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THE CANADA FARMER

VOL. I. No. 5.

TORONTO, CANADA, MAY 15, 1869.

NEW SERIES.

The Field.

Sowing Grain and Grass.

The advantages of the practice of drilling in seed grain, over broadcast sowing, are becoming more manifest each year, and were grain drills made less costly and cumbersome, but few farmers would be content to be without one. Experience has shown that if grain can be planted and covered at a depth of from one to two inches, not only is much less seed required per acre, but each kernel being covered at a uniform depth, the plants all come up so nearly together that they are equal in strength and powers of development, and the crop will consequently be more even in quality, and contain much fewer abortive heads, or heads of small grains, than if the crop had been sown broadcast, and covered in with the harrow, which naturally buries some seeds altogether too deep, while it leaves others almost on the surface. To enable a grain drill to be used at all, the land must be in a good state of cultivation, and this of itself is one reason why the crop grown is more certain of succeeding; for if the soil be not well pulverized, much of the seed cannot be covered by the drill, and therefore it could not be used.

Most farmers who use grain drills confine their usefulness mainly to the sowing of winter wheat, for which they are more especially made and adapted; but we think it would be well to try drilling in some of the spring grain crops, where the machine in use can be made practicable for that purpose. We should like to know of experiments being made in drilling in peas, barley, spring wheat, or even oats, to show whether enough is gained hereby to compensate for the extra cost and loss of time. Mr. Mechi states that he obtained 48 bushels of wheat per acre from a seeding of one peck, dibbled in, and the crop afterwards cultivated by hand hoeing; but he does not advocate thin seeding except on very rich soil, and then only with those

cereals that have a natural tendency to tiller out, and form large stools of stalks from a single root.

But drilling also has its disadvantages, not the least of which is that most of the grain drills now in use are only practically adapted to the sowing of one kind of grain to advantage. Again, the process is rather a slow one, which may be a matter of small moment in getting in fall wheat, for which purpose they are most generally constructed and used. But, in our short and uncertain period of spring work, it becomes important to get the land sown quickly and at the right time, as a difference of even a day or two in getting in barley or spring wheat may make a material difference in the yield of the crop; and while two or three hands can be employed in sowing the grain broadcast, the teams can be at work covering it in, thus getting in a much greater breadth in a day than could be done with the use of a grain drill, as at present constructed.

Our implement makers have generally adopted English models in constructing grain drills, rather than set their invention to work to make one that will be of lighter draught and cover a greater breadth of land at a time, while at the same time it could by some simple mechanism be adapted to various grains, and be less expensive than those made after English models.

Broadcast sowing by machinery has been tried in the States, and there "Cahoon's Broadcast Seed Sower," a machine of very simple and cheap construction, adapted for both grain and grass seeds, is much used, and enables the voriest tyro in farming matters to get in his crops of grain with expeditious precision. Such a machine, or one on the same principle, might be got up by our Canadian implement makers very profitably, as it can be used on all soils and under any circumstances, suiting the quantity sown to the requirements of the crop.

In sowing broadcast, so much allowance must be made for seed that, being left uncovered by the harrow, or being so lightly covered as to be washed out by the first rain,

is eaten by birds, fails altogether to grow, or comes up so much later than the rest of the crop that is properly covered as to be overshadowed and left behind in growth by the stronger plants that have got the start of it, that we think those who give a liberal seeding will be most certain to have a fair crop in favourable seasons.

In sowing grass seed it is well to be liberal, especially with clover. A difference of a few pounds of seed per acre often makes a difference of one half in the yield of the crop. Our own experience is that everything is gained and nothing lost in being liberal with grass seed, or, in fact, seed of any kind sown broadcast. We believe one bushel of clover seed per acre is not too much to sow to ensure a good stand, and we have known of two bushels being sown on rich land that was wanted to produce a crop of clover the same year and a heavy yield the next, no other crop, of course, being allowed to grow and choke out the clover the season of sowing.

In sowing broadcast by hand, we have always been able to calculate with tolerable exactness the proportions of seed required to sow a given breadth, by measuring the land both ways in yards, multiplying the length by the breadth in yards, which will give the number of square yards, and dividing the number of pounds of seed required to be sown by the square yards in the plot, which will give the exact proportion of seed required to cover each square yard of surface. The larger the amount of seed needed to the acre, the greater the proportion will be to the yard; and if the lands are ploughed each of an equal breadth, it is easy to calculate how to spread the whole amount of seed equally, by giving the necessary amount to each land, and a trial on one land breadth will show how heavy or light the cast should be to cover each with the exact proportion of seed. When permanent pasture is designed, it is well to get as many varieties of grasses as can be obtained to mix together, and also conform more to the English practice of sowing at least 40 to 50 lbs of seed per acre, which will be sure to result in a much heavier yield of feed for stock.

Potato Grafting.

A Scotch gardener, some years ago, informed Richard Boddy, shoemaker, of Caterick, of a method of raising new varieties of potatoes by grafting two distinct kinds together, and the said Richard Boddy told me he had successfully tried the system. He likewise told several other persons his secret. I was very doubtful about the method succeeding, but determined to try the experiment, as I had heard other persons had produced hybrids in this way. That year I grafted twelve sets, taking twenty-four potatoes. I made the following notes:— No. 1, an Ash-top Kidney, grafted into a Forty-fold. No. 2, an Ash-top grafted into a Lapstone, and so on up to No. 12. When I lifted them, I made the following note, stating what was produced—from No. 1, kidneys and rounds; No. 2, round, mottled and kidneys, as the case might be. I forwarded these notes to the Rev. W. F. Radclyffe, who, I believe, handed them over to Mr. Fenn, of Woodstock.

I raised in that year from these twelve grafted sets more varieties than I knew what to do with. I picked out from amongst the lot a few handsome, smooth-looking tubers for further trial; some I gave away, and the remainder went to the pigs. One of these hybrids, which I had picked out for trial, proved to be extra good in quality and flavour. I propagated it, and when I had a small stock of seed I sent some to my esteemed friend, the Rev. W. F. Radclyffe. The remainder of the seed was lost by frost. I had foolishly placed the seed tubers in a flower-pot, and stowed it away in an out-house under some tiles, where the frost spoiled them. The breed was, however, fortunately preserved by Mr. Radclyffe, who named it Taylor's Yorkshire Hybrid. Thomas Almond had been grafting potatoes about the same time as myself, and he raised a good variety, which was sent by me to Mr. Radclyffe, and after being proved good and tried another season, was named by Mr. Radclyffe the Yorkshire Hero. About two years ago Mr. Almond had many applications for seed of the Hero, in consequence of the excellent character given to it by Mr. Radclyffe in the gardening periodicals. Mr. Almond then, as at present, had only a limited quantity of seed, and I find from a book which he has shown me, that a long list of gentlemen, too numerous to mention here, were supplied with seed in the spring of 1866.

With regard to potato grafting as a means of raising new varieties, there is an amount of certainty about this method of crossing two distinct potatoes which there is not in raising new varieties from seed. If it is wished to combine flavour with earliness, it can be done by cutting out all the eyes from an Ash-top Kidney and grafting into it an eye or two from the Lapstone Kidney, which is allowed to be of superior flavour. The

Yorkshire Hero was obtained by grafting these together. The process may be pursued with other varieties. It is quite essential to remove entirely all the eyes very cleanly from one of the two sorts to be grafted. Unless this be done the operation cannot succeed.

The following is my mode of operation: Take any two sound potatoes of different varieties whose good qualities you wish to retain. Cut out all the eyes of one of them entirely with a common pocket-knife, then cut a piece out of this potato in the form of a wedge or of any other shape, and substitute for the bit so removed a piece having a good eye or two, nicely sprouted, about half an inch long, then tie firmly together with a piece of bast matting or string, having first run a couple of ladies' hair-pins clean through both potatoes. These hair-pins will prevent the tie from slipping off the potatoes, as well as assist in holding both parts together. The fit must be a good one, and the bark or rinds of each must meet, as in any other mode of grafting. The operation must be performed quickly, and the grafted set must be planted as soon as possible, as the sap would dry up if exposed for any length of time to the air. I have my trench opened and manured ready to receive the grafted tubers, and they are placed therein and covered up level with soil as quickly as I can get them ready. As some of the grafts may fail, it is best to graft at least a dozen or more sets, which will produce round ones and kidneys from the same root. Pink-eyed and mottled ones, purples and reds, are also produced of various shapes and sizes. Some are early, some late, some large, and some small. All the produce, both large and small, must be kept in bags and planted out the following year, for until they have been planted it cannot be told whether the varieties are early or late. The early ones can easily be discovered by the early decay of the foliage. These should be marked with a stick. The produce of each, or such of them as look promising by their shape and general appearance, should be put into separate bags or boxes, and numbered in the usual way. I have illustrated my process with kidneys, but rounds may be grafted with kidneys, or kidneys with rounds, or rounds with rounds, but I find the greatest number of varieties are produced from a kidney and a round, or a round with a kidney.

As many of your readers may have some doubts about potato grafting, and may possibly fail in their attempts, let it be perfectly understood that not every one can graft potatoes successfully. The operation should be performed by a person who thoroughly understands grafting fruit trees. Then there is a chance of success. Early in April is the best time.

Mr. Almond tells me that during his grafting experiments he once grafted two red potatoes together, of distinct varieties, and never was so much astonished at anything in his life, for when the produce from

this set was taken up, the whole lot consisted of white round potatoes. If any of your dubious readers had seen this, they would probably have believed in the grafting system.—Taylor, in the *Gardener's Chronicle*.

Hybridization of the Potato.

There are very few old country farmers who have not in their time seen seedling potatoes, that is, potatoes raised from the seed balls which grow on some sorts of that vegetable. Many old countrymen, when the potato disease set in, about twenty years ago, made growing from seed a specialty, and since the success of the late, Mr. Goodrich in that department, our cousins on the other side of the lakes have gone heavily into the business. Hence the Early Rose and all the other advertised sorts, with which the continent is now all but flooded. But raising seedling potatoes is a long and tiresome business. Many thousand plants may be grown before one good root is produced (or rather one of a better sort than those we already have), and when produced several years are lost in proving its quality and several more in producing it in sufficient quantity for marketable purposes, so that seedling potatoes are at best a tedious business, although the results, when obtained, have been most valuable.

It never seemed to strike any one that a quicker way of producing varieties might be adopted, but such is the case. It is now proved that potatoes may be thoroughly hybridized by grafting, both in the tuber and the stem.

The following article, taken from the *Gardener's Chronicle* (English) will show what has been done in these respects, so far as the stem grafting is concerned, and is highly suggestive to Canadian farmers:—

“Some time since, in discussing with Mr. Jones, the able steward to Lord Dunally, the probable origin of the potato disease, I incidentally mentioned some experiments I had made, with a view to ascertain if two different varieties of the potato could be hybridized. I have just received from him an extract from your journal of the 27th February, in which a mode of grafting is described by Mr. Taylor, with a request that I would communicate to you the process adopted by me, and its results. Having frequently observed that the vitality of the potato plant was very great; that when broken, and having only a very slight attachment to the stock, it continued to live and grow, it struck me that it was possible to conjoin two plants, so as to have their juices intermixed, and so to modify the quality of each. I determined thus to make a trial, and, not wishing to wait for a test as to quality, I chose subjects that were calculated to give visible results. I had three varieties sown at the time, one entirely white, of mild flavour, and very prolific, but bearing very small tubers, another thoroughly

black, very prolific, and growing to a large size, but ill-flavored; and a third, completely red, of large size, but yielding only one or two tubers to each stock or plant. My object was to give the black potato a milder flavour, and to render the red one more prolific, by crossing them with the white. In the first week of May, when they were well above ground, I took up several sets of each of the above varieties, and disturbing as little as possible the clay attached to the roots, I joined them by cutting a slice out of the clean parts of the shoots without injuring the roots or leaves, placing the cut surfaces (which were made to fit each other as nearly as possible) together, tying them with strips of linen, and covering the parts with tenacious clay, in which state I put them, each double plant having two sets of leaves and two sets of roots, down again, and carefully drew up the clay about them without covering the leaves. No. 1. Black and white; No. 2. Red and white; No. 3. Black and red. I put down about half a dozen of each of these double sets, all of which appeared to thrive as well as the sets in the single rows from whence they were taken. In August, on stripping the clay from some of the plants, I found I had succeeded in hybridizing, so far as color was concerned. When taken up in October the following were the results:—No. 1. All the produce were most curiously coloured, one side being thoroughly black and the other perfectly white, the dividing line running from the roots to the tops of the tubers, nearly dividing them into equal portions. Some persons to whom I showed them imagined at first sight that I had slit white and black Potatoes and attached the parts. No. 2. All the tubers were colored, the red showing in circular and crescent-shaped patches, except a few which were colored in nearly equal proportions, the colors taking opposite sides. The smaller tubers had the colors most intermixed. No. 3. Produce irregularly spotted and striated, the red color predominating."

In the foregoing it will be seen that the stems of two growing potato plants of different kinds were grafted together by inarching, and that the produce of tubers was a complete hybrid, partaking even of the conjoined colours of the parent plant.

This is a beautiful experiment, and proves what all have supposed who can have thought about it at all, that the sap forming the tuber goes first from the fibrous roots which spring from the set, ascends into and through the branches and leaves, there, from contact with the air, supplies itself with the required reproductive power, and then descends into the embryo tuber, forming that portion of the plant for its future continuance and reproduction. The mixture of the sap of the two kinds in the foregoing experiment not only arose from each root to the branches, but descended again from the branches, commingled, and produced a con-

junction of sorts, which has never heretofore been obtained, except by chance, or from the mixture of pollen in the seedlings. This fact may also account, and does in my estimation, for a great deal of the potato disease still existing.

It has only been of late years that potato insects have attracted much attention. A cutworm, to which the name "black grub" has been applied, sometimes, though very rarely, would nip off the stem as it appeared above ground, but the mischief was so very trifling that it was scarcely either observed or appreciated. Now, however, the case is altered. We have the Striped Yellow Beetle (*Lema trilineata*), an insect much resembling what is called the Cucumber and Melon Beetle (*Diabrotica vittata*), and which eats the leaves of the potato vines in both its larval and perfect states. In the former it is a most disgusting-looking object from its habit of voiding its excrement over its back, and keeping itself constantly covered with the horrid deposit—a provision of nature to protect it, probably, from the attacks of birds and parasitic insects, who would, no doubt, think twice before venturing to make a meal off such an uninviting object. We have also, occasionally, in some parts of the country, a Blistering Beetle (*Lytta cinerea*, Fabr.), and a tiny Flea Beetle (*Haltica cucumeris*, Harris), which bears a strong resemblance to what is commonly called the Turnip Fly. Again, there is the huge horned, or rather tailed, caterpillar of the handsome Tomato Sphinx (*Sphinx maculata*, Haw.), about whose poisoning properties wonderful, but utterly fabulous, stories are told; and last, but not least, the terrible Colorado Potato Beetle (*Doryphora 10 lineata*, Say), which has not yet reached Canada, but which is steadily marching eastward, devastating the fields wherever it goes.

