. 3-4
Allsa Craig	Oct. 3-4
GREY, NORTH	Oct. 4
Owen Sound	Oct. 4
PRINCE EDWARD	Oct. 4
Pictou	Oct. 4
Adelaide	Oct. 4
Adelaide	Oct. 4
Ashford	Oct. 4
Duncannon	Oct. 4
Amaranth	Oct. 4
Whittington	Oct. 4
Lambton	Oct. 4
Sarnia	Oct. 4
Elma	Oct. 4
Newry	Oct. 4
Howick	Oct. 4
Gorrie	Oct. 4
Turnley	Oct. 4
Wingham	Oct. 4
Tyendinaga	Oct. 4
Shannonville	Oct. 4
Cardwell	Oct. 4-6
Mono Mills	Oct. 4-6
Dereham	Oct. 4-5
Tilsonburgh	Oct. 4-5

CENTRAL FAIR	Hamilton	Oct. 4-6
Arthur	Arthur	Oct. 5
Colborne	Smith's Hill	Oct. 5
Howard	Ridgetown	Oct. 6
Mara	Atherly	Oct. 6
Morris	Blyth	Oct. 6
Huntingdon	Huntingdon	Oct. 6
RENFREW, NORTH	Beachburg	Oct. 6
BRANT (SOUTH)	Brantford	Oct. 6
KENT	Chatham	Oct. 6
LANARK NORTH		Oct. 6
YORK (EAST)	Markham	Oct. 6
PERTH (NORTH)	Stratford	Oct. 6
WATERLOO NORTH	Waterloo	Oct. 6
HASTINGS, WEST	Bellefleur	Oct. 6
ADDINGTON	Newburgh	Oct. 6
MIDDLESEX, WEST	Strathroy	Oct. 6
NIAGARA	Niagara	Oct. 6
HASTINGS, EAST	Roslin	Oct. 6
Euphrasia	Dyer's Corners	Oct. 6
Hay	Zurich	Oct. 6
West Zorra	Embro	Oct. 6
Garafraxa East	Wardsville	Oct. 6
GREY, SOUTH	Durham	Oct. 6
VICTORIA, SOUTH	Lindsay	Oct. 6
North Norwich	Norwichville	Oct. 6
Garafraxa West	Douglas	Oct. 6
Bertie	Ridgeway	Oct. 6
Murray	Murray	Oct. 6
Stamford	Drummondville	Oct. 6
Brook	Sunderland	Oct. 6
Barton & Glanford	Glanford	Oct. 6
Euphrasia & Dawn	Florence	Oct. 6
Harwich	Blenheim	Oct. 6
Hilbert	Staffa	Oct. 6
Thorold	Port Robinson	Oct. 6
Whitchurch	Stouffville	Oct. 6
Hamilton Towns'p.	Baltimore	Oct. 6
Collingwood		Oct. 6
OXFORD (NORTH)	Woodstock	Oct. 6
HALDIMAND		Oct. 6
WELLINGTON GEN.	Guelph	Oct. 6
DURHAM and Hope	Port Hope	Oct. 6
HASTINGS, NORTH	Luke's Hunting'n	Oct. 6
Blanshard	Kirkton	Oct. 6
Haldimand Towns'p.	Centreton	Oct. 6
Derby	Kilsyth	Oct. 6
South Monaghan	Centreville	Oct. 6
Fullarton	Fullarton	Oct. 6
Tilbury East	Valets	Oct. 6
Caridoc	Mount Brydges	Oct. 6
West Williams	Parkhill	Oct. 6
Esquesing	Georgetown	Oct. 6
Otemabee	Keene	Oct. 6
WELLAND	Welland	Oct. 6-14
PETERBORO' WEST	Peterboro'	Oct. 13-14
Camden	Clark's Mills	Oct. 14
HALTON	Milton	Oct. 14-17
Grimsbey	Smithville	Oct. 17
Erin	Erin	Oct. 17
Beverly	Rockton	Oct. 17
YORK WEST	Woodbridge	Oct. 17-18
NORTHUMBERLAND		
(WEST)	Cobourg	Oct. 17-18
LENOX AND AD-DINGTON	Napanee	Oct. 17-18
MONCK	Wellandport	Oct. 17-18
Dungannon	L'Amable	Oct. 18

UNITED STATES.

NEW ENGLAND	Lowell	Sept. 5-5
AM. POMOLOGICAL	Richmond, Va.	Sept. 6-9
CINCINNATI INDUS-TRIAL	Cincinnati	Sept. 6-Oct. 7
OHIO (NORTHERN)	Cleveland	Sept. 12-13
BUFFALO INDUS-TRIAL	Buffalo	Sept. 18-Oct. 10.
SWINE EXHIBITION	Chicago	Sept. 19-21.
OHIO (CENTRAL)	Mechanicsburgh	Sept. 19-21.
MICHIGAN STATE	Kalamazoo	Sept. 19-22.
WISCONSIN	Milwaukee	Sept. 25-29.
NEW YORK	Albany	Oct. 2-6
MICHIGAN (CENT)	Lansing	Oct. 3-5.

Miscellaneous.

History of a Canadian Farm.

NO. III.

CHOPPING AND CLEARING.

During the first winter we chopped 60 acres—15 acres on each of the lots. I knew, you see, that I had the means in the rear, although the others did not, and therefore was made fearless. In the spring the amount of wages I owed began to look large, and one of my men, a troublesome fellow and a great talker, used to hold forth on all occasions on all sorts of subjects, pecuniary and otherwise. He was, in fact, a perfect bush lawyer. Before he emigrated to Canada, he had been, when at home, half porter, half clerk, in a lawyer's office in the north of Ireland, and had come to Canada determined to have a farm and family of his own.

This man I soon saw would cause me some trouble, so I at once stopped his mouth, and enlisted his interest in mine by making him foreman of the rest, and at the same time promising him some small advance of wages. Nevertheless the mischief, such as it was, was done, and as it was manifestly necessary for the protection of so much of the men's wages as was then due that the clearing should be completed and crop sown, and as it would take at least one year's work to put it in, and another portion to harvest it, the men all began to think their bargain was good enough if all went well and they could get the crop secured to pay them. But they also felt they were tied to me until the crop came off, and the natural independence of mankind did not altogether relish this, so they delegated the foreman to require some further agreement or security.

The foreman had of course to come to me and say what he was told; but, with characteristic shrewdness, he also went a little further, and proposed that as the men wanted security of some sort, I should regularly make over the crop to them, they on their part to agree to log the land, put the crop in, and take it off. All this was done. But my foreman, when it came to signing, declined to enter into the agreement with them, he preferring to continue as he was. He thus cut adrift from the delegateship and assumed the foreman, and afterwards I had no trouble; the men were obliged to work, or they would not make make their pay secure, and they had no one thank for the more stringent terms but themselves.

All went well, and in the following fall I had 60 acres of Soules wheat thoroughly well and early put in. After that I felt that "man proposes and God disposes." I had done all I could, and the season and Providence must do the remainder.

When the wheat was all sown my men did not know exactly how to act. On the one

hand, if they left me, and concluded to work elsewhere, their interest might not be so well looked after; and if they concluded to remain, they must naturally make a fresh bargain for more work, as they could not remain and be idle.

This was the point my lawyer-foreman had looked forward to as his chance. They all knew him, and had confidence in him. The crops looked so well, and as every now and then I seemed to have plenty of money, and always paid cash where I promised and could not avoid, my credit was good, and the men felt more than half inclined to go in for another job. My foreman at once solved the difficulty, and settled the matter by offering to take a job himself from me, to clear up 60 acres more land and put in the crop, to put up potash works, and generally drive the job through—looking to the crop for one-half the pay, if I could meet the other half in cash.

I at once threw off the mask of poverty to him, and agreed to do so, stating where my money was, and all about it. I now felt confident of success, and sink or swim, determined to persevere in Canadian farming. The only man, however, I told of my means was my foreman, and he for obvious reasons kept the knowledge of it to himself, and urged me to tell no one else. He quaintly remarked that he thought he could spend all the cash it was good for me to pay out, and that I could pay him as the work advanced, and he would still keep my secret. He was a very clever, intelligent man. I continued to do this until after harvest, paying the foreman as he required money.

HARVESTING THE FIRST CROP.

When we had once got the 60 acres of wheat in the barn, a crop which good judges had averaged at 33 bushels to the acre, I felt perfectly safe for the future. Wheat was worth \$1 a bushel, and the crop netted me a gross proceed for sale \$1,500. I had seeded down with grass seed as we sowed the wheat. This course my foreman advised, and the following year I had thus again 60 acres of wheat and about eight acres of oats and peas, all sown on new land, and 60 acres of splendid grass for meadow and hay. I paid up all my men, and stood fair, thanks to Providence that he had blessed my first crop with so bountiful a return, and feeling deep commiseration for those who under adverse circumstances had put in their 10 acres of wheat in hope and fear, only to find that at harvest, owing to late sowing, poor seed, or some other difficulties, their crop was not one-half as much a yield per acre as mine. Few people can realize the painful anxiety of the immigrant who, on new land and in debt, watches for the crop to grow, which shall reduce him to poverty or raise him to comparative affluence; and the first crop does this. That is the turning point. If that crop is good, success for the future on that land is almost certain; whereas, if that fails, the debt and trouble it will entail will require years of success to pay the deficiency unless there is real capital behind.

NO. IV.

FIRST STOCK.

Having now a considerable quantity of land well seeded down, I determined to buy ten cows and a second horse. I had hitherto done what work I required with one old

mare, who now had a colt to her side, and also one of a year old. I therefore purchased another under the same conditions. I felt it more prudent to have young horses growing up round me than to be hereafter buying teams. These two mares would, I felt sure, fully supply me with teams in future, if well taken care of. About May I purchased ten cows of the best sort I could get. I chose grade Devons. They were hardy; and as it happened I met with a farmer near Guelph who had previously kept a well-bred Devon bull; the stock in his neighbourhood were thereby vastly improved, and from his stock I purchased my future dairy of cows. My cows were well-bred and hardy, not large by any means; nor did I desire to have heavy animals, as I knew that for one or two years, or until I had my second sixty acres of grass ready, my necessities would require that they should live a part of each summer in the woods. When I once had 60 acres of wheat, 60 acres of grass, and 60 acres of meadow, by following the same course I had commenced, I felt assured of ultimate success.

Up to that time my stock of hogs were poor enough. I had bought some of the best that were to be had, and had were the best. Tall, gaunt, slab-sided animals they were, with high arched backs and long legs and snout, with hair along the spine of nearly six inches in length, more like wild pigs they were than any I had seen. I knew such hogs would cost more than they were worth to fatten; but there was no help for it. Moreover, they were regular carnivorous animals, and it was harrowing to see the way one of the old sows would gobble up young chickens one after another; and when the old mother, driven desperate, would fly at the brutes to rescue her little ones, she would seize her in her mouth, and setting her foot on the unfortunate hen, would rip and tear her to pieces in a moment, and eat her before my eyes. I am sure no baby or small child would have been safe where such a sow could have got at them. After my trial with these, and feeling the absolute necessity of some amendment, I sent to one of the importers of Berkshire hogs, who advertised some for sale, and bought a pair (not brother and sister) of this most valuable breed. I gave \$20 for them; they were about half grown or less, and although I thought it a great deal to pay at that time, I have been quite satisfied since that they were the cheapest by far in the end, even had they cost \$100 instead of \$20. Ever afterwards I had a splendid stock of hogs, and have the same breed to this day, only crossed somewhat, of course, to prevent breeding in and in.