All these insects injure the stem and leaves of the plant, and in doing so either actually destroy the tuber, or so far injure it as to leave it open to destruction, from rain or imperfect keeping.

The fact is now proved that the potato plant has but a certain term of life. It starts from the seedling, attains such maturity and excellence as it will attain in about five years, then continues in perfection for a certain series of years, supposed to be from ten to twenty, during which it is most prolific, and produces the best kind of food; then gradually gets worse and worse, until in the course of some fifty years, more or less, according to different sorts, it finally runs out, and is lost. This has been the fate, or rather was the fate, of all the good old sorts, and as they were all pretty much of the same age and standing, the simultaneous loss of them culminated in the so-called "potato disease," which in Ireland alone cost millions of human lives.

This was the course of events before the advent of the plagues which now afflict the potato plant. Now, we may expect, and in

fact do find, that the natural decay of sorts is infinitely hastened by the injury to the vines caused by insect attacks, and the consequent depreciation and ultimate destruction, or at all events degradation, of the tuber.

Such being the case, and the general facts are too patent to be altogether denied, although the data may and will be doubted and disputed, (for what fact, however self-evident, is not doubted by some in this age of free thinking?) too much importance cannot be attached to this new method of producing varieties. Sorts and flavours should be balanced against and with each other, productiveness against the contrary, and tardiness in ripening should be balanced by intermixture with sorts of more rapid maturity. But the thing of all others to be looked for is a sort that "yet possesses the power of resisting insect attacks." In this alone is our hope of avoiding disease and destruction to the sort. We all have seen where, many different sorts of potatoes are planted together, one or more amongst others which still flourished in full leaf and branch, flower and seed ball, whilst all around it were fading and rotting. It is, we believe, from such plants that we may hope for permanence of kinds, and if they can transmit this quality by inarching or grafting, and at the same time combine other excellency, that man's time is well employed, if he does nothing else, who can produce such a result.

Chemical analysis ought to help us here. Some varieties of the genus *Solanum*, to which the potato tribe belongs, contain more or less of a poisonous quality, called solanine, which may specially resist insect encroachment. Or it may be that some kinds contain more potash or mineral matter than other kinds. At all events, the resisting kinds (and we strongly suspect those kinds bearing seed or potato balls will be found such), should be analysed and examined, and their constituents put on record, for future study and experiment.

Fifty years ago there was a general belief that the apples and seed vessels of the potato were poisonous, and that uncooked or raw potatoes were so unwholesome as to be nearly if not quite poisonous, and also that the water in which potatoes were boiled was very hurtful. These popular ideas have generally a considerable foundation of truth, and it is quite possible that the sorts then in existence, and which certainly resisted all insect depredation, were in particular states unwholesome and even poisonous. These qualities, if they ever existed, may have been lost by cultivation, or have died out through age in the plant, or from some other operation of nature may have disappeared. Certain it is, that the raw juice of some kinds of potatoes is very active in its effect on steel or iron. Other kinds will barely stain these substances. Some kinds cook in a very short time, others require a full hour's boiling before they are

eatable. All the old insect resisting sorts were universally boiled for an hour before they were fit for eating. This quality alone might, on enquiry, lead to further developments.

The entire subject is most interesting, and opens a widespread field of research to the enterprising agriculturist, who, at the same time that he raises the greatest quantity of grain and the largest quantity and number of sheep and cattle, does not think the pursuit beneath his attention. Mr. Goodrich has proved himself a benefactor to mankind, but he who can conduct us back to the kinds of potato which resisted all insect attack will confer a much greater benefit than even Mr. Goodrich.

VECTIS.

Practical Drainage.—III.

BY ALLAN MACDOUGALL, C. E.

The trenches or grips which are to form the drains being ready to be filled in, the next step is to determine what is the best adapted material to form the drain. Tiles are now considered to hold the first place for this purpose, but they cannot easily be obtained in all neighbourhoods, and the cost of bringing them to a locality may be so great as to deter a farmer from draining. A very good substitute can be obtained in stones. These can be picked up off the fields, and laid in heaps along the side of the drains during the summer. There are several ways of laying these drains—one, and the most frequently used, is to throw in loose stones to a depth of nine or twelve inches, and then fill in the earth. A second is to place two flat stones on edge, and place a third over them as a cover, and above the cover to throw in four or five inches of stone; or the bottom of the ditch may be filled by placing long flat stones on edge, side by side, and filling up above them with stones loosely thrown in. A third method is to place three stones in the form of a triangle, and fill in above them. The last plan is often carried out with pieces of wood instead of stone, and makes a good drain, as the wood will last for a long time under ground. This plan is very well adapted for draining peat or bog lands, or very wet soft clays and running sands, as the stones all round catch the silt which would otherwise choke up the drain. Any convenient scantling from six to nine inches broad by one inch thick, or even rough slabs, cut off the sides of logs, that can be easily obtained in the district, will do. They will last for a long time, but like all drains put into peat or wet sand, require a good deal of attention, and sometimes even to be taken out and relaid. Stone drains, when properly laid in, will last for a considerable time, and work well; but care must be taken in laying out these drains to see they are kept at a distance from trees, if it is not convenient to remove the trees, as these drains are liable to be injured

by vegetation getting into them, which acts very injuriously in their working. A good plan to save them from danger of roots, &c., is to place a turf over the stones before the earth is filled in.

There is another material that may often be used when stones are not easily to be got in sufficient quantity, that is, brushwood: the small branches of shrubs, the tips of cedar, balsam, spruce fir, or birch branches, or charred branches, if they are not very large, broken into pieces about two feet long, and covered with straw. Care must be taken in laying in these materials that the branches are small, that they are laid on the top of each other regularly, so as to form a regular drain, and keep any earth from falling into the drain, making it shallower in one part than another. Drains of brushwood, if properly laid, will continue to work and keep for a long time in good order. The material does not decay under the surface of the ground. The branches ought to be laid to a depth of twelve inches, as the earth, when the drain is covered, will press them down.

The writer has seen drains, laid with cuttings of hedges, that had been in work for more than twenty years, when exposed in the laying in of tiles, still have the appearance of being laid only a few years. When side or arterial drains are laid in connection with main drains, it is not necessary to put in the stones or branches to a greater depth than six or eight inches, as that is quite ample to run off water with a main drain, so long as the side drains are not more than 200 yards long. Tiles are undoubtedly the best things that can be used for drainage purposes, and where they can conveniently be obtained ought always to be used. They will probably be more expensive than stones or brushwood, but they have the advantage of being free from many of the inconveniences of the other materials, and from their superior working will repay the extra primary cost.

The various descriptions of drains, and the distances and depths to which they ought to be set, being now laid before the farmer, he will be able to fix on the material best adapted to his circumstances. Every one is, doubtless, acquainted with the various tools necessary for cutting drains. An enumeration of them is not now necessary, though reference to a few of the leading ones may be made in some future article, if it be desired. Let us now proceed to the working operations.

The outfall drain is the first thing to be looked to. If a stream, or ditch alongside of a road exists, it ought to be cleaned out to a depth of three feet nine inches or four feet. It is not necessary to have a great fall on it, as water acts more freely than solid substances. Each particle looks out for itself, and seeks the lowest place it can find; and when confined in a drain, each particle trying to get to the lowest place, pushes on the

particle next to it, until the drain is emptied. For an open outfall drain, three, or four feet to a mile is sufficient fall to allow a drain to discharge water freely, as long as the bottom and sides are kept clean and free from weeds, and for drains from a field, one foot on four chains, or half an inch on ten feet, is considered quite enough. The outfall is usually an open-cut ditch, made down the side of two fields, which is used for draining the fields on both sides, as well as being an outlet for other drains coming down from other fields. It should be carried up in the lowest place, so as to drain as many fields as possible, and be made about three feet six inches to four feet deep, according to the fall it has, about eighteen inches broad at the bottom and five feet wide at the top. Open cut outlet drains from other fields should be connected to it. They should be about one foot wide at bottom and four feet wide at top.

The trenches or grips in which the drains are to be laid ought to be commenced at the low end and carried up the field regularly, that is, after one has been cut fifty or eighty yards, the next must be brought up that distance, then the third, then the fourth, and so on, as this enables a grip to let away some of the water from the low end of the field before the water from the top is let into it, and also lets the air get into the land. For tile drains, it is not necessary to cut them more than twelve or fifteen inches wide at the top, sloping downwards to six inches at the bottom. For stone or brushwood, they would need to be cut nine or twelve inches broad at the bottom. Care should be taken in making these grips that the bottom has a regular slope, for if it has not, the water will be certain to lodge in the hollow, and derange the working of the drains. This is more particularly the case where the ground is very flat. Side drains ought never to join a main drain at right angles. They ought to have a bend at the end for ten or fifteen feet to run in the slope of the land, that the water coming from them may flow easily into the main drain. Were this not done, the two currents coming in contact, would cause back-water in the weaker stream, which would be the side drain, and this would keep the drain from being properly discharged, or, as frequently happens after heavy floods would cause the side drains to burst.

When drains come down the whole length of a field to the outfall drain, or the principal drain that is to carry off the water, they ought to join at a little higher level, so that the two streams may unite together without any back-water.

When the main drain happens to be an open ditch, as is usually the case, it is a good and safe plan to place a large stone below the last pipe, and another on the top of it to keep it from being washed away by floods; or in stone drains, to lay a large flat stone for the bed, and place two stones on edge, with a large one over them to cover them, which will protect the loose stones of which these drains are composed from being washed away.

Special Manures.

If Canada farmers cannot, or think they cannot, afford to use special manures, there is no reason why they should not hear something about them. Special manures are now become the object of a great amount of manufacturing industry and of mercantile investment in England. Manures are now extensively advertised in England for everything. Wheat manure, turnip manure, clover and grass manure, barley manure, manure for the destruction of insects, and, in short, for every other possible purpose on the farm.

All these manures are composed of admixtures of the following substances, varying in quantity according to the special purpose they are intended to serve:—

GUANO.—This, when of the first quality, is brought from those portions of the tropics where it seldom or never rains. It is formed of the deposits of countless seabirds, and covers islands, otherwise desert, to great depths. Ichaboe was one great deposit of this manure, but it is now nearly or quite all removed.

PHOSPHATIC GUANO.—This is a similar substance, obtained from similar situations; but where it is liable to be leached by the rain. It is very valuable, but wants the ammonia of the genuine guano.

AMMONIA, in every possible form and shape, natural and artificial. It is obtained in all quarters of the globe, also from the soot in chimneys, the refuse of gas works, and every other place where it can be found. Of late even the volcanic springs and the issues of volcanic mountains (the lesser ones of course), have been pressed into the service of the British farmer.

NITRATE OF SODA.—This is brought from every quarter of the globe, and is a native production of the earth.

COMMON SALT.—This is used either in a raw state, or chemically combined with lime. When the latter is the case, the salt and lime are mixed together for several months, and after repeated turnings and manipulations have taken place, a double decomposition occurs, and it becomes a most powerful solvent of manure.

LIME.—This is used as above, or in its caustic state. In England, where it is very cheap, it is used in enormous quantities, and to great advantage. We dare not use it in so large quantities in Canada.

SULPHATE OF LIME, or PLASTER, is used as a general medium for the rest, and too often as a makeweight.

SULPHURIC ACID.—This is also used in very large quantities on most English farms of any consequence. They prepare for this purpose a cheap sort, coloured, and not so pure as is imported here for various purposes. It is called "oil of vitriol," and is chiefly used to dissolve bones, and other matters containing phosphate of lime.

The great element, next to guano, is, however, bones either raw in the shape of a

powder, or burned and mixed with sulphuric acid, and then called "superphosphate." It is, however, a great waste to burn the bones, and nothing ought to excuse the practice, but they are sometimes so hard that it costs more to grind them in a recent state than is lost in burning. Sulphuric acid, however, is so powerful a solvent that burning is almost given up. The whole world is now ransacked for bones, for England, France and Belgium; and so valuable are they, that they are received from all quarters, and no questions asked, and there is no doubt that many of the European battle-fields have paid tribute without any one enquiring as to the human or animal origin of the articles.

Next to bones, **COPROLITES,** a fossil found in large quantities, and containing a great deal of the bone element, and **MINERAL PHOSPHATE OF LIME,** are collected in large quantities, and a great deal of the latter article is exported from Canada both to England and the States.

There are many other articles, but these are the chief, and by the artificial manure makers they are worked up into one form and another until the identity of each is lost; and indeed it is too often found that other substances of no manurial value are added to increase bulk and enhance profits.

Now we all know that British and continental agriculturists would not be fools enough to buy these special manures, at various prices from five pounds to ten pounds sterling a ton, unless they produced a correspondingly profitable effect. Farmers on rented lands in the old countries are too close calculators to send their money on a wild goose chase. They well know how much profit such things yield, or they would not use them. British farmers insist on immediate returns for capital invested in manures. They all hold their farms either from year to year, with the understanding that they are to continue tenants as long as they and their landlords agree, or they hold under leases of seven, fourteen, or twenty-one years. In either case they look to immediate returns for money laid out in manure.

Farmers in Great Britain are not considered eligible tenants unless they have capital to the amount of from five pounds to eight pounds sterling an acre. They seldom on moving carry away anything, except some fancy stock possibly, but all is sold at auction, and again bought on the new farm to suit the new place.

In general, all manure and straw is left by the outgoing tenant, and by his lease he is bound to leave a certain quantity. He is paid for wheat sown, for clover seed sown, and for fallow and other work done.

Now except in one case, that of Mr. John Robertson, of Bell's Corners, formerly quoted in the number of the CANADA FARMER for May 15th, 1868, (vol. 5, page 146) we do not know of any one who makes a regular use of special manures in Canada: but we are

coming to it, and a few years will see manure manufactories common. In the States there are some enormous establishments of this nature, rivalling and indeed surpassing those of England, but the great requisite for such is "cheap sulphuric acid." That we have not yet got. We believe, however, that cheap sulphuric acid is coming. Our sulphurets of iron and copper are in large quantities in the mineral regions, and as they are brought into use the sulphuric acid will be eventually preserved, instead of being driven off and wasted and cheap oil of vitriol will be the result.

To show the way in which sulphuric acid is used in England, we may mention the following incident: A farmer's horse stumbled over the plough, or some other implement, and broke his leg. He was at once killed, thrown into the superphosphate pit, dissolved in sulphuric acid, and drilled in with the superphosphate which was being applied to the crop of turnips for which the field was preparing at the time of the accident. All dead animals and animal refuse are similarly used in Britain.

VECTIS.

Salt as a Manure.

In a recent number of this journal will be found several questions on the use of salt for crops, which we had hoped would be answered by some one who had tried the article. But it appears there are few if any here who have had any experience in the matter as yet. Some years ago John Johnston, of Geneva, the great authority on wheat-growing in America, and one of the most painstaking and successful farmers in New York State, tried it as a manure on fall wheat with a very marked effect in producing a heavier yield, and an earlier maturity. He applied it at the rate of one barrel per acre, sown broadcast and harrowed in with the seed. His example has been since followed by many others with varying results, mainly depending on the soil and season. It seems that the richer and better cultivated the land, the more probability is there of salt proving beneficial, as on poor soils it produced no effect. It is yet uncertain in what way it acts, but as it is not of itself valuable as a manure, it is supposed to act chemically on other substances that are in the soil, rendering them more easily dissolved or eliminated into plant food. It is supposed to fix ammonia in the soil, and to draw and retain moisture in dry seasons, both of which are perhaps done equally well by plaster.

Mr. Lawes, of Rothamstead, England, tried salt at the rate of 336 lbs. per acre on wheat, with different manures, for 16 years, and could discover no appreciable difference in the yield over those plots on which salt was not sown, but thought the quality of both straw and grain was improved. But on plants that are of a marine origin, such as asparagus and Mangold Wurtzel, salt acts as a

specific manure. In England, especially in the eastern counties, on the light soils, salt is extensively used as a manure to the Mangold crops, and not only increases the yield materially, but also improves the quality of the roots. On light soils it is said it can be used to advantage if not over 300 lbs. per acre is sown, while on heavy soils it proved disadvantageous to use salt. On the whole we doubt if salt will prove of so great a value for manure, as some sanguine persons expect; but as it is now so cheap it would be well to try experiments with it, and report results, as it may turn out that it produces other effects than those looked for by chemical writers, who seem to think it of little value. Dr. Voelker says "the character of the soil had a great deal to do with the utility of the salt applied to it."

As to applying it mixed with ashes, plaster, &c., it is doubtful if that would do any good, for the ashes or plaster are known to be valuable as manures, and it would be well to ascertain first the value of the salt, and its mode of action on the soil, or the plants growing in it, before crediting it with qualities that may be due to other substances that had been mixed with it. Its application as a top dressing is scarcely advisable, unless to old meadows. We should prefer Mr. Johnston's plan of harrowing it into the soil at seed time, when if it did nothing else it would be sure to prevent smut.

In the experiments tried in England, the coarse Liverpool rock salt was used. John Johnston used the refuse salt from the Onondaga salt works.

Perhaps the Goderich salt being so fine and pure, may produce better results than was the case in using an inferior and cheap article. As to how much it will pay to use, we have no data to go on. Let it be tried in quantities of 50 lbs., 100 lbs., and so on up to 300 or 400 lbs. per acre, and results noted. Over 400 lbs. per acre might prove a serious injury rather than a benefit.

We hope that some of the enterprising farmers in Huron County, or elsewhere, will not be hindered by the trifling cost of the material from demonstrating whether it can be used to advantage as a manure, and on what crops.

Stump Machines.

A correspondent from Renfrew enquires which is the best machine for pulling stumps, and where it can be had.

A good deal will depend on the kind of soil, and the timber of which the stumps are the remnants. In our younger days, we found no difficulty in getting out the stumps of maple and beech from a rich limestone soil, with a strong yoke of oxen and a good logging chain, when the timber had been cut down over seven years previously. In those sections where hardwood timber prevails; and the roots spread over near the surface, the common triangular stump puller,

which can be made by any rough carpenter, and the ironwork by the nearest blacksmith, will prove as good as any. This machine consists of three strong poles, about ten feet long each, joined together at the top with an iron cap or clasp, the legs spreading out so as to stand a good distance apart over the stump. From the top hangs a strong iron hook, to which is attached a pulley block, over which the logging chain is passed. The short end of the chain is fastened to a projecting root of the stump, and a team of horses or oxen at the other end to pull it over. The chain acts as a lever, the pulley as a fulcrum, and the other end of the stump as a rest.

For taking out large stumps, such as those of elm, pine, or hemlock, a screw machine is required, and we believe Messrs. Gilbert & Burkholder, of Nelson township, Halton Co., make a good article in that line. We do not know their P.O. address, but think it is Wellington Square.

No doubt other implement makers construct stump extractors, or could do so if they got an order, but as a general thing they are not an article that commands so ready a sale as to induce makers to keep a stock on hand. In sections where pine stumps are abundant, large powerful machines, costing two or three hundred dollars, are employed, and travel from place to place, taking out the stumps at so much each, or per acre, as may be agreed upon, being worked by men who make a special business of it, and keep their own teams and hands to do the work with. Generally, fallow fields, or old pastures, where no crop is in the way, are the scenes of their operations.

Daniel O'Rourke Peas.

To the Editor.

SIR.—An article which I noticed in your paper, headed, "The Pea Weevil," reminded me of one of the apparently good qualities of a new variety of pea (Daniel O'Rourke), which I grew last season for the first time. I sowed ten bushels, and harvested from them 140 bushels by my measure, which by weight is giving me a little over 150 bushels from the ten bushels sowing. I believe that this yield surpassed anything that this county produced, the pea crop being nearly a failure last year. The Daniel O'Rourke, I believe, will yet occupy an important position in the hands of our best farmers. It requires better cultivation than the Golden Vine, as it only produces about two-thirds or three-quarters as much straw. It, however, yields more per acre, is a surer crop, and commands a much higher price in the market than the common pea. It is a quick grower, ripening about twenty days earlier than the Golden Vine, and on this account is less liable to suffer from the effects of drought.

I have not been able to discover any traces or marks of the pea weevil in this variety, but of course it needs longer experience than mine to establish the fact of its immunity from this pest.

WM. R. DEMPSEY.

Albany P.O., County Prince Edward.

How to Use Super-Phosphate.

We have inquiries from several subscribers on this point, and as there are several ways of using this material with different crops, we propose to give an article that will answer all at the same time.

For grain crops, as barley, on which super-phosphate produces a marked benefit, there are two ways in which it may be applied, either sown broadcast like plaster on the soil, at the time of seeding, and harrowed in with the seed, or on the crop after it is up, and before the young plants have become too far advanced—say when they are an inch or two high.

For potatoes, we should apply it in the drills or hills, either at the time of planting the seed, by dropping it along the furrow, or in the hill at that time; or, shortly after the plants are through the ground it may be strewn over them.

For root crops generally, it is best to apply by sowing it along the drills either at seeding time or very soon afterwards, except with turnips, with which crop it is usual to apply part of the super-phosphate, (say two-thirds) in the drills at the time of covering in the manure, and the remainder is reserved to be dusted on the young plants as soon as they appear, in order to quicken the growth and keep off the turnip fly.

For Indian corn, field beans, or squash, it is usually applied in the hill, mixed with an equal bulk of unleached ashes, and given at the rate of a handful of the mixture to each hill, as soon as the plants are an inch or two high.

On grass or clover, sow broadcast, about the first to the middle of May, in the same manner as plaster is usually applied.

For garden crops it is best to apply by incorporating it with the top stratum of the soil by sowing thereon as soon as it is forked or spaded over, intermixing by means of a hand rake when making the beds. Afterwards some more may be given by dusting it over the young vegetables soon after they come up.

As a general rule it will be found that from 100 to 200 lbs per acre will be sufficient for field crops; more is sometimes given to turnips, but as the effects of superphosphates are not permanent in the soil like bone dust or ground bones, it pays better to apply some each year to the crops intended to be benefited, than to put on a large dose at one time. It is soon dissolved by rain, and what is not taken up by the roots of the plants, in their early stages of growth is apt to get washed beyond their reach before the end of the season.

Remove all obstructions to the mowing machine from the meadow before the grass gets sufficient start to hide them from view. A day's work on the meadow now will save a good deal of vexation at haying time.

Cultivation of the Thistle.

The cultivation of spring wheat and the cultivation of the Canada thistle, if not synonymous words, are (to coin an expression) "synonymous facts." It is absolutely certain that the thistle is making such headway even among our best farmers as to cause considerable alarm. Fallowing and ploughing five times during the season are really the only method of absolutely eradicating this pest. Four ploughings during the season will do a great deal, three are better than two, and that is all that can be said; but five ploughings make sure work, and if conducted in dry hot weather are certain to kill every plant that has attained maturity. There will of course still be seedlings in the ground ready to put forth as soon as a favourable opportunity occurs, and this will last so long as a seed remains which is capable of germination, but five ploughings make sure work.

It is very seldom that farmers either can or will make a good summer fallow the previous year for spring wheat, although we think it would pay them to do so. A moderate or poor crop can, however, be had without, and so long as this is the case spring wheat will be sown without a good fallow, and so long will the thistles flourish and grow.

If you wish to convince yourselves of the importance of keeping the thistle moving, (if you mean to kill it) take a lot of roots and plant them in your garden: as soon as you see the first green tip, move up the whole ground, shake the roots out of the places they had taken hold of, and plant them again. This moving will dry the ground; in a short time the green tips will appear again, when again you must move them well about, and so on a third time. Now you will find that the roots look brown and poorly, they will be limp and tough, and will seem to be losing vitality but still they will struggle up. Move them again, and the fourth time you will find nearly all gone, still there will be some so "stout-hearted" as to try it again; but the fifth time finishes the job, and all are dead and decayed, and you are free of them until their place is taken by seedlings.

Many of our best farmers now advocate the allowing the thistle to come into flower, before ploughing, then if they are too thick for the horses (as will often be the case) mow them, and at once plough the ground. The thistles and other weeds answer for nearly a green crop of manure, and these people say that if the ground is then kept moving the thistles are far easier conquered than if attacked earlier in the year.

VECTIS.

The *American Agriculturist* advises sowing a pound or two of white clover with the red clover and timothy in seeding down the land intended for pasture.

Clover Manuring.

The value of clover as a manurial agent is every day becoming better known. Our American cousins, who have cheaper land and dearer labour than we, have gone a step further with this subject than we have in Canada. We as yet have only gone to the extent of ploughing in the year's crop of clover, and generally trust to the influence of the drying roots alone, after having taken off either one or two cuts of grass or hay. American farmers take the bull by the horns at once. They seed down wheat with clover, do not allow the young clover to be fed off on any account, then for the next season close up the field fences altogether, and neither feed nor cut the crop. The entire clover plant is allowed to grow, and is often over two feet high, a solid mass of flowers and seed, and is allowed to rot down on the ground, and lie all the winter. The next spring the clover starts again, and is allowed to grow till in full flower. The whole of the result is then ploughed under as a preparation for wheat, either with or without a fallow. If spring wheat is to be grown, the ground is fallowed during the remainder of the season, after ploughing, and regularly prepared for spring wheat. If for fall wheat, the clover is ploughed under, the land heavily rolled, and cultivated so far as to keep down thistles and weeds, and the fall wheat sown. A noble crop may be expected, to be again seeded down to clover. By these means the ground becomes filled with clover seed, and the peculiar elements produced from rotten and decayed clover, and this ensures a thorough crop of clover so often as it is used. The originators of this system claim that it is one of great economy. The outlay is very small, the cost of labour comparatively nothing, the smothering effect of the clover kills all weeds, and the double crop so ploughed in is done by one ploughing and a slight cultivation of the soil between the time of ploughing and wheat sowing. They say that you have the ground more cheaply and better manured than you can have it in any other way, and ensure a thoroughly good crop of grain. In case of growing spring wheat, the plan might be further supplemented by a crop of buckwheat ploughed under after the clover, or a crop of green mustard. Either of these would be ploughed in the last thing in the fall.

On Planting Trees.

To the Editor.

SIR,—So much has been written on this subject that it is scarcely possible to say anything new in reference to it; but things of so much importance will bear reiterating, and indeed require to be brought the more prominently under notice when we do not see the present advantages of our work, and when it does not bring the dollars into our pockets, or at least when we cannot see it if it does.

Let the planting of trees in the spring be as much the work of the farm as ploughing and sowing. Set apart two days at least every year for this important work. Let all hands go at it with a will, and do the work well, for ten trees well planted are better than a hundred ill done. Plant shade trees in each nook and corner of your fields, for the protection of your stock from the scorching rays of the sun. Plant fruit trees by the road side and prevent orchard robbing. Plant trees along the north and west sides of your farms, for wind-breaks, and you will have better crops of fall wheat. Plant trees on all hill sides and places which cannot be cultivated, for timber and fuel to the rising generation. Plant a good orchard of the best kinds of apples, pears, cherries, &c., and plant evergreens around your orchard to protect it from winds. In fact, plant trees everywhere you may think it necessary. Plant evergreens and deciduous trees, fruit-bearing and nut-bearing trees, trees for ornament and for profit, but plant as if you intended and expected that they should grow. Do not undertake to do too much in one year, but still something might be done every year, and as we gain a little experience in the matter, it can be done more easily and with better success.

The sooner tree planting becomes general, the better will it be for the country, as some years must elapse before they will be of any service as wind-breaks, &c., and by that time the remaining portion of the forest, especially in the older sections of the Province, will be cut away, so that it will be hard to get young trees to plant, unless we get them from the nurseries, which will be additional expense, or else raise them from the seed ourselves, which will take much time and care, besides throwing into still longer perspective the period of growth and maturity. Canada is one of the finest countries under the heavens, and it is our duty as Canadians to preserve it in beauty and productiveness.

CULTIVATEUR.

April, 1869.

Superphosphate of Lime.

To the Editor.

SIR,—In a recent issue you make some remarks as to the manufacture of superphosphate of lime, which might lead some of your readers to think that we manufacture our superphosphate in the way you say it is usually manufactured.