I well knew from former experience that the milk from each cow would raise two hogs, if they were provided with plenty of clover pasture; and the sale of the one, after the stubbles were picked clean, would fully purchase the food to fatten the other.

When I came get to stock management, and out of the direct line of bush farming, clearing land, and logging and burning. I felt quite at home, as all the details were familiar to me from early experience in Scotland. My wife, with the assistance of my youngest boy, took charge of all the small stock, thus leaving me free to attend to the larger but by no means more serious concerns of the farm.

The next year my lawyer foreman had a splendid crop of wheat, which took a great rise in price about that time, and having it all by him unsold, he realized somewhat over one dollar and forty cents per bushel, and at once took another contract. I had for some time past suspected the reason for his extreme industry. Our eldest girl, although young, was the attraction, and eventually he married her and bought a farm in the neighbourhood; so she was not, therefore, far removed from her mother.

A FIGHT BETWEEN A HUGE WOLF AND DOG.

About this time my daughter had a great fright from a wolf. There were still some of these gentry about, and one old he wolf followed her home to within half a mile of the farm-yard gate. She had that evening quite imprudently undertaken to walk the intervening space between their own farm and mine, and carry an infant not more than a month old. It was winter time, the snow lying thick on the ground, and about 5 o'clock in the evening, and consequently getting dark. The baby was restless, cold and crying, and the young mother was walking quickly along the sleigh track, when an immense wolf sprang out of the thick hemlock bush, within a few yards of where she stood. She started, but providentially avoided running away. In fact, mother-like, when her young was endangered, she turned round and faced the monster. We always supposed the crying of the child first attracted the wolf towards the spot, just as the bleating of a sheep or bellowing of a calf are well known to do. They stood looking at each other for some moments, she fearing to run; and the wolf, somewhat daunted by being faced, snarled, and showed his great yellow fangs and teeth, and kept trying to get round behind her, but she turned as he went round, and faced him always. If she walked towards our home, he at once tried to lessen the distance between them, evidently with intent to spring on her from behind. If she stopped, he also did so, but gaining confidence, kept getting closer and closer, as if preparing for a final leap. She was terribly alarmed for her first-born baby boy, but never entirely lost heart or nerve. Highland lassies have these by nature. Some girls would have fainted; and she was only seventeen or thereabouts, and at that time quite weak from recent illness after her confinement. Whilst thinking what she should do, she at once recollected a peculiar ivory whistle she generally carried, and which she happened to have in her pocket. With this she trusted to be able to make some one hear, and, as the weather was perfectly still, did not doubt doing so if there was any one within a mile who would come to her rescue. The whistle was constructed by a North-west hunter to recall hunting dogs in the woods. The sound it made was more like a scream than a whistle. She had always been

accustomed to call her husband with it when at a distance; and her hope was, that being in the neighbourhood, he might hear her now; or her splendid dog "Nero" might hear her, and she would know he would come any distance at the call. The wolf meantime had gradually decreased the distance, attracted by the meaning of the child, who had become quite restless. The brute now attempted to turn my daughter's flank and get partially behind her, but she still faced him fearlessly for her babe's sake, and putting the whistle to her lips, blew a shrill blast that made the still woods echo again and again. The wolf started back at the sound, and half determined to pass again into the woods. Pleas'd with the result she hurried on, but the wolf again followed, and a few leaps brought him close to her. Again she blew the scream, but now the wolf cared no more for the sound than she did, and once more came quite close up and prepared to leap on her, snarling all the while. He evidently would have been quite satisfied with the baby, whom she was now trying to suckle and quiet, and in doing so she was compelled to give less attention to the wolf and more to the child, consequently the vicious brute grew more determined and fearless. Just when she felt her last hour was come, and the cold perspiration of fear began to break out on her, as she felt her senses reeling and her knees knocking together, the welcome sound of galloping feet tearing along the sleigh track greeted her ears, and a magnificent mastiff dog came bounding up. The dog was the gift of her husband's friend, who had come to see them the year before, and who had left the dog for the protection and companionship of my daughter in his absence. He had a large brass collar on his neck, with spikes two inches long, for his protection against wolves. The dog had travelled from the North-west—Hudson's Bay Company's possessions—accompanied by his former master, who had been in their employment. Now, however, that he lived in the city, he did not know what to do with such a monster. With spasmodic effort my daughter called to "Nero" to come to her; and when he saw the wolf, two bounds only were wanted to enable him to knock him over on his back. The wolf snarled dreadfully, the sound of his teeth could be distinctly heard on the spikes, but "Nero" in a moment had him by the throat, and he never was known to let go unless told in a peculiar manner to do so. This had been his education when living in a country where wolves were plentiful. His former master used to defend his breast and shoulders with a light set of chain links; for although such encounters were very rare, many dogs were killed by wolves where he had formerly resided. Now, however, there was no chance for the wolf; "Nero" had him by the throat, and in a few minutes the brute was dead. "Nero" had some ugly bites, but was not seriously hurt. My daughter did not stay to see the fight ended, but ran home at her utmost speed. I met her on the way, and after carrying her to the house, returned to "Nero" and the wolf. There the great long-legged, gaunt brute lay dead, with some terrible marks of "Nero's" teeth in his throat. I dragged him home and skinned him. He weighed 90 lbs., and was dreadfully thin, having no atom of food whatever in his stomach. You may be sure "Nero" was petted and made much of after that; and you may also be sure my daughter never went out alone at night again whilst wolves were in that part of the country. I have the skin to this day of that wolf, and any one who sees it expresses great surprise at the immense size.

C.

The Barometer.

In taking our estimate of a farmer's rank and proficiency, we generally turn to his implements, the state of which is one of the many criterions of good farming. We seldom see a good farmer with bad implements, and not often do we find bad farmers with good implements. Now, there are implements other than ploughs, harrows, &c. &c. The workshop should be full of implements, the garden should be full of fruit, and in the house there should always be a good barometer.

How often do we hear farmers, of course too, who will protest that a barometer is no good, and that they never saw one upon which reliance could be placed. They can mistake the principles which regulate the rise and fall of a column of mercury. Expansions and contractions are governed by natural laws, which, under the guidance of an over-ruling and Omnipotent Creator, are in their very nature immutable.

Doubtless there are many of our readers who understand the effects of changes of the temperature and density of the atmosphere upon the mercury in the thermometer and barometer, but without doubt there are many who have never given the least attention to the subject. For the benefit of the latter we would as plainly and concisely as possible explain the principles which govern the barometer a test of weather to come.

The atmosphere is a gaseous envelope encircling the earth, and it forms the ocean of air at the bottom of which we live. When a gas is subject to an increase of pressure its volume becomes less, and when the pressure is withdrawn, the gas immediately expands again, and becomes of the same volume as before the pressure was increased. We have not space to enter here upon the chemical causes, but we need only state that the pressure upon this our atmosphere becomes greater when the temperature is high, and in this state the air is capable of being saturated with and retaining a maximum amount of aqueous vapour. When this air, saturated with aqueous vapour, comes in contact with air of a cooler temperature, it becomes incapable of holding it any longer, and this vapour congealing, falls in the shape of rain, snow or hail, according to the coldness of the air through which it passes before reaching the surface of the earth.

It has thus been established as a fact that before falling weather the pressure upon the lower atmosphere becomes less, and before fine weather the pressure becomes greater. Now, a barometer in its simplest form is only a tube of a certain standard, proportionate height and size, filled with mercury, closed at the top, open at the bottom, and placed upright in an open vessel filled with the same metal. When this is done, the mercury in the tube, at a certain standard state and temperature of the air, sinks to a certain point. It is sustained at this point

by the pressure of the atmosphere upon the mercury in the vessel. When this pressure becomes greater or before fine weather, the mercury in the column is pressed upwards into the vacuum above, and is said to rise when the pressure becomes less, or before alling weather the mercury in the tube falls.

Now, in noticing the action of a barometer, the *rapidity* with which it rises or falls should be observed. If it falls rapidly in fine weather, the rain-fall is near, and if slowly, it is probably far off, and *vice versa* if during weather it rises rapidly or slowly, or will the clearing weather be near at hand so not.

Before a thunder-storm the barometer sometimes gives us no indication, because the pressure of the atmosphere having been so great the barometer has risen high, and that pressure is in these cases not relieved until the storm is actually upon us. But frequently storms are indicated by a sudden or rapid fall of the mercury.

To make use of a barometer, let a slate be hung near it, and let some member of the family who is frequently in the house note its height at different times, and record the height and hour upon the slate; we can thus judge of the time which is likely to elapse before the predicted change of weather will occur. By a careful observation of a well tested barometer, we cannot perhaps predict in time the advent of thunder-storms in "catchy" weather; but we may generally so far judge of a steady change of weather as to regulate the amount of hay we should cut at a time, when we should cock such hay, or whether to cap our grain "stooks."

C. E. W.

Notes of a Naturalist.

The swallows of Canada, with the exception of the bank swallow, differ specifically from those of Europe. None, of course, stop during the cold months. They make their appearance and exeunt with marked expedition. The chimney swallow (*H. Americana*) is essentially rural, preferring scattered settlements to towns. The house martin (*Cotyle bicolor*) and the small black swift (*H. pelagica*) have points in common with their transatlantic brethren, to wit the house martin and black swift; but of all this kind none is more attractive than the large purple swallow (*Progne purpurea*). This welcome harbinger of spring is held up by the Canadians as the first certain indication of the budding leaf, when frosty nights still retard vegetable growth. The purple swallow is one of the most powerful of its tribe, and will attack rapacious and all other birds that happen to intrude on its haunts. For the latter reason it is encouraged about houses, and swallow cotes are built, where it breeds year by year—indeed, there is an impression that the same individuals repair to certain cotes annually. I have seen hawks and carrion crows compelled to flee before the audacious attacks of this bird. It is a lively scene to witness swallow after swallow shooting upwards from its cote and darting wildly at the intruder, which, on finding himself assailed at all points, decamps with speed, pursued by the harsh screams of the swallows. Then, when he is fairly beaten beyond the confines of the town, the pur-

suers are observed returning to their cotes, which are usually placed on poles attached to the gables of barns or outhouses. The cold nights towards the end of August cause the broods and old birds to assemble in flocks, when the first frosty night before the 5th of September sends them all southward, to Mexico and the States.

In the depths of the New Brunswick forest, among the haunts of the moose, cariboo, stag, and bear, where the lumberers' camp is the only indication of civilisation, there, at all seasons, assemble flocks of the white-winged crossbill, as docile and familiar in habits as robin redbreast. It crowds in flocks on the refuse-heap, picking among the debris, and is said to show a marked predilection for salt fish, which seems somewhat strange in the regimen of the genus, and even the order, it belongs to. It also rears its young in mid-winter, when the thermometer often ranges 30 degrees below zero of Fahrenheit. The same course is pursued by the moose bird, or Canada jay, which is also a winter companion to the lumberer, becoming so tame that it often eats out of his hand.