The way we manufacture is that three-fourths of the bones we use we manufacture into animal charcoal, for sugar refiners, and in the course of burning the bones for charcoal we catch all the ammonia and animal matter, and add to it the bones which we use for the manufacture of superphosphate, and then apply sulphuric acid and leave it fermenting for about six months, so that the acid has time to dissolve the bone.

You also speak of the bone dust being

made from burnt bones. The bone dust we make is not burnt.

In another paragraph, in reference to bone dust, you say that "the price asked for bone dust here is altogether above its intrinsic value." Bone dust is cheaper here than in any other part of the world. In England bone dust is worth \$35 to \$40 per ton, and in the United States \$40 to \$50, while the price we ask is \$22 and \$27 50 per ton.

PETER R. LAMB.

Toronto, April 21, 1869.

NOTE BY EDITOR.—We had no intention of disparaging the article manufactured by Mr Lamb, which we believe to be thoroughly reliable. Our remarks apply to very much of the superphosphate that has been offered to the public.

Hedge Plants.

There seems to be great difficulty in finding a hedge plant that is suitable in every respect to our climate and our wants. The evergreens, such as Arbor Vitæ and Norway Spruce or Hemlock, make fine hedges as screens and windbreaks, but they will not answer as hedges to keep stock within bounds. The Osage Orange, so much used for this purpose in the Western States, does not withstand the extreme cold here. The White Willow, though a rapid grower, and tolerably hardy plant, gives no protection against cattle. The Buckthorn is too slow a grower, as also is the Hawthorn, besides which they are apt to get killed by summer droughts, and are scarcely stiff enough to make a good hedge. The Honey Locust we have seen made into a good stubborn hedge, but it is more of a tree than a shrub, and unless very severely pruned back and plashed, is apt to grow thin at the bottom for want of side branches. We have thought of some of the varieties of wild plum, those especially that are of a thorny, shrubby character, as being likely to make a good hedge. But then they are so liable to the black knot, that the hedge would soon be a mass of unsightly festering sores.

It has recently occurred to us that the wild crab apple would prove a good subject to experiment upon in the way of obtaining a hedge plant in every way adapted to our wants. It is inclined to be shrubby, is a very stiff grower, and well covered with sharp spines, grows much more rapidly than Buckthorn or Hawthorn, and is perfectly hardy, and liable to no disease or drawback that we are aware of.

As there are plenty of wild crab in various parts of Canada, would it not be well for some of our enterprising farmers to endeavour to save the fruit when ripe, the coming fall. They might be gathered before fully ripe, and kept till the seeds are ripe, then pressed into pomace, the seeds saved, and planted out early the next spring, the young plants cut back and transplanted the succeeding fall, and the next year after planted into

hedge rows. We anticipate that if they are well managed, they will make a good hedge of four or five feet high, in five years from the time of planting out, and one that once established would require only an ordinary amount of cutting back to keep it proof against all kinds of stock.

A correspondent of the *New England Farmer* says he raised thirty heads and 6,411 kernels of oats from one kernel of seed.

A correspondent of the *Journal of the Farm* says he has raised 1,200 bushels of sugar beets to the acre on soil not over six inches in depth.

GOODRICH SEEDLING.—Your correspondent is right as to the Gleason being a fine and valuable variety. But the Harrison is a larger yielder, and of finer quality. Both varieties being the same as to colour and time of ripening, any one having the Harrison will not want the Gleason. Both the Harrison and Early Goodrich are superior in some respects to the Gleason, and are the most popular of the Goodrich seedlings. The Calico is a hardy variety, of somewhat finer quality than the others (at least such is my opinion, though all the above are good), and is recommended as having comparative immunity from the ravages of the potato-bug, where other varieties are defoliated. He is also correct as to the productiveness of the Cuzco; and there is but one objection to this sort, namely, that its potatoes are not good for anything—at least, so says the *Country Gentleman*. J. F. C.

L'Original.

HOP GROWING.—A correspondent from Ancaster, who wishes for information on this head, will find a series of articles treating the subject very fully, in the 4th volume of the *CANADA FARMER*, 1867, numbers 7, 8, 9, 10, 11, 12, 13, and 14, besides answers to a variety of questions relative to hop culture in other parts of the same volume. The separate numbers can be procured for 5 cents each, or the whole volume for \$1; and to reproduce the articles in the present volume would, besides occupying a large amount of space, be quite superfluous with a large proportion of our readers.

THE GARNET CHILI IN SCOTLAND.—We learn from the *Cobourg Star*, that somewhat more than eighteen months ago a barrel of Garnet Chili potatoes, procured from Mr. W. Riddell, who had introduced them into the neighbourhood of Cobourg, was sent by the St. Andrew's Society to the Duke of Buccleugh, with a request that he would give them a trial in Scotland. The potato was carefully planted in Dalkeith Park, and has given entire satisfaction, so much so that Mr. Dean, the Duke's farm overseer, writes to the President of the St. Andrew's Society that he had tried a good many new potatoes, but never yet one that promised so well. It appears to be peculiarly free from liability to rot. It has in this country been found to succeed best in stiff clay soil.

Veterinary Department.

Diseases of the Digestive Organs in Horses.

SPASMODIC COLIC.

This is a disease very common amongst horses, and consists in a spasmodic contraction of the muscular fibres which form the middle layer or coat of the intestines. This inordinate muscular contraction is usually confined to the divisions of the alimentary tube known as the small intestines. There are many other names applied to this disorder, as gripes, belly-ache, &c. The causes of this common complaint are numerous, the following being among the most frequent:—Change of food, allowing a horse to drink freely of cold water when he is in an overheated condition, exposure to sudden changes of temperature, and a constipated state of the bowels, or the presence of an irritant within the intestinal canal. Some horses are very subject to attacks of colic, and as a consequence their digestive powers appear to become greatly impaired. Spasmodic colic is a very painful disease, but happily is generally of short duration, and is not very fatal in its results. The symptoms are often very alarming. The attack is sudden; the horse commences to paw and stamp with his fore feet, and cringes his body downwards, looking to his sides as if pointing to the seat of the disease; he will throw himself violently to the ground, and roll frantically about, endeavouring to balance himself on his back; this is a favourite position, as it appears to afford him temporary relief. He will again get on his feet, stand quietly for a short time, when he is again seized with violent pains, and he throws himself down as before; often, from the extreme pain, he is covered with a profuse perspiration. The circulation is not so much affected as might be supposed from the alarming symptoms. Immediately after a severe paroxysm the pulse is considerably quickened, but during the period of quietude it almost regains its natural condition. In cases, however, where the attack follows a fast drive, a hard day's work, or arises from some debilitating influence, the pulse will be very much quickened, and is weak, differing entirely from the full bounding pulse of *enteritis*, or inflammation of the bowels; pressure to the bowels also appears to afford temporary relief. Colic is usually a disease of short duration, and cases are frequently noticed, when in the course of ten minutes the patient to all outward appearances is as well as ever. Occasionally the attack will continue for hours, and death may take place from the severe and continued spasms, or from inflammatory action being set up within the bowels. Spasmodic colic is easily treated, and a great many medicinal agents have the effect of giving relief. At one

time blood-letting was practised to a great extent in the treatment of colic, but at the present day it is seldom resorted to in the treatment of this disease, because a simpler remedy is more effectual, and the risk of *phlebitis*, or inflammation of the vein, is prevented. An excellent remedy is an ounce each of laudanum and nitrous ether, or sulphuric ether, given in from eight to ten ounces of cold water, allowing the patient to have a good roll in a comfortable and well bedded box. In some cases a smart trot for a short distance will dispel the attack. When the pain is very severe and the animal wishes to lie down, he should be allowed to do so, as he chooses that position which affords him relief.

Often horses are seriously injured by being whipped and kept running around with the view of preventing them lying down and rolling. This, instead of relieving, in many instances has a tendency to produce inflammation of the bowels. Clysters of soap and water are also invaluable in removing the spasm, besides relieving the rectum of its contents. In cases where the bowels are overloaded, six drachms of Barbadoes aloes may be given in solution.

In slight cases, a pint of warm ale combined with a dessert-spoonful of ginger is a useful and simple remedy. When the violent pains are prolonged, it is necessary to administer repeated doses of opium. We may also mention that a great many nostrums are recommended for the cure of this disease, many of which have a very injurious effect.

Overworked Horses.

Overwork annually destroys many horses, especially in the omnibus, cab, and heavier draught work of our larger towns. Very frequently the locomotive organs first fail. More than one-half of the animals sent to the knackers' yards are incapacitated from lameness. The tendinous cords running down the limbs are repeatedly and severely strained, causing painful shortenings of the limbs. Navicular disease shaves many well bred steeds. Often the joints are stiffened by irremediable disease. Treads, falls, broken bones, and other accidents, are all greatly increased by the weariness and distress accompanying overwork. In fast trotting or galloping, the tough tendinous suspensory band passing immediately behind the cannon bones is sometimes torn, causing the breaking down so familiar to racing men. But the tear and wear of severe exertion tells not only on the extremities. In animals unused to it, and especially if the work is rapid as well as violent, blood is driven from the surface to the interior of the body, the internal organs become congested, and amongst horses the lungs and the sensitive laminae of the feet frequently suffer.

Severe exertion also operates injuriously in greatly increasing the disintegration of the

structures. The blood is thus loaded with effete particles, which, unless rapidly removed, give rise to serious derangements. To favour the elimination of substances so injurious, well-cared for horses, after a hard day's work, are washed with tepid water, well dried, comfortably clothed, and their legs bandaged. The skin is thus left in a condition in which it fulfils its share in the process of purification. Gruel and mashes, rather than dry food, form the bulk of the dietary for twenty-four hours, especially if the exertion has been very violent, and thus the bowels and kidneys are encouraged to drain away by these two important channels any deleterious matters.

But amongst hard-wrought, ill cared-for horses, no precautions are thus taken to mitigate the evils of severe work. The poisonous products of active tissue—metamorphosis—are not got rid of; the chills to which so many horses are exposed when overheated and exhausted interfere with the important purifying influences of the skin; the retained excrementitious matters gradually but certainly undermine health; for a few days there may be only dulness, listlessness, and feverishness; and the animal may still be kept at work; in expressive popular phraseology, the horse does not always die the day he is killed, and three or four days or even a longer period may elapse before the animal is entirely laid up with gastric fever, farcy, glanders or diabetes.

The effete putrescent substances so largely generated by severe exertion cause, as already pointed out, much harm when retained. They are, moreover, apt to irritate and injure the channels or organs by which they are expelled from the body. In this way are explained the diarrhoea which in many horses follows violent exertion, particularly of the description to which an irritable animal is unused, and the inflammation of the kidneys and bladder which sometimes succeeds long and exhausting journeys.

Notable amongst the ways in which horses are overtaxed, is their being urged beyond the pace for which their breeding or condition fits them. Many a good horse that might last for years if driven at six or seven miles an hour, becomes irretrievably knocked up by a few journeys performed at the rate of ten or twelve miles an hour. Proverbially, it is "the pace that kills." Agricultural horses, although their work is seldom very violent or severe, often suffer in busy times from being kept too long in the yoke. Their times of eating and of rest being thus unduly curtailed, derangements of the digestive organs, lassitude, and loss of condition, are entailed. A regularly recurring day of rest is requisite for hard-worked beasts as well as for hard-worked men; and so thoroughly is this now recognised that in all well conducted coaching, bus, and other such establishments, one day of rest per week is allowed to each horse. Many young green horses are overworked, not so much from the actual

severity of the labour required of them, as from their being immature, fat, or unprepared for any work. Hundreds of horses just out of the breeder's, farmer's, or dealer's hands, possibly plump, well made up, but without the condition which properly-regulated exercise alone can give, are put, with little preparation, to severe and even to fast work. They flag at the lightest labour. If urged on, they are, to use an expressive coachy phrase, "knocked out of time," and they largely contribute to fill the veterinary case-book with strained and injured limbs, catarrhs, sore throats, congestion of the lungs, gastric fever, farcy and glanders.—*North British Agriculturist.*

Veterinary Queries.

A correspondent over the signature "North Dumfries" writes:—

"Can you or any of your numerous correspondents tell me the disease which killed my pigs? I have had seven died with the same trouble. The symptoms were as follows:—they invariably work into a corner of their pen and try to climb up the wall; not succeeding in this, they begin to push with their snouts into the ground with considerable force, when presently they become paralysed and fall down; this shock does not last over two seconds, after which they get up and go round half a dozen times, with some froth coming from their mouths. They die in about fifteen hours from the first attack. I have opened some of them, but they appear to be all right as far as I could judge. No symptoms of inflammation could be seen; liver, lungs, kidneys, and stomach, were all right. Their feed was bran and slops from the kitchen. They were in good condition, about four months old. I gave medicine to some of them, but it did not appear to do any good. The medicine I gave to them was epsom salts, saltpetre and sulphur. I can assign no reason why they should have sickened. Their food was wholesome, their sty was clean and dry, and they were in a thriving condition, until they took this strange trouble, and all died within 18 hours. Please to let me know what you think about it, and give the cure if you have any idea what it is."

Judging from the symptoms presented during the illness of your pigs, we are of opinion that death resulted from disease of the brain, and what is known as frenzy. The causes of this affection are ravenous feeding, &c., and therefore it is most apt to occur in very fat pigs that are full of blood.

As regards treatment, very little can be done, as the disease runs its course so quickly; however, we would recommend a good dose of castor oil, say from six to eight ounces, and also give the tincture of aconite in five drop doses every hour, and apply cold water or ice to the head. As a preventive, feed sparingly for a short time, and give a change of food.

"A Constant Reader" asks for a cure of worms in sheep's nostrils, a disease which carried off many sheep in the neighbourhood of Fort Erie :—

Minute filariae are frequently found in the respiratory passages of sheep, and oil of turpentine has a very good effect in causing their removal, but should not be injected into the nostrils; it should be given by the mouth, in doses of three drachms, combined with three ounces of linseed oil, and should be repeated every day until three or four doses are given; the nostrils must be sponged several times a day with tepid water, and the strength supported with beer, grain, &c.

Oliver Coles, Yarmouth County, sends the following enquiry :—

"I have a yearling colt that will necessarily have to run to pasture with a mare, that I don't wish to get in foal. The colt shows signs of early maturity. Would it injure him to get him castrated this spring? Some say it will, others say it will do him no harm. What would your advice be?"

We think early castration has many advantages, and that in many respects it is better to perform the operation on yearling colt than on two-year-olds.

A correspondent of the *Country Gentleman* says that every time a colt, a calf, or other young animal feels miserable, hungry, cold, or tired, a mark to a certain extent will be left on the general figure.

A correspondent of the *Union Herald* finds nothing equal as a destroyer of lice on cattle, to a strong solution of soft soap and rain water, to which is added common salt. This is applied by rubbing thoroughly over the animal.

TREATMENT OF LAMB.—Correspondents of the *Mark Lane Express* testify to the efficacy of a slight application of common coal tar around the navel a few hours after the birth of the lamb, to prevent inflammation, which is often fatal to a great extent on many farms.

Stock Diseases in Europe.—The *Practical Veterinarian* (English) for February, says that the cattle plague prevails very extensively at the present time in eastern Europe, and that great fears are entertained of its extension from Austria to those states from which England receives a large supply of cattle. Not only are Moldavia, Wallachia and Transylvania greatly infected, but also Poland, Galicia, and Hungary. The pleuro-pneumonia is also said to be on the increase, not only in the London dairies, but in several parts of the country, and on the continent. Recent information reports its existence in a severe form in Spain. The small-pox of sheep is also reported to have recently broken out in the neighbourhood of Hamburg, and to be still prevalent in some parts of Holland, particularly near Rotterdam.

Stock Department.

Rise and Progress of Short-horns.

ABRIDGED FROM A PRIZE ESSAY BY HENRY H. DIXON, VOL. I. SECOND SERIES OF THE JOURNAL OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

The most imperfect treatment of this subject carries us back more than a century, to the days when Bakewell was a living name, and Dishley the head-quarters to which all the best breeders of farm stock made resort. The improved Leicester sheep were steadily gaining a reputation that was destined to become world-wide and permanent; and this great breeder regarded his celebrated herd of Long-horns as destined to represent the roast-beef of Old England for ages to come, little thinking that a race with shorter horns and of earlier maturity, from the banks of the Tees, would ruthlessly push them from their place, and reduce them to a mere fraction in the course of one or two generations. These midland Long-horns were really fine-looking animals, slow growers and feeders, but ultimately attaining to great weights, and they were exported to the northern counties, and to Scotland and Ireland, in considerable numbers, for the improvement of the various native breeds. Among the Irish cattle of the present day, traces of the Long-horn strain are more or less observable.

The Holderness, a fine large-framed breed, with good backs, long quarters, remarkably clean straight legs, and well-developed udders, grazed in the districts north of the Humber. From their general appearance they were thought to be of Dutch origin, and milk was their great specialty. These cattle resembled in many respects the "Teeswaters"—a local name given to the original Short-horns (and hence sometimes called by that name) before the termination of the last century—but it was not until "The Durham Ox" commenced his six years of caravan life in 1801, that the doom of the Long-horn was virtually sealed.

The Tees-water cattle were large, but somewhat ungainly in form, and were thought to yield a better quality of milk than the Holderness, but a smaller quantity. Their origin is involved in considerable obscurity, but a pretty wide opinion has prevailed that they, like the latter, were decidedly imbued with Dutch blood. Herdbooks in those days were not in vogue, and the patient pilgrimage of Coates, through sunshine and shower, with his grey pony and saddlebags, has not had the effect of tracing the breed further back than four crosses beyond "Hubback" (319), who was calved in the year 1777. The brothers Colling, the Maynards, and others, were distinguished for their zeal and judgment in the improvement of the Teeswaters, and prided themselves on the

characteristic merits of their respective herds. Hubback (319) has always been considered the great regenerator of Short-horns; but he did not do Charles Colling so much good as "Foljambe," who was from a "Hubback" cow, and he was parted with at the end of two seasons. The brothers Colling successfully aimed to reduce the size and coarseness of their cattle, and to improve their general symmetry and more valuable points.

Down to 1810 the demand for Short-horns was almost exclusively confined to a few counties, as Durham, Yorkshire, Lincolnshire, Northumberland and Westmoreland. "Comet" was regarded as the most symmetrical bull hitherto seen, and his price, a thousand guineas, elicited general astonishment and admiration. The spirit south of the Humber began to be fairly roused, and in a very few years four or five more counties were added to the domain of the Short-horns. The well-known names of Lord Althorp, Sir Charles Knightley, Harrison, Arbutnot, Bates, &c., characterized and adorned this period. Mr. Bates had been breeding Short-horns by the Tees side for several years, without appearing to have struck out any especial herd line for himself, till he took up his fancy for the "Duchess" tribe. "Belvidere" (1706), of the "Princess" tribe, was the bull which Mr. Bates selected to bring out the "Duchesses." He was small and plain, and with rather rough shoulders, but soft as a mole to the touch. The brothers Colling had a most faithful disciple in the Kirklevington philosopher, as his celebrated show bull, "Duke of Northumberland" (1909), was by "Belvidere," dam by "Belvidere," and was thus bred on precisely the same principle as four of their leading animals—"Comet" and "The Ox," "Punch" and "Broken Horn"—rather an instructive comment on the popular timidity which eschews even an approach to in-breeding. Mr. Bates led the Short-horn ranks of the Royal Agricultural Society both at Oxford and Cambridge, and it was his lot to breed the second one thousand guinea bull, and to fashion the model of the mould in which such cows as "Second Grand Duchess," "Oxford 15th," and "Duchess 77th" were cast and quickened. No one contributed more towards Short-horn progress than Mason of Chilton, who got rid of the open shoulders and improved the fore-quarters generally. Both Earl Spencer and Captain Barclay, and others of not much less note, availed themselves largely of Mason's blood. Whitaker of Butley was distinguished for his milking tribes, and laid much stress upon the purchase of "Magdalena," by "Comet" (155). The "Americans," and more especially Colonel Powell and the Ohio Company had heard of her and her thirty-two quarts in their repeated visits to Butley. They generally left Yorkshire with the belief that "a man might ride four hacks to death in the North, and not find twenty such cows as Mr. Whitaker's;" and they were among his best customers for a series of

years. Sir Charles Knightley and Mr. Crofton accomplished a great deal in improving the form and developing the milking properties of Short-horns.

The Booth family began at Studley, about 1793, with "Teewaters" and "Twin Brother to Ben" (660); and lengthening the hind-quarters, filling up the fore-flank, and breeding with a view to that fine deep flesh and constitution which bears any amount of forcing, have been their special aim. It is thought by some that modern Short-horns are not so massive in frame, or generally uniform in character, as the earlier herds; but all must acknowledge that for quality of meat, and the weight of the more valuable parts, a marked improvement, rather than deterioration, has been effected. What the brothers Colling were in earlier days, the brothers Booth have been in later. No blood has been more widely spread than that of "Warlabey" and "Killerby," or commanded a finer bull-hiring trade; and it was from "Buttercup," a daughter of "Brampton Rose," and crossed with Booth's "Jeweller," (10,341), that "Butterfly" sprang, chief foundation, with "Frederick" (11,489), of the Towneley herd, whose victories in the store and fat shows combined are wholly without parallel. It is true that North Devon, Herefordshire, Wales, Ayrshire, and the north and east of Scotland continue to maintain the purity and excellency of their respective breeds, but it is not less so that the modern Short-horns have been spread broadcast, and in many cases have superseded the native breeds altogether. More than two-thirds of the fat beasts sold annually in the London market are either pure Short-horns or Short-horn crosses. Beef-making, rather than the production of milk, is now-a-days the leading, if not exclusive, object of the generality of Short-horn breeders; a circumstance easily explained by the high price of butcher-meat in the British markets.

Scotland furnishes a most remarkable example of Short-horn beef development. Mr. Robertson, of Ladykirk, was, perhaps, the earliest patron of the breed when he bought "Broadhooks" from Robert Colling, and "Ladykirk" (355), from Charge. Mr. Rennie, of Phantassie, took a decided lead when the fine arable expanses of East Lothian were only whin and heather. In 1810 he spoke of the breed as "wider and thicker in their form, and therefore yielding the most weight and the greatest quantity of tallow." Mr. Stirling, of Keir, Mr. Boswell, of Kingcausie, and Captain Barclay, of Ury, were among the most distinguished breeders of that day. In 1820 some of the North Highland farmers did not even know a Short-horn by sight, whereas now no less than four first-class Royal English bulls are to be found between Caithness and Stirling, and a small farmer within those limits, only occupying a second-class farm of 130 acres, has been known to give 75 guineas for an eight or nine months' bull-calf. Scottish Short-horns have crossed the Border to some pur-

pose, in their turn. The "Queens" and the "Roses" of Athelstanford were often foremost among the best at the shows of the Royal Agricultural Society. It is calculated that eight-tenths of the immense beef supply from the north of Scotland to the English markets now consists either of Short-horns or their crosses with the native breeds. Even as far north as the Orkney and Shetland Islands the modern Short-horn has found his way, and the cross with the small native breeds has been found exceedingly beneficial. In the Orkneys, where the farmers were working on a mixed foundation of West Highland, Devon, and original Orkney, the price of yearling crosses has been raised by its use nearly 400 per cent. Short-horn progress throughout the meat producing counties of the north and north-east of Scotland has of late years been really surprising. The Forglen breed in Banffshire is quite "crossed out" by them; and in Aberdeenshire nearly every "cross-bred" cow has more strains of pure blood than would satisfy the Herd Book. The breadth of turnips has increased enormously throughout the three "beef counties," and although McCombie's black beasts from the Alford districts have no equals in the Smithfield Christmas market, Buchan has disowned its original blacks and brindles, and has quite fallen into the fashion. The number of Short-horns and their crosses is constantly increasing in these parts, and when well finished for the fat markets will bring from thirty to forty, and even fifty pounds each, from two and a half to three years old. A two-year old steer brought £91 10s. by auction! The bulls are not only used to cross-bred, but also to West Highland and polled cows, making a beautiful cross, and correcting the sluggish maturity of the Galloway blood. The second cross, however, generally falls short both in flesh and milk. These crosses are gradually extending in districts to the north, where it was formerly thought to be impossible for any but the small and hardy natives to exist. In Angus the "polls" have long been retreating before them, which has been the case with the native breeds of Fifeshire, and the West Highlanders even have in some measure given way, and are sent south as "fancy cattle" to the English parks.

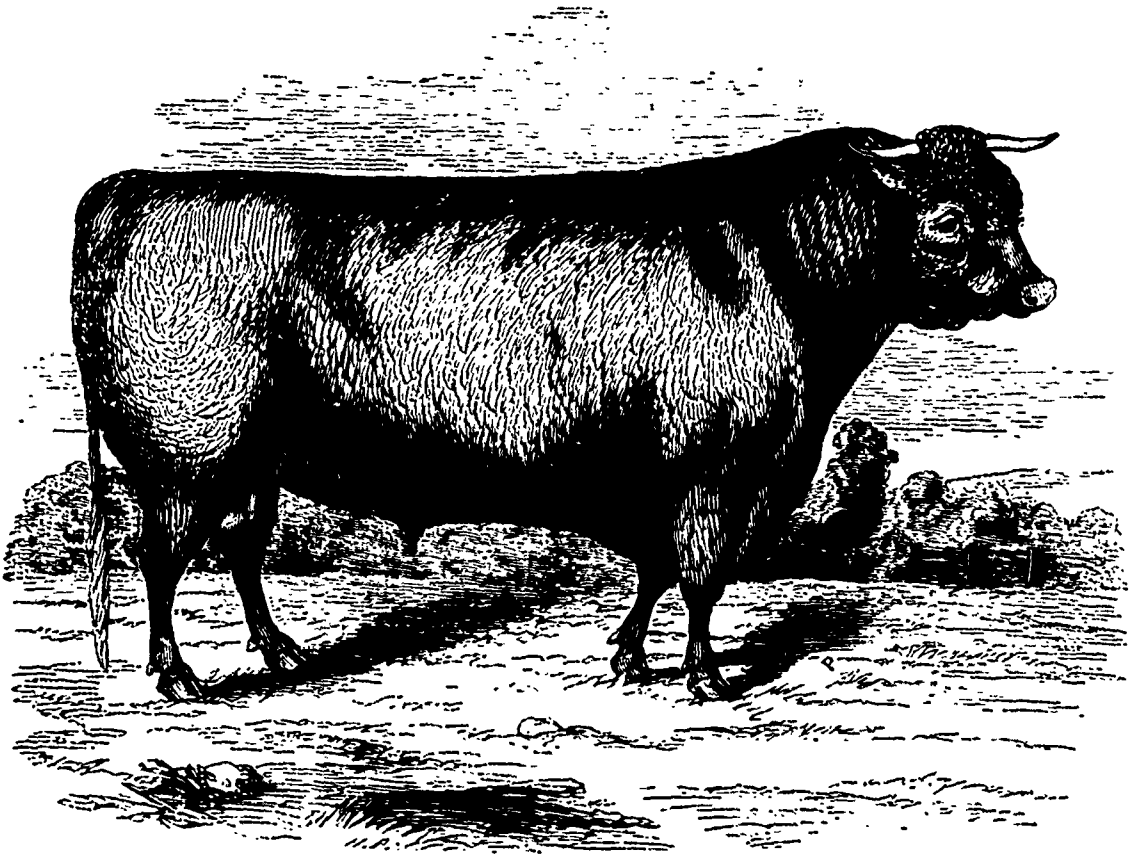
In Ireland, "Teewaters" were very early imported, and the influence of that blood has been most beneficial on the cattle of that country, which now boasts of some of the best and purest herds. France and several other European countries have, of late years, extensively cultivated the Short-horns. British breeders have found their best customers in North America, and in the principal colonies of the Empire. Very high prices have been given by enterprising breeders in the States of New York, Ohio, and Kentucky, and in Canada, where Short-horn blood is to be found of the purest and highest quality, while the Australian colo-

nies have exhibited an equally commendable spirit in advancing this important pursuit.