The southerly migrations of birds are completed in this portion of the continent by the end of November. The last batch of robins has disappeared, and now the forests seem almost deserted; the stillness is remarkable, and we listen in vain for the joyous notes of such welcome summer residents as the song sparrow, or the piping call of the Pennsylvanian finch, or the flute note of the hermit thrush. However, the brave little black-headed titmouse, uttering its well-known *icee-dee-dee*, is seen flitting among the evergreen and bare boughs during the severest cold, when the thermometer stands at 30 deg. below zero, the white and red-bellied nut-hatches bearing him company. It is then the great horned owl, and four others of its congeners, may be seen sweeping past in the gaps of the forest after squirrels and other rodents, and the carrion crows assemble about the settlements on the outlook for carcasses of cattle and such like.

As soon as the leaf has fallen, from the north come flocks of that handsome bullfinch the pine grosbeak (*Pinicola canadensis*) to feed on the elder-tree berries. This bird delights also in the forest solitudes, where its chirp is often the only sound that breaks the stillness around. When feeding it is easily approached, and often caught by a hair noose slipped over the head. The cold of the central part of the province is evidently too trying for even its sturdy frame, for seldom are they seen after January; perhaps they push further southwards, or towards the less rigorous climates on the Atlantic coast. A sure sign of the coming winter is the appearance of the snow bunting (*Fringilla nivalis*) and its European ally the redpole, both common to the boreal regions of the old and new worlds. The plumage of the former is only somewhat paler in mid-

winter, and more downy, to enable them to withstand the cold. Often after a heavy fall of snow I have seen the latter so tame that it only sufficed to throw a few cinders on the snow, when flocks repaired to the spot, and might be caught almost with the hand. There is then a hard struggle for existence with many of the feathered tribes. Sometimes the migratory thrushes and the earliest visitors in spring, such as the snow bird (*Junco hyemalis*), arrive before the last snow has fallen. Then a heavy fall in April renders the little creatures perfectly helpless, and hundreds die of cold and starvation.

The stillness of the forests in February is remarkable; the pines and spruces, with their boughs overburdened with snow, look like the scenery of some Christmas pantomime, whilst the leafless limbs of the maples and hardwood trees stand out in ghastly relief against the background. I often roam in snow-shoes down the lumber roads and pathways, through the dense clustering trunks of the primeval forest, and—excepting the broad footprints of hares, an occasional track of a red fox (*V. fulvus*), ermine, weasel, or red squirrel—there is nothing animate to be observed in these wild woods.

There can be no doubt that, although the snow is the cause of the declination of the boughs of certain coniferous trees, there is at the same time a contraction taking place in the fibres of the bark and wood on the lower surface. This is proven by relieving the branch of its snow, when it will be found to return only partially to the horizontal. The long and rigorous winter of these latitudes does most assuredly tend to bring about a more decided bending of the branches of the spruces in particular, as compared with allied species under less trying circumstances. There can be no question, therefore, that, besides the mere mechanical pressure, cold has an influence in producing the graceful downward swoop to the boughs of many of these trees, as observed in this and the northern forests of Europe and Asia. Many of the wild quadrupeds of Canada are entirely dependent in winter on the pine tree family for subsistence—for example, the hare, birch partridge (*Bonasia umbellus*), and the spruce or Canada grouse (*Tetrao canadensis*). It is well known that the flavour of their flesh becomes so tainted by their pine food as to be scarcely palatable, more especially the latter, which is not eatable after November, and even in summer partakes strongly of their food.—*The Field*.

Scales of Temperature.

Many of our readers, in their search after information on beet root sugar, and other questions which are treated of in works published on the continent of Europe, will find the temperature therein stated at so much "Centigrade" or "Cent." This of course means the Centigrade scale of temperature; and as our English ideas are mainly founded on Fahrenheit scale (in which we have been educated), it is often very troublesome and disappointing not to be able at once to tell what so many degrees "Cent." means according to our usual scale "Fahr."

To meet this difficulty we have constructed the following table, a reference to which will at once give the enquirer the information

wanted by a casual glance. The following are the rules on which the table has been constructed :

To convert Centigrade to Fahrenheit—Multiply the number of degrees Centigrade by nine (9), divide the product by five (5), add 32 to the product, and you have the answer in Fahrenheit scale thus :

100 Cent.—Multiply by 9.

9

5)-900 Divide by 5.

180

32 Then add 32.

212 Answer—i. e., the heat of boiling water by Fahrenheit scale.

To bring Fahrenheit to Centigrade, reverse this calculation.

Fahrenheit commences at 0, which is the temperature of snow and common salt mixed.

He makes water just freezing 32°, and boiling water at the level of the ocean, or with a barometrical pressure of 30 inches, 212°.

The Centigrade scale starts from the temperature of freezing water, which it makes 0; it then considers water when boiling at the level of the ocean (or when the Barometer stands at 30 inches) 100; and the intermediate scale is divided into 100 parts or degrees; thus when the temperature is below freezing, the Centigrade scale has so many degrees "minus" attached to it. "Reaumer's" scale, also extensively used on the continent of Europe, and often referred to in books, is nearly one-fifth less than Centigrade. This Reaumer scale also commences with freezing water, as 0, and makes boiling water at the level of the ocean (or 30 inches Barometer) 80°; so that by the table here given, if you have a heat given by Reaumer, all you have to do is to add a fourth to it (which is the same as deducting a fifth), this brings it to Centigrade, and you can then refer to the table for the corresponding degree Fahrenheit. Thus :

80 Reaumer is boiling water.
Add $\frac{1}{4}$...20

100 Makes Centigrade; then look for 100 Cent., and you find 212° Fahrenheit.

These are all well-known facts; but the public, who are the chief readers of newspapers, have not scientific works always at hand to refer to, and this table may save a good deal of searching and trouble, besides placing the matter in a plain and easy point of view to those who may not have particularly studied the subject.

As both the Centigrade and Reaumer's scale start from freezing as 0, and the one makes boiling water 100° and the other 80° the added one-fourth or deducted one-fifth, will not be mathematically correct in the low numbers, but the above calculation is near enough for all ordinary and practical purposes.

TABLE OF TEMPERATURE—"CENTIGRADE" REDUCED TO "FAHRENHEIT" SCALE.

Cent. Fahr't.	Cent.	Fahr't.	Cent.	Fahr't.	
0	32	36	96.4	72	161.3
1	33.4	37	98.3	73	163.2
2	35.3	38	100.2	74	165.1
3	37.2	39	102.1	75	167
4	39.1	40	104	76	168.4
5	41	41	105.4	77	170.3
6	42.4	42	107.3	78	172.2
7	44.3	43	109.2	79	174.1
8	46.2	44	111.1	80	176
9	48.1	45	113	81	177.4
10	50	46	114.4	82	179.3
11	51.4	47	116.3	83	181.2
12	52.3	48	118.2	84	183.1
13	55.2	49	120.1	86	185
14	57.1	50	122	86	187.4
15	59	51	123.4	87	189.3
16	60.4	52	125.3	88	191.2
17	62.3	53	127.2	89	193.1
18	64.2	54	129.1	90	194
19	66.1	55	131	91	195.4
20	68	56	132.4	92	197.3
21	69.4	57	134.3	93	199.2
22	71.3	58	136.2	94	201.1
23	73.2	59	138.1	95	203
24	75.1	60	140	96	204.4
25	77	61	141.4	97	206.3
26	78.4	62	143.3	98	208.2
27	80.3	63	145.2	99	210.1
28	82.2	64	147.1	100	212
29	84.1	65	149	101	213.4
30	86	66	150.4	102	215.3
31	87.4	67	152.3	103	217.2
32	89.3	68	154.2	104	219.1
33	91.2	69	156.1	105	221
34	93.1	70	158	106	222.4
35	95	71	159.4	107	224.3
				108	226.2
				109	228.1
				110	230

DRESSING MUTTON.—Everybody, says *The World*, knows that the oil which lubricates wool is disagreeable to both taste and smell. In slitting and taking off the pelt, it is difficult to prevent a contact of the wool with the flesh along the lines where the skin is first severed, preparatory to being stripped off. The accomplished butcher cannot wholly prevent this contact, and he therefore very thoroughly scrubs the parts exposed with saleratus, dissolved in cold water, which wholly removes the disagreeable odour and flavour. The farmers, for a long time, were not aware of the necessity of such purgation, which should be applied at once, as soon as the pelt, by the greatest activity, can be removed. This done, the meat is as free from the taint of wool-oil as the meat of any other animal.

Advertisements.

THE CENTRAL EXHIBITION OF Stock, Agricultural Products, Manufactures, &c., &c.,

Will be held in Guelph on the 10th, 11th and 12th of October, 1871. \$5000 are offered for premiums. Prize list can be had from the Secretary.

v3 8 21. GEO. MURTON, Sec. C. E.

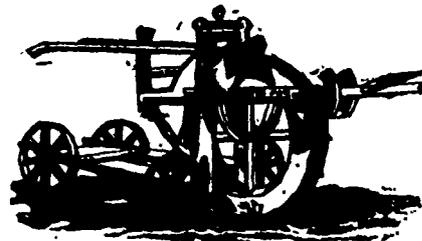
THOROUGH-BRED SHORT HORNS BULLS, COWS & HEIFERS,

Also several AYRSHIRES and some splendid CROSSES and GRADES for sale at Kingswood Stock Farm, near Beachville, Canada West.

The Station of the Great Western Railway at Beachville adjoins the farm. ADDRESS,

GEORGE GREIG,

3.8-21. Beachville P.O., Canada West.



WE BEG TO NOTIFY INTENDING PURCHASERS OF CARTER'S DITCHING MACHINE

That the following are the only parties authorized by us to manufacture the said machine in Ontario, from whom certificates and other information as to the working of the machine can be obtained:—

- John Abell, Woodbridge P.O., County of York.
- Eyer & Broe., Richmond Hill P.O., County of York.
- I. D. Sawyer & Co., Hamilton.
- John Watson, Ayr P.O., County of Waterloo.
- McPherson, Glasgow & Co., Fingal P.O., County of Elgin.
- Do., do., Clinton P.O., County of Huron.

CARTER & STEWART, Proprietors,

v3-8-31. Aylmer P.O., Elgin Co., Ont.

VINEGAR—how made—of Cider, Wine or Sorgo, in 10 hours. F. SAGE, Cromwell, Conn.

v3-8-31.

PARTNER WANTED—In an old established Seed and Florist business; or will sell either the Seed Store or Greenhouses, as the business together is too large for one to manage. Situated in a flourishing town of 150,000 inhabitants in the States. For particulars, address—W.M. GRINTON, Dentist, Hamilton, Ont. v3-8-11.

NATIONAL SWINE EXPOSITION,

TO BE HELD AT CHICAGO, - ILLINOIS, SEPTEMBER 19th, 20th, & 21st, 1871,

Under the auspices of the Illinois Swine Breeders' Association.

Competition open to all the World.

120 Class Premiums from \$15.00 to \$100.00 Each.

ALSO 12 Grand Sweepstakes Prizes, Ranging from \$100 to \$1000.

Send for Premium Lists with Rules and Regulations. CHARLES SNOAD, Secretary.

v3-8-21. Joliet, Ills.

BREAKFAST. EPPS'S COCOA.