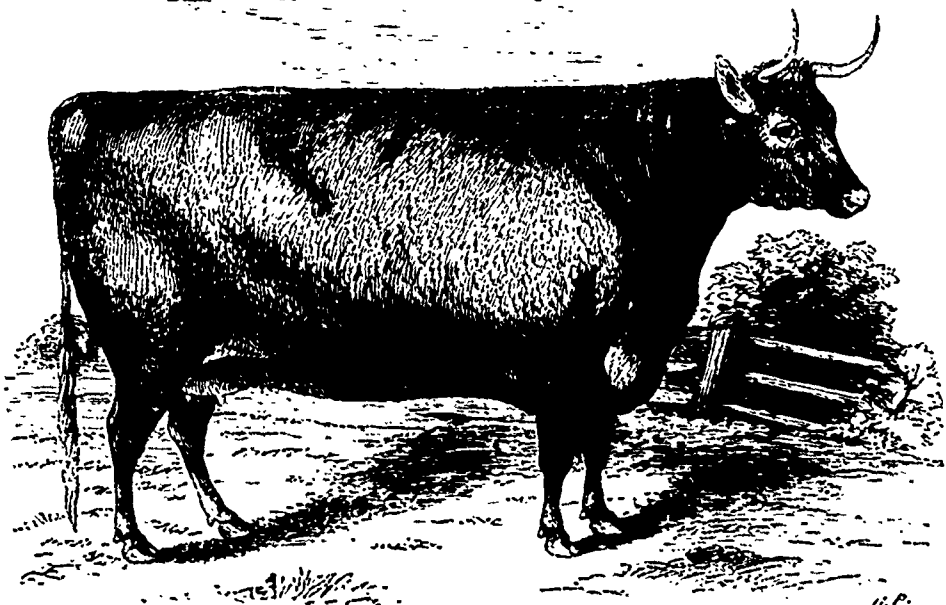
Prices may at times have been wild and fanciful, and 250 guineas may seem an extravagant bull-hire; but still buying good beasts and holding to approved tribes, even at a large outlay, is the most profitable policy in the long run. There is some "method in the madness" which would give 125 guineas for "Oxford 11th" as a calf, 250 guineas for her as a three-year old, and 500 guineas for her as a cow, on the only three occasions that this dam of "Fifth Duke of Oxford"—the first prize aged bull of Chester, and a 300 guinea purchase at six months old—was brought into the sale ring. When we look back to the calm foresight of the brothers Colling, the courageous confidence of Mason, the Rev. Henry Berry, and Whitaker; "Tommy Bates," and all his animated lectures on touch and form in his pastures, or on the show-ground; "A quiet day at Wiseton," the dashing cow and heifer contests between Towneley, Booth and Douglas; the victories of "Duchess 77th" and "The Twins;" the dispersion of the late Jonas Webb's herd at the steady paying average of £55 10s. for 145; the brilliant gathering which appraised the "Butterflies;" the £8,180 at Willis's Rooms for seventeen Grand Dukes and Duchesses; and then scan the result in so many fairs and pastures, we may well feel that Short-horns have repaid all the money, thought and labour which have been expended upon them. Still, in one way only can their supremacy be made permanent—by always keeping in mind the rule by which our first breeders have been guided, that "a good beast must be a good beast, however it has come; but that it is to pedigrees alone that we can trust for succession."

Swine—About Breeds.

A writer in the *Rural World* says he has bred and fattened the following breeds of hogs, and found some of all sorts good, but not uniform in their fattening tendencies: First trial with the China, then the Woburn or Bedford, followed by the Berkshire, Yorkshire, Chester, and lastly the Essex—the latter fully answering all his wishes as a perfect animal. Their early maturity, fine form, aptitude to take on flesh, quick growth, large, well developed hams, the sows prolific and good nurses—these qualities he considers the most desirable in swine. If every farmer in Canada had no swine in their hands but Essex, it would save hundreds of thousands of dollars by the saving of corn, peas, and other food. One other recommendation the Essex hog possesses is freedom from cutaneous diseases, such as mange and measles. All black breeds of swine are less subject to skin diseases than the white, and are altogether more hardy than white hogs.



FIRST PRIZE DEVON BULL, "WILMOT,"
The Property of MR. GEORGE RUDD, Guelph.



FIRST PRIZE DEVON COW, "THRIFTY."
The Property of Messrs. W. & J. PETERS, London, Ontario.

Prize Devons.

On the opposite page we give two illustrations of prize Devons exhibited at the last Provincial show in Hamilton. This very useful breed of cattle originated in the north of Devon, and was at one time in high repute both as dairy stock and for working cattle. The more showy qualities of the modern short-horns, their greater size and aptitude to fatten, have thrown all other breeds perhaps too much into the shade. There are qualities about the Devon that recommend them to the breeder. They are hardy in constitution, gentle in temper, will make average and not unfrequently more than average milkers; they are easily kept, and will readily take on fat; and more than all, they make the best class of working oxen for the backwoods settler—docile, quick, yet strong, and easily broken in. The splendid ring of short-horn cattle at the Hamilton Exhibition last year attracted an amount of attention that caused many to overlook the other classes; but we happened to be present while the judges were inspecting the Devon ring, and were much struck with the general excellence of this class. Among the meritorious animals then exhibited, the two whose portraits we give deservedly gained the highest honours.

The subject of the first illustration is the property of Mr. George Rudd, of Guelph. This fine bull, "Wilmot," gained the first prize on this occasion in the class of two-year old Devon bulls, and also the diploma against all other competitors in the same class, as the best bull of any age. He had previously taken several first prizes as a calf and year old at county and township shows. Mr. Rudd bought him of Colonel Scott, of Wilmot, when he was only a few months old. He was calved on May 4th, 1866. The following is his pedigree:—

Wilmot (261 Canadian Devon Stock Register), sire, Young William (103); grandsire, Duke (100); dam, Young Lady, (152), by Wallace; g.d., Lady (81), by Holkam (217); gr. g. dam, Devon (638), descended from the stock imported into the United States by the Hon. R. Kieely, from the Earl of Leicester.

Both Wilmots, sire and dam, took first prizes at the Provincial Show, the former also gained the same distinction at London. He is a fine, symmetrically built animal, and as the portrait shows, a good representative of the breed. We understand that he is docile in disposition, and an excellent stock getter.

The second illustration is a portrait of the thoroughbred Devon cow "Thrifty," owned by Messrs. W. & J. Peters, of London. She gained the first prize at the Provincial Exhibition, as the best cow. She is a beautiful specimen of her kind, of fair size, well proportioned, having a fine skin and good color. She has never appeared at any exhibition

without carrying off laurels in her class. She is a noble breeder and milker. Her offspring are also prize getters. The judges at the Exhibition spoke in high terms of the whole ring, and remarked that they found considerable difficulty in making their awards, as in quality the animals exhibited were very nearly alike, and all of very high merit.

The following is "Thrifty's" pedigree:— She was bred by the late Samuel Peters, Esq., of Grosvenor Lodge, London, Ontario; was calved in January, 1862. Her sire was a first prize Devon bull, imported from England by W. H. Lock, of Yarmouth; her dam, Truefit 2nd; grand dam, Truefit 1st, imported from England and bred by the Earl of Leicester.

The Prevention of Disease.

To the Editor.

SM.—A few remarks on feeding and ventilation, with reference to the health of stock, may not be out of place at this season of the year.

I have often thought that farmers make a mistake in the management of their stock, particularly when fodder is scarce, by feeding their cattle too sparingly in the fall and during the winter months, so that the animals become poor and weak. Then again, in the spring, they feed them much better, particularly horses, to give them strength to enable them to do the spring's work. This, I think, is wrong, and I would recommend that horses should be fed rather better, if anything, during the winter than in the spring. But the right method is to feed regularly, for by this way fodder will certainly be economized, and disease not unfrequently prevented. For it is a known fact that an animal that is poor and weak requires more good food to keep him up than one which is fat and strong, to do the same amount of work. Another source of disease is the sudden changing the food from poor to rich. In early spring, particularly during the change of the weather, when days get hot, horses should be dieted for a day or two. This would be far better than to overfeed them. Dieting is not starvation. It is living on substantial food, in amount sufficient to satisfy the wants of the system. Sickness might also be prevented by continually and thoroughly ventilating the house in which the animals are lodged. By day and by night a window or door should be frequently left open, the animal being screened from immediate contact with the draft. Many diseases, especially those which are preceded by languor, lassitude, and drowsiness, are produced by a foul atmosphere, and by the effluvia arising from drains and sewers. The recovery of the animal will often entirely depend upon a removal to a pure air.

If there were more lovers of simple preventives, hundreds of lives now yearly lost

might be saved. Thousands of cases of sickness occur which might have been prevented, and measures for prevention are infinitely more beneficial and effective than remedies for the cure of disease.

J. W. MOORE.

Darlington.

Horse Feed.

A correspondent from Mono Centre writes:—

Your journal has a large circulation in this place, and its agricultural advice is very confidently followed by our farmers; I therefore wish to submit to you the following questions:—

In the *Complete Farmer*, published in the year 1831, by Thomas G. Fessenden, I find:

1st, &c. says that "the best of clover hay will keep horses as well as most other kinds of hay with oats."

2nd, he says that "wheat, the natural food for man, is poison to the horse."

Large quantities of hay are used in my stable, and most people will take timothy hay to feed their horses, even when there is plenty of clover hay to be had.

Oats have been so scarce that many farmers have fed large quantities of wheat to their horses. I have nothing else to give my own, and wheat is much cheaper than oats. My horses seem to improve on their new feed.

Is clover decidedly better for horses, and is wheat poison to them?

Ans.—The best clover hay, properly made, is good feed for horses or cattle; but as it is generally made, it is either mouldy, or too dry and dusty for horses, and timothy, which is usually better cured, is preferred. Wheat, when not injudiciously given in too large quantities, has been used with advantage in the old country, as well as in Canada, when other grains have been scarce. Its price, however, commonly puts it quite out of the question as food for horses. The injury it has sometimes caused has been owing to horses getting loose and gaining access to stores of wheat, upon which they have greedily fed, and suffered, perhaps even died, in consequence.

SALE OF STOCK.—Mr. Joseph Kirby, of Milton, Ontario, has sold his eight months old short-horn bull calf "Duke of Malden," by "Duke of Marlborough," 5587 A. H. B., out of "Diadem," sired by "Butterfly," 91 C. H. B., to the Anderson Agricultural Society. The same society have also purchased the two-year old bull "Evelick," by "Romeo," bred by the late A. J. Fergusson Blair.

SHEEP AND SHEARING EXHIBITION.—The annual Sheep and Shearing Exhibition at Hamilton will be held, as usual, on the anniversary of the Queen's Birthday, May 24th, Sweepstakes prizes are offered, in accordance with the terms proposed by Mr. Nottle, in the CANADA FARMER of April, besides the usual premiums for the different breeds of sheep, and for shearing. The prize list is on a very liberal scale.

The Dairy.

Skim-milk Cheese.

Are our farmers over dainty, or are they so given over to eating pork that they can be satisfied with nothing else? In olden times in the old country, both farmers and farmers' men were satisfied with a good skim-milk cheese as an addition to bread for either breakfast or supper, and often for dinner. Few who have not tried it have any knowledge of what an excellent article of food can be produced from skim-milk cheese. It is quite true that some is of inferior quality, and very hard, but on the other hand, some samples are so really excellent, that in most country gentlemen's houses in England in years past, the skim-milk cheese was presented alongside of its richer brothers of various titles, and was by many preferred. To be sure, it was only the very best of the kind that was so honoured, but the fact that some skim-milk cheeses were of surpassing excellence proves that inferior kinds are the result of want of skill only.

In English farm-houses of the old fashion, small beer, bread, and skim-milk cheese, were always placed at the command of all. There was no stint, and these articles were considered to be by all equally good and wholesome as human nourishment. The cheese was always believed to be a good "stand-by," which enabled the eater of it to hold out in his labour from meal to meal without extra fatigue. In those days these matters were not looked into scientifically, but now we know that cheese of this quality is rich in muscle-producing food, whilst from the absence of fatty matter it does not induce obesity and its consequent shortness of breath.

Skim-milk cheese was always made in the following manner, and entirely by the "rule of thumb," such a thing as a thermometer being then unknown in the dairy, and neither wanted nor wished for. The dairymaid saved the milk, after skimming, putting the two meals together. The morning was the time for making it, but when the weather admitted it, two days' milk would be kept. The whole of this milk was placed in a brass kettle, set in what in Canada is called an arch, that is, brickwork with a fireplace underneath, rennet was added, and a fire lighted with straw, furze, or other light material. The milk was brought to the right heat in the estimation of the operator, was then well stirred round, the rennet was taken out of it, and it was left to repose for an hour or more. If the milk was heated too much the curd would be stringy and tough. If not enough, the curd would be soft, but it was never heated a second time. As soon as the heat was sufficient, the fire was put out, if it had not burned out previously, which was generally the case. The kettle

was covered, the dairymaid then went to her other work. When the time suited, she came again, laddled the contents of the kettle into a broad shallow cheese tub, with a cheese-cloth strained over it so far as to let the greater portion of the curd rest on the bottom of the tub. The curd was then cut through and across many times with a wooden knife, and the whey allowed to drain off through the cloth, and it was caught in a vessel below. There was always a hole about two inches in diameter in the bottom of the tub, and this was covered with a flat wooden dish or bowl turned over it, which thus formed an excellent strainer. When the whey was sufficiently drained off, the curd was churned and mashed up with the fingers and hands, until it would make a kind of creaking noise when handled. It was then salted more or less, according to taste, but not fully salted, and, with the cheese-cloth folded round it, placed in the hoop, and under the press. This was either a screw press, or, preferably, a large heavy square stone hoisted up by tackle, and allowed to settle on the cheese. The next morning the cheese was taken out, and the cloth turned. The edges which had gone over the hoop were cut off, and given to the chickens, and the cheese was replaced in the press for consolidation. After it had become a solid mass, easily handled, it was taken out of the hoop and cloth, and placed in a vessel containing wet salt, and turned therein for a day or two. It was then put on the rack, and occasionally turned and examined, sometimes being rubbed with butter and sometimes not. In the course of a month or two it ripened and became tasty and good to eat, having attained a full cheese flavour, but oftentimes being very hard. Some of the cheese would become affected throughout with a kind of blue mould called "blue veins." These were the most admired, and were put by for better use. The others became, like bread, the food of the family, to be used *à discretion*, as the French say.

The poet Bloomfield, in his celebrated poem of the "Farmer's Boy," sourly abused this kind of food, and after supposing it in every position, and rejected by all, deposits it in the pig trough, where even the swine nose it about, as "too big to swallow, and too hard to bite;" but, fortunately, the condemnation even of a poet cannot ignore usefulness, and we fancy that even yet skim-milk cheese will be adopted extensively as food in the Canadian farmer's family.

Cheese-making in Small Dairies.

Cheese has been high in price the past year, owing, perhaps, partly to the overdoing of the business of cheese-making the year before, when not only were large quantities made, but much of it was of inferior quality, that the consumption of the article could not be encouraged, and so prices ruled below a paying point, and many left off

cheese-making last year, which, together with the short supply of milk from the pastures being dried up with the excessively long summer drought, brought up prices again. The lesson learned the year before caused more care to be given to the process of manufacturing the past season, and a better article was the result, and now consumption has been somewhat stimulated by a supply of really eatable and good cheese, prices will not be likely to again reach so low a point, for a really good article, at least; and no other ought to be sent to market.

But will cheese-making in small dairies or by single farmers pay? We are inclined to think not. At least, we would advise such to give their attention to butter-making rather than the manufacture of cheese, for the reason that they cannot hope to compete in the market with the cheese produced under the factory system, where capital and talent combine to produce an article of first-rate quality, at a much less cost than can be done in small dairies. Cheese-making is a nice and intricate business to carry out to perfection, and few indeed there are possessed of the knowledge and knack of applying it that is requisite to ensure perfect success in producing a superior article of cheese. Butter-making will, we think, commend itself to those who have a small herd of good milch cows, and we think will pay the best, especially if such an article is produced as can be commended for its sweetness of flavour and perfect cleanliness, by those among our wealthier classes who can and will appreciate and pay for a really good article.

FEEDING COWS AT MILKING TIME.—It is a bad policy to feed cows moist food at milking time. It is like purchasing the good behaviour of children with *bon bons*. Discontinue the practice for a short time and the cows will be restless and intractable. Besides, its practice will be likely to interfere with the milking, the cow not giving down her milk with the same readiness as when not occupied in cramming down the food before her.

ABORTION.—E. J. Yorke writes: "I have a very fine heifer, of which I designed to make a cow. But about six weeks or two months before her time, she slipped her calf. How shall I treat her, as she has considerable milk in her udder now? Should she be dried or milked, the object being to secure good milking qualities in future? Will she be more liable to slip her calf than if no such accident had occurred?" REPLY.—If it be intended to keep the heifer and breed from her, it would certainly be better to milk her, and encourage the secretion as much as possible, with a view of developing milking qualities. She would be liable, however, to a recurrence of the accident, and great care should be exercised as her season of calving approached. By the time this note can reach the writer of the above enquiry, the matter must have been practically decided. Still, for guidance in similar occurrences, we give our opinion of the right practice under the circumstances.

Poultry Yard.

Ontario Poultry Association.—Fourth Exhibition.

The fourth Exhibition of Poultry and Pigeons, under the auspices of the Ontario Poultry Association, was held in the Agricultural Hall, in this city, on the 21st and 22nd of April, and comprised a most creditable collection of birds. Indeed, taking it as a whole, it perhaps surpassed any of those that have been hitherto held. The number of entries was fully equal to last year's, amounting to nearly three hundred, though some of the pens were empty in consequence of the non-arrival of their expected tenants. This has always been the case to some extent, and is doubtless unavoidable; but the number of vacant coops was not in the present instance sufficient to detract from the fine display which the interior of the Hall presented. It is the custom of this association to have all the birds in their places and the judging completed before the public are admitted. Early on Tuesday afternoon the last of the arrivals were in their appointed places, and the Judges commenced their labours, the Hall being cleared from all intruders or interested parties, so that the judging might not receive any bias, as is too often the case, from influences apart from the merits of the objects of competition. Another excellent regulation is adopted, namely, that, until the judging is decided, no names are attached to the specimens, and the judges are ignorant of the ownership of the birds.

In the recent exhibition, the onerous task of awarding the prizes was rendered in many instances very difficult by the uniform excellence of specimens presented for competition; but the judges, Col. Hassard and Mr. Finch, performed their duties with great patience and impartiality, sparing no pains in a careful comparison of points, and resorting in doubtful cases to measurement and weighing. The result of their examination, which was not concluded till a late hour in the evening, will be found in the prize list appended below.

Most of the classes of poultry were pretty fairly represented in point of numbers, and several of them showed an excellence in quality not hitherto attained in this country. This is gratifying to the society, as it shows that their efforts to effect improvements in the various breeds of poultry are meeting with success.

The Buff Cochins were, as heretofore, in force, and there were some most magnificent birds. Those who have visited previous exhibitions would not fail to recognize some of the splendid birds that were bred by Col. Hassard and exhibited at the last show, and which were then sold and distributed to various parts of the country. Others were clearly the progeny of the same strain. A pair of young birds exhibited by Dr. George Sangster, and which gained the first prize, were no doubt thus raised. There were larger birds, and finer looking, but taking their age into account, and the completeness of all their points the judges concluded to award them the highest distinction. Mr. Peters showed a magnificent pair of birds in the same class, which were, perhaps, larger than any others in competition with them.

The White Cochins were also good, though not so numerously represented as their darker congeners. Mr. Feeley, of Hamilton, carried off all the honours in this class.

The Dark Brahmas were never before shown in such numbers in this country. They are a splendid fowl, and will, we predict, become favourites with poultry fanciers here. The finest specimens were undoubtedly those of Mr. Sheldon Stephens, of Montreal. He imported some fresh blood from England last spring, and the birds exhibited by him in Toronto were the chickens raised from the imported birds. In size and plumage and carriage, they are truly noble samples of the breed.

Mr. Thomas, of Brooklyn, also showed some splendid birds of the same class; and among the meritorious

specimens was a remarkably fine hen—one of the first imported by Mr. Varley—and the parent of some of the best birds in the Province. The show in this class was remarkably excellent.

The Light Brahmas scarcely came up to the mark hitherto attained. They were inferior in number to those of previous shows and scarcely so good in quality. Mr. Joseph Lamb was the successful competitor, with a splendid pair.

There was not a very large display of Dorkings, but in the Grey variety especially, there were several very fine birds. All the honours in this class, as well as the White, were awarded to London exhibitors.

The Spanish were not shown in such force as last year. Mr. Birchall, who carried off all the prizes, had, however, some beautiful birds, and Mr. Peters showed a very meritorious pair of this useful and prolific breed.

The class of Red Game has never before been equalled. The show was really magnificent. The judges would have been glad to award a prize to each pen and commended the whole class. The competition was very close, and those who have taken prizes have reason to be proud of their honours. Some of the birds, otherwise splendid and entitled to distinction, were ruled out from not matching well. Exhibitors should keep this point in mind, and be careful that in the colour of legs and other points the birds are properly matched.

The Duckwing and other classes of game fowl were also fine, though they did not come up in point of numbers or general excellence to the Red.

In Hamburgs the competition has been very close. The Judges spent much time over this class, and did not come to their decision without a careful and repeated comparison of points. For beauty of marking, and elegance of form and carriage, there is perhaps no more attractive variety of fowl. Their small size, and their wildness and disposition to fly, are disadvantages; but they are, nevertheless, great favourites, and several Canadian breeders have been eminently successful with them. A pair sold by Mr. McLean Howard to a gentleman at Albany, carried off the first prize at the recent great show in New York. We believe the birds Mr. Howard exhibited here were superior to those which gained this distinction. Mr. Lamb, nevertheless, took the first prize in the class of gold and silver pencilled. In the spangled Hamburgs the silver birds were the best.—Mr. Feeley, of Hamilton, leading with one of this variety.

Very marked improvement was evident in the Golden Polands. The Society's shows have hitherto been rather weak in all the Poland classes, but on the present occasion there were a number of very meritorious specimens. Mr. James McGrath, of Toronto, and Mr. Lamb, took the prizes. The miscellaneous class of Polands were by no means equal to the preceding. Indeed, the show in this portion was decidedly inferior.

There were but two pens of French fowls, Mr. Lamb showing a pair of Creve Coeurs, and Mr. Leslie a pair of Houdans, both good pens.

Among the Bantams, the gold and silver faced were some of them well marked, but on the whole they were too large to be first rate. The next class of Bantams was better. Indeed the pair of Game Bantams shown by Captain Gore are perfect beauties, and decidedly the best of the kind ever exhibited in Toronto. Mr. Howard also showed a beautiful pair, and those exhibited by Mr. Peters deserved the commendation awarded by the judges. Indeed we prefer them altogether to those that gained the first prize.

There was not a large show of Ducks, but several of the specimens were of remarkable excellence. The Aylesbury were true to breed. Those shown by Mr. Lamb were old birds and finely grown; the young ones of Mr. Peters are very promising. The same exhibitor also showed a splendid pair of Rouens. In the any variety class of Ducks, the judges were unwilling to award any distinction to birds that should have been exhibited as Rouens, but were probably not considered by their owners good enough for

that class, and so placed amongst the miscellaneous ones. But a bad Rouen is not a good common duck.

On this account solely, the prizes were awarded to Muscovy Ducks, of no particular merit.

The Geese were very few and not remarkable. Mr. Peters carried off the first prize for a very large and beautiful pair of bronze Turkeys. Mr. Lamb and Mr. Foley had also some good birds in this class.

The display of Pigeons was larger than last year, and on the whole very good, though fanciers missed the magnificent show of Carriers and Pouters shown at the last exhibition by Colonel Hassard. The greatest number were shown by Mr. Johnson of London, who had altogether a very good collection, and carried off the greatest number of prizes. Mr. McGrath and Mr. Hendrie of Toronto, and Mr. Bailey, of London, were also successful competitors, as were also Dr. Sangster and Messrs. Butler and Davis. This portion of the exhibition was indeed well filled and formed an attractive feature of the show; nearly every class in the prize list was represented. Mr. Johnson's Carriers were beautiful. The show of Pouters was very good. There was quite a large competition in Tumblers, the judges showing their preference for the short-faced variety. There were some good Jacobins, but they gave some trouble in the award from being nearly all odd-eyed,—that is, having the two eyes of different colours.

The exhibition was altogether highly creditable, and well repaid a visit. We congratulate the Society on the successful issue of their enterprise. Below we give the award of prizes.—

PRIZE LIST.

Class 1—Cochin China (buff or cinnamon)—12 entries. 1st prize—\$4, George Sangster, Avenue Road, Yorkville; 2nd prize—\$2, R. Smith, Front street, Toronto, highly commended, John Peters, London; commended, A. McLean Howard, Toronto; commended, J. H. Feeley, Hamilton.

Class 2—Cochin China (white, or any other colour)—10 entries—1st prize—\$4, J. H. Feeley, Hamilton; 2nd do—\$2, J. H. Feeley, Hamilton.

Class 3—Brahma Pootra (dark)—10 entries—1st prize—\$4, Sheldon Stephens, Montreal; 2nd do—\$2, H. M. Thomas, Brooklin, Ontario; highly commended, A. McLean Howard, Toronto; highly commended, Sheldon Stephens, Montreal.

Class 4—Brahma Pootra (light)—16 entries—1st prize—\$4, Joseph Lamb, London; 2nd do—\$2, Joseph Lamb, London.

Class 5—Dorkings (coloured)—8 entries—1st prize—\$4, Joseph Lamb, London; 2nd do—\$2, John Bogue, London; highly commended, John Peters, London; commended, Joseph Lamb, London.

Class 6—Dorkings (white)—6 entries—1st prize \$4—Joseph Lamb, London; 2nd do—\$2, John Bogue, London; commended, John Plummer, Junr., London.

Class 7—Spanish—8 entries—1st prize, \$1, T. Shivers Birchall, Toronto; 2nd do, \$2, T. Shivers Birchall, Toronto; highly commended—T. Shivers Birchall, Toronto; John Peters, London.

Class 8—Game, black breasted and other reds—22 entries—1st prize, \$4, James Bewick, Toronto; 2nd do, \$2, John Hendrie, Toronto. Highly commended—James A. Ellis, Toronto; John Plummer, Junr., London; John Peters, London; James Bewick, Toronto; Joseph Lamb, London; whole class commended.

Class 9—Game Duckwing, greys and blues—15 entries—1st prize, \$4, John Bogue, London; 2nd do, \$2, James A. Ellis, Toronto. Highly commended—R. C. Smyth, Brantford.

Class 10—White, Pile and other variety—9 entries—Given by A. McLean Howard, Esq.—1st prize \$4, James A. Ellis, Toronto; 2nd do, \$2, A. McLean Howard, Toronto. Highly commended—A. McLean Howard, Toronto; W. A. Schoenau, Glenlyon.

Class 11—Hamburg, gold or silver pencilled—11 entries—1st prize, \$4, Joseph Lamb, London; 2nd do, \$2, A. McLean Howard, Toronto. Highly commended—John S. Barnes, St. Thomas. Commended—George Brown, Toronto.

Class 12—Hamburg (Gold or Silver Spangled)—9 entries—1st prize, \$4, J. H. Feeley, Hamilton; 2nd do, \$2, A. McLean Howard, Toronto.

Class 13—Polish (Gold or Silver)—14 entries—1st prize, \$4, James McGrath, Toronto; 2nd do, \$2, Joseph Lamb, London.

Class 14—Polish (any other variety)—4 entries—1st prize, \$4, George Brown, Toronto; 2nd do, \$2, Joseph Lamb, London. Highly commended (hen)—Joseph Lamb, London.

Class 15—Houdans (Creve Coeur, La Fleche and any other French Fowl)—2 entries—1st prize, \$4, Joseph Lamb, London; 2nd do, \$2, Joseph W Lesslie, Toronto.

Class 16—Bantams (Gold or Silver Laced)—3 entries—1st prize, \$1, James Millington, Toronto; 2nd do, \$2, James Millington, Toronto.

Class 17—Bantams (Game and any other variety)—3 entries—1st prize (given by Wm T Goldsmith, Esq, St Catharines), \$4, Captain R Gore, R A, Toronto; 2nd do, \$2, A McLean Howard, Toronto. Highly commended—John Peters, London; commended, Captain M O Miller, Toronto.

Class 18—Turkeys, any variety—4 entries—1st prize, \$4, John Peters, London; 2nd do, \$2, Joseph Lamb, London.

Class 19—Ducks, Aylesbury—4 entries. 1st prize, \$4, Joseph Lamb, London; 2nd do, John Peters, London. Highly commended—Joseph Lamb, London.

Class 20—Ducks, Rouen—4 entries—1st prize, \$4, John Peters, London; 2nd do, \$2, Joseph Lamb, London.

Class 21—Ducks, any other variety—3 entries—1st prize, \$4, Joseph Lamb, London; 2nd do, \$2, G. P. Sangster, Yorkville.

Class 22—Geese, white—3 entries—1st prize, \$4, W John Bailey, London; 2nd do, \$2, Joseph Lamb, London.

Class 23—Geese, coloured—4 entries—1st prize, \$4, Joseph Lamb, London; 2nd do, \$2, Joseph Lamb, London.

Class 24—Any other variety of fowl not mentioned in above classes—2 entries—1st prize, \$1, J W Hector, Rosedale, Toronto; 2nd do, \$3, W M V Robertson, Toronto; 3rd do, \$2, James Millington, Toronto. Highly commended—A McLean Howard, Toronto.

PIGEONS.

Birds of any age, to be shown in pairs, except Carriers andouters.

Class 25—Carriers, Cocks, any colour—2 entries—1st prize, \$2, John Johnson, London.

Class 26—Carriers, Hens, any colour—2 entries—1st prize, \$2, John Johnson, London.

Class 27—Pouters, Cocks, any colour—11 entries—1st prize, \$2, John Johnson, London. Very highly commended—John Hendrie, Toronto. Highly commended—John Johnson, London; John Hendrie, Toronto; James McGrath, Toronto.

Class 28—Pouters, Hens, any colour—9 entries—1st prize, \$2, John Hendrie, Toronto. Highly commended—John Johnson, London; John Hendrie, Toronto; W John Bailey, London. Commended—John Johnson, London.

Class 29—Tumblers, any variety—20 entries—1st prize, \$3, James McGrath, Toronto; 2nd do, \$2, Jas McGrath, Toronto; 3rd do, \$1, John Johnson, London. Highly commended—W John Bailey, London; John Johnson, London.

Class 30—Jacobins or Frills, any colour—6 entries—1st prize, \$2, John Johnson, London; 2nd do \$1, David Davis, Toronto.

Class 31—Pouter, any color—5 entries—1st prize, \$2, Wilkin B. Butler, Toronto; 2nd do, \$1, George E. Sangster, Avenue Road, Yorkville.

Class 32—Barbs, any color—2 entries—1st prize, \$2, John Johnson, London; 2nd do, \$1, John Johnson, London.

Class 33—Turtins, any colour—4 entries—1st prize, \$2, John Johnson, London; 2nd do, \$1, David Davis, Toronto.

Class 34—Trumpeters, any colours—4 entries—1st prize, \$2, W John Bailey, London; 2nd do, W John Bailey, London.

Class 35—Any other variety of Pigeons not mentioned in the foregoing classes—4 entries—1st prize, \$2—1st prize withheld; 2nd do, \$1, Isaac Davis, Toronto.

Some very ill-natured criticisms respecting some of the awards appeared a few days after the show, in more than one of the daily journals. The communications were anonymous, and otherwise undeserving of notice. The statements were inaccurate, and the tone of criticism was, to say the least, in very bad taste. Every unprejudiced person will acknowledge that the judging was fair and impartial, though there will always be room for some differences of opinion. A good reason, in the present case, could be given for every decision. The Society could not have selected two men in the Province better qualified to act as judges than Colonel Hassard and Mr. Finch.

New York State Poultry Show.

This great exhibition was held in New York city, in the spacious building known as the Empire Skating Rink, and is reported to have been eminently successful. A very large number of visitors, over 20,000, attended, and the number of entries mounted up to about one thousand, including the miscellaneous articles—fancy and singing birds, ponies, rabbits, cats, dogs, &c., that made up the show. In every respect the poultry exhibited appear to have surpassed anything of the kind seen in New York before. Perhaps the most noticeable feature of the exhibition was a collection consisting of eight trios of poultry, sent by the noted breeder, Mr. Cooper, of Limerick, Ireland. These birds attracted much attention, and at the auction sale, which took place on the last day of the show, they realized enormous prices. The first lot sold, a trio of dark Brahmans, fetched \$235. The next lot, a trio of Buff Cochins, were knocked down at \$315 (\$105 for each bird). The remaining trios were sold as follows: The Dorkings for \$35, the Houdans for \$87 50, the La Fleche for \$16, the Creve Coeurs for \$87 50, the Black Spanish for \$35, the Sultans for \$52 50, and a pair of Toulouse geese for \$51—the whole sale of eight trios of fowls and one pair of geese bringing \$994 50, and netting to the Society over the invoice price about \$600.

Poultry Queries.

W. R. Rutlan, of Pictou, sends the following array of queries:—

How large a yard will I require to keep 1,000 hens?

What height and style of fence?

What kind of food would you recommend to make them lay well?

What amount of food will they consume per day?

How many roosters will be required for 1,000 hens?

Whether it will pay or not to winter them over?

If so, what kind of a house would you recommend?

What kind of a house is best for summer?

How many eggs will they average per week?

Is it possible to preserve eggs until winter without spoiling?

To answer all these enquiries would involve quite a treatise on poultry culture, and we would recommend our correspondent to procure "Wright's, Practical Poultry Keeper," which is one of the best compendiums on the subject, and can be obtained at moderate price. If a still cheaper work is desired, we can confidently recommend "Poultry for the Many," to be had for 12½ cents, an excellent little treatise. Either of them will enable him to gather the information he requires.

The answers to his specific queries must depend very much upon the particular object

he has in view; but he is perhaps aware that poultry keeping on a large scale has seldom been successful, probably on account of too limited space and other causes, generating epizootic diseases. An extract from one of our exchanges, which we give below, furnishes answers to many of the queries. The space allotted should be ample. The height of fence must depend entirely on the breed selected. For Cochins and Brahmans, two feet would be sufficient, while Spanish and Hamburgs would fly over one of eleven feet. If the chief purpose be to raise strong chickens, each cock should not have more than seven or eight hens, but if eggs are the principal object, the fewer male birds the better. Our correspondent, however, cannot do better than procure one or both of the works before mentioned. The following extract also will furnish some useful hints:—

Mr. Warren Leland, proprietor of the Metropolitan Hotel, New York, seems to have been quite successful in the generally unsuccessful attempt to raise poultry in large numbers. He has a farm twenty-five miles from New York, some fifteen acres of which he has devoted to poultry. It is varied in surface and not well adapted for tillage. Over all this, as well as, to some extent, the adjoining fields, the fowls have freedom to roam at will. A stone building 75 by 25 feet furnishes shelter from storms and cold, roosting places at night, and nest. About 300 of the earliest spring chickens are kept over winter, furnishing a good supply of eggs. They are fed on corn, bread and meat scraps from the hotel, chopped cabbage and turnips.

Queries on Poultry Points.

To the Editor.

Sir,—Can you or any of your correspondents give me the points, &c. in Leghorn fowls? In the New York Exhibition, in class C, three sections are given to them, and I should much like to have the differences explained between Dominique and Dominique Leghorn, and also between white and coloured Leghorns and any coloured and white fowls. In a work on poultry, by S. M. Saunders, being mostly a word for word reprint from "Bailey on Fowls," I find at page 73 Leghorn fowls mentioned; and although qualities common to all good fowls are stated as their attributes, there is, I think, not sufficient to judge them by. From this description I gather that the colour might be anything, with single combs and white earlobes, faces red, white, or mixed, *ad libitum*; and that the white are a mongrel white Spanish. Is this so?

I consider Mr. Saunders' description very vague, for he gives us no definite points to breed to.

I have heard of Black Minorcas, and seen them. I have heard of white, and not seen them. Are not these Leghorns White Minorcas? They answer all the points, but the face must be red—a partial white showing their sport from the Spanish. But how did they get their yellow legs? I should be obliged if any of your readers could enlighten us upon this subject.

Is a La Plata duck the same as the Buenos Ayres or East Indian?

And is not the Black Labrador duck the same as the Cayuga? We all know that it is not the same as the Buenos Ayres, or Little Black Duck.

F. C. HASSARD.

Entomology.

The American Vapourer Moth.

To the Editor.

SIR—Having noticed an article in your January number regarding the caterpillars which appear on our fruit summer, and do so much injury by eating up all the leaves I thought I might as well take a look at my trees. Well, sir, as the snow is pretty deep, and pretty firm just now, I put my snow shoes on my feet, and my spectacles (as I am near-sighted) in my pocket, and commenced a survey. I did not find many samples, but I send you one of the neatest and most compact for the benefit of any of your visitors. At this season there ought to be no old leaves on fruit trees, and so whenever I spied a leaf there was almost sure to be a deposit. I don't think there is any necessity for cutting off the branch on which they often deposit their eggs, if it is cut it will drop into your hand, and in the case of the leaf, you can see it is quite easy to pull away the whole establishment. I scrub my trees every first week of May, with soft soap, which I lay on, or rub in vigorously with an old worsted sock. Should the caterpillars come out strong, as they will do now and then, in spite of every precaution, I administer a dose of whale oil soap diluted in rain water, with a large syringe, and two or three applications will destroy the whole family, and the soap won't injure the fruit a bit: all nursery men keep the whale oil soap, and a large syringe can easily be got in your city. I may mention, that I could not get into my garden except over the fence, as I think we have more snow than last year, and yesterday was a fearful day, forming immense drifts.

F.

Fergus, 15th March, 1869.

NOTE BY ED.—The specimen sent us consists of a withered leaf with the remains of a thin silken cocoon attached to it, on which are deposited about two hundred round white eggs. These eggs, each of which has a deep hollow on the top giving it the appearance of a tiny opaque white bead, are the first stage of what is called by Dr. Fitch, "the American Vapourer Moth," (*Orgyia leucostigma*, Smith and Abbott). The caterpillars which come out of these eggs in the early part of the summer are remarkably pretty creatures. They are, when full-grown, over an inch long, of a bright yellow colour, with thin yellow hairs along the sides of the body: the head is bright coral red, the next segment has two long pencils of black hairs projecting forwards; and the last segment but one a single similar pencil pointing backwards; on the fourth and three following segments there are short thick brush-like tufts of yellowish hairs; and on the ninth and tenth two little coral-red knobs or warts. These caterpillars feed singly on the leaves of apple, plum, and a large number of other trees, sometimes when they are numerous, doing a good deal

of damage. When full-fed, they spin their thin silken cocoons on twigs of the trees which they frequent, or on fences; in the former case they draw down a leaf as a covering, and firmly attach it to their cocoon. In the winter this withered leaf serves to point out the position of the cocoon, with its cluster of eggs, as our correspondent relates. The insect remains about a fortnight in the chrysalis state, and then comes forth in the form of a moth; and here a singular peculiarity is observable. The male has broad ashy-grey wings, which expand about an inch and a quarter; the fore wings have a few indistinct black lines across them, and a white crescent-shaped dot near the lower corner; the antennæ are broadly and beautifully feathered, the tips of the plumes bending over and approaching each other. The female, on the other hand, is a totally different-looking creature, with the merest rudiments of wings, which are not observable except on close inspection, and thin simple antennæ. She bears a strong resemblance to the wingless female of the Canker-worm (*Anisopteryx*). The female moth, being of course unable to fly about at all, remains on her cocoon, where she is found by her mate, whose boastful ostentatious flight is the origin of his English name, "Vapourer." After pairing, the female lays her eggs upon her cocoon, covers them with a curious frothy matter, which becomes hard and brittle, and protects them from the weather, and then—her work accomplished—drops down and dies. The best remedy for these insects, when sufficiently numerous to be troublesome, is to adopt our correspondent's plan, and go around the orchard about the close of winter, when the cocoons with their eggs may be at once detected by their attendant leaf. At the same time the bracelet of eggs of the notorious Tent-caterpillar may be sought for and destroyed; but be careful to choose a dull cloudy day, when the eyes can be directed upwards without being blinded by the glare of sun and sky.

How to Kill the Currant Worm.

In 1860 currants were plenty in the St. Catharines market, at from 2 to 3 cents a quart. In the summer of 1868, the same fruit was scarce at 12 cents a quart.

What can have caused so extraordinary a rise in the price of a fruit so easily raised? Something may be due to the late dry season but the principal cause is owing to the destruction of the leaves by worms. This is sufficiently evident from a perusal of the local reports of the Ontario Fruit Growers' Association.

Currants are mentioned in fourteen of the sixteen localities reported, and in twelve of them the ravages of the worm are deplored; three only of the twelve reporters say they have found a successful remedy.

Three kinds of worms infest the currant bushes.

1st. The Borer, which eats out the pith of both the black and red varieties.

2nd. The Measuring Worm which roams freely over the bushes, taking its selected bits from the leaves, and spins a thread, when rudely disturbed, to the ground, where they can be received on a sheet and easily destroyed.

3rd. And most destructive of all is a smaller worm, hatched from the egg of a fly on the leaves near the ground, where they may be seen in the latter part of May, or early in June, when not more than one-third of an inch long, crawling on the stems of the bushes near the ground and making their way to the nearest leaves, to which they attach themselves, and eating most voraciously, they grow in proportion. They do not quit the leaf first taken hold of while any of it is left, when they go to the next, treating that in the same way, until every leaf may be consumed in four or five days.

Thus the Gooseberry Worm, as it is called, is much more destructive than either the Borer or the Measuring Worm, and differs from the latter in this respect: that no amount of violence short of killing will cause them to let go their hold of the leaves.

Now, what is the remedy for this widespread evil? Much harm has been done by careless or indifferent advice, given by persons who should and probably do understand the matter well. To illustrate:—the able President of the Ontario Fruit Growers' Association advises brushing them off with a broom and killing on the ground. The gooseberry worm, the offspring of the saw fly, will not be shaken off, and if they did come down how many cultivators keep their land clean enough to find them where they fall. Mr. Saunders, to whom we look for instruction in everything pertaining to Entomology, says they may be hand-picked from the bushes. Undoubtedly, they may: so may farmers dig their wheat land with a spade, but will they do it? Quite as likely as to hand-pick the worms from the currant bushes in their gardens.

What is wanted is a cheap, expeditious and effectual method of removing these destructive pests that any one can apply, and one which, when well understood, most people having currant bushes will apply.

Such a remedy we have in hellebore and water; sprinkled, not over the bushes, but on the worms before they have spread over the bush.

Between the 25th of May and the 5th of June, in ordinary seasons, they are either on the canes, near the root, or on the lower leaves; then is the time to kill them. Take half an ounce of white hellebore powder, mix it well with three quarts of water, in a watering pot, provided with a rose that will spread the water well; thrust it into the

centre of the bush and sprinkle; half a pint is sufficient for one bush. In the absence of a watering-pot a small, fine sieve or tin colander will do, putting the mixture through it with a dipper.

At the rate of half a pint to a bush, one ounce of the powder, which can be had from any druggist for three cents, will be sufficient for 48 bushes, as many as are in most gardens and fifteen minutes are sufficient time for the application.

What should be done with the old bushes, still alive, that have been stripped of their leaves for two or three years in succession?

Early in the spring prune them closely, taking away all the dead wood, and as many of the hollow canes as well can be done, leaving most of last year's shoots, if there are any. While the ground is yet soft, dig off the sod with the thistles and burdocks, and mulch