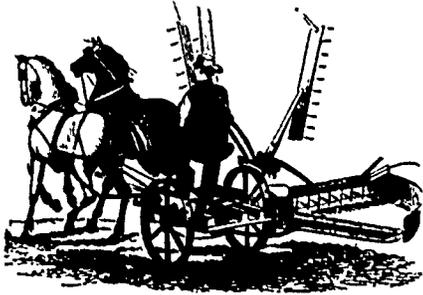
GRATEFUL AND COMFORTING.

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

JAMES EPPS & Co.,

Homoeopathic Chemists, London.

v2-11-18



THE JOSEPH HALL MACHINE WORKS

OSHAWA, Ont.

ESTABLISHED 1851.

THE JOSEPH HALL
MANUFACTURING CO.,Y,
PROPRIETORS.

WE DESIRE TO CALL ATTENTION TO OUR

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

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

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

It has no gears on the Driving Wheels,

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

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

Any one or all of the arms of the Reel can be made to act as Rakes at the option of the Driver, by a Lever readily op-

erated by his foot. The cutting apparatus is in front of the Machine, and therefore whether Reaping or Mowing the entire work of the Machine is under the eye of the Driver while guiding his team. The Table is so constructed as to **gather the grain into a Bundle before it leaves the Table, and deposits it in a more compact form than any other Reel Rake.**

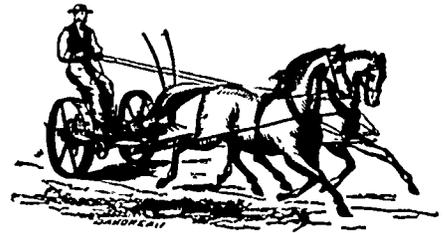
The Table is attached to the Machine both in front and rear of the Driving Wheel, which enables it to pass over rough ground with much greater ease and less injury to the Table. The Grain Wheel Axle is on a line with the axle of the drive wheel, which enables it to turn the corners readily.

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

BABBIT METAL.

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

Johnson's Self-Raking Reaper, impro-



ved for 1871, with two knives, smooth and sickle edge, and malleable guards.

Wood's Patent Self-Raking Reaper.

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

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

Ohio combined Hand Raking Reaper and Mower.

Cayuga Chief Jr., Mower.

Buckeye Mower No. 1.

Buckeye Mower No. 2.

Ball's Ohio Mower No. 1.

Ohio, Jr., Mower.

Taylor's Sulky Horse Rake.

Farmers' Favourite Grain Drill.

Champion Hay Tedder.

AND OUR CELEBRATED

HALL

Thresher and Separator,

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

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

A NEW AND COMPLETE
ILLUSTRATED CATALOGUE

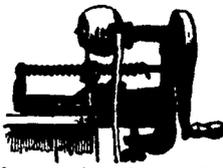
OF ALL OUR MACHINES

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

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

For further information, address

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

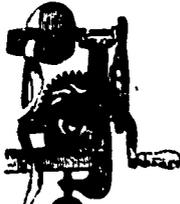


The Best, Cheapest, and only Combined Apple Parer and Slicer ever made. It is the only machine that does its work all at once. Five turns of the crank pare and slice an apple. It is a perfect model of simplicity, durability, and compactness. Every family who owns an orchard should have it! Every house-keeper needs it! For preparing fruit for drying or family use, it cannot be surpassed.

What the Press says of it.

"It is the very best for apple cures I ever saw, and worthy of universal adoption."—Harvard Gazette. "It is a most excellent machine."—Rural New Yorker. "It does the work a hundred per cent. better and nicer than the most careful human hand."—Rock Island, Ill., Argus. "We place it in the first rank, and it should be found in every house where the fruit itself is found."—Davenport, Ia., Democrat.

Retail Price at Factory, \$2.



The Union Apple Parer is a machine simply for paring, and is so constructed that the knife moves half way round and returns, and pares an apple going each way. It throws the parings clear from the machine. The gears are all connected directly with each other dispensing with the connecting rod, which has always been liable to work loose. It is the best in the market for hard, soft, and bruised apples.

Retail Price at Factory, \$1.

If you cannot find these machines in town, ask your merchant to send for them.

MANUFACTURED BY

D. H. WHITTEMORE, Worcester, Mass.

v3-S-11.

WINDSOR NURSERIES,

WINDSOR, ONTARIO.

The stock suitable for Fall planting is large and well grown, comprising all the best varieties of Fruit Trees, both standard and dwarf, Grape Vines, Small Fruits, &c. Particular attention is called to the extra fine stock of Dwarf Pears from 2 to 6 years old, principally three years extra (none but the best varieties suitable for the quince stock grown). As Pears succeed best when planted early in Fall, orders should be sent previous to 1st October, if convenient.

Catalogues sent free; also, The Canadian Fruit Culturist, giving lists of all the best fruits and how to plant them, free by mail for 25 cents.

HYACINTHS & TULIPS

From the Subscriber's splendid and unrivalled collection of the finest named varieties, suitable for garden or pot culture, will be sent free by mail at the following rates:

Hyacinths, blooming bulbs, assorted, but without the names, \$1 doz.; \$5 per 100.

Tulips, blooming bulbs, assorted, but without the names, 50c doz.; \$3 per 100.

Smaller bulbs at half the above prices. When sent by name, double the above rates will be charged.

GRATIS PREMIUMS.

Cash orders for Fruit Trees amounting to \$10 will receive a premium of one dozen each of assorted Tulips and Hyacinths, and for every \$10 more, one dozen each additional.

An order for \$50 will receive 100 blooming bulbs each of Hyacinths and Tulips, or double that number of smaller roots.

The bulbs will be sent free by mail on receipt of the orders, and the trees at proper time for lifting. Persons preferring to order trees in Spring can have the same privilege now by remitting the cash value of the bulbs, which will be deducted from spring orders.

JAMES DOUGALL,

Windsor, 6th Sept., 1871.

v3-S-11.

TREES.

FRUIT AND ORNAMENTAL For AUTUMN of 1871.

We invite the attention of Planters and Dealers to our large and complete stock of Standard and Dwarf Fruit Trees.

Grape Vines and Small Fruit.

Ornamental Trees, Shrubs and Plants.

New and Rare Fruit and Ornamental Trees.

Bulbous Flower Roots.

Descriptive and Illustrated priced Catalogues sent prepaid on receipt of Stamps, as follows:

No. 1—Fruits, 10c. No. 2—Ornamental Trees 10c.

No. 3—Green-house, 10c. No. 4—Wholesale, FREE.

No. 5—Bulbs, FREE. Address,

ELLWANGER & BARRY,

Established 1810. ROCHESTER, N. Y.

2-S-21.

Markets.

Toronto Markets.

"CANADA FARMER" Office, Sept. 20th, 1871.

FLOUR AND MEAL.

The market has been much more active under increased offerings and firmer prices, which we quote as follows:—

Flour—Superfine, \$5 35 to \$5 40; Spring Wheat, extra, \$5 50; Fancy, \$5 60; Extra, \$5 70 to \$5 75; Superior Extra, \$6 00 to \$6 25.

Oatmeal—\$4 50.

Cornmeal—\$3 25 to \$3 40.

Bran, in car lots, \$14 to \$15.

GRAIN.

Wheat—Softies, \$1 27 to \$1 30; Treadwell, \$1 25 to \$1 25; Spring, \$1 18 to \$1 19, Do Midge Proof, \$1 15 to \$1 16.

Barley—No. 1, 65c; No. 2, 50c to 60c.

Oats—36c to 37c.

Rye—65c.

Rye—60c to 62c.

HAY AND STRAW.

Hay, in fair supply, at \$13 to \$18.

Straw, scarce, at \$10 to \$14.

PROVISIONS.

Beef, by the side, 6c to 7c.

Mutton, by the carcass, 6c to 7c.

Apples, per brl., \$1 to \$2 00.

Potatoes—New, per bag, 70c to 80c.

Poultry—Turkeys, \$1; Chickens, per pair, 45c to 45c; Ducks, per pair, 50c to 60c.

Pork—Mess, \$16 to \$16 50.

Bacon—Cumberland Cut, \$1 2c to 9c, Canada, 8c to \$1 3c.

Hams—Salted, 10c to 11c; Smoked, 12c.

Lard—10 1/2c to 11 1/2c.

Butter—Dairy, 15c to 16 1/2c.

Eggs—Packed, 12 1/2c.

Cheese—8c to 11c; Reesor's Stilton, 18c; Royal, 17c.

Dried Apples—7c to 7 1/2c.

Salt—Goderich, \$1 50, Liverpool, per bag, 75c to 76c.

Live Hogs—\$4 to \$5.

THE CATTLE MARKET.

Beves (live weight) \$2 75 to \$4 50 per cwt.

Sheep—\$3 00 to \$5 00.

Calves—\$3 to \$8.

Lambs—\$2 to \$3.

HIDES AND SKINS.

Hides—From 7c to \$1 2c.

Sheepskins—80c.

Calfskins—12c.

Wool—27c to 30c.

PROVINCIAL MARKETS.

Montreal, Flour Receipts 5,071 brls. Market quiet and rates generally unchanged. Wheat, quiet; a cargo lot of No. 2 western was taken at \$1 25. Peas, in moderate request, at full rate. Butter, steady at quotations. Pork, nominally unchanged. Ashes, pots firm; Pearls nominal.

Hamilton, Sept. 19.—Wheat, Deibl, \$1 26 to \$1 27; Softies, \$1 24 to \$1 25; Treadwell, \$1 21 to \$1 22; Winter Red, \$1 15 to \$1 16; Amber, \$1 15 to \$1 16; Spring, \$1 16 to \$1 18. Barley, 58c to 59c. Corn, 45c to 70c. Rye, \$0 00. Buckwheat, 85c to 95c. Oats, 37c to 38c. Peas, 58c to 60c. Flour, Superfine Extra, barrel, \$7 to \$7 50; Extra, \$5 50 to \$7; Superfine No. 1, \$6 to \$6 40; do. No. 2, \$5 50 to \$6; fine, \$5 to \$5 50. Oatmeal, \$3 to \$3 25. Cornmeal, \$4 75 to \$5 Bran, 80 to 90c. Shorts, fine, \$1 25; coarse, \$1 10 to \$1 20. Butter, rolls, 22c to 25c; do. tub, 15c to 16c. Eggs 13c to 15c. Cheese, 9 1/2c to 15c. Potatoes, 85c to \$1. Honey, 25c. Apples, per bag, 50c to 75c, dried do, per bush., \$1 25. Wood—Canada fleeces, 40c to 40c; superfine pulled, 35c to 35c; combing, pulled, 32c to 35c. Hides and Skins—Green, No. 1, inspected, \$8 50; do. No. 2, \$7 50; Calfskins, green, 10c; do. dry, 15c to 20c; lambskins, 30c to 60c; pelts, 30c to 40c.

London, Sept. 19.—Spring wheat, \$1 10 to \$1 15; Red Fall do, \$1 12 to \$1 14, white do, \$1 16 to \$1 22. Barley, 45c to 55c. Corn, 7c to 80c. Rye, 55c to 65c. Oats, 35c to 40c. Peas, 50c to 60c. Clover Seed, \$4 50 to \$5 25. Timothy Seed, \$4 to \$4 75. Butter, 14c to 15c. Eggs, 10c to 11c. Potatoes, 35c to 40c. Hides—green, 8c to 8c; do. dry, 12c to 14c. Calfskins, green, 10c to 12c; do., dry, 14c to 15c. Sheepskins, 25c to 40c. Wool, 35c to 40c.

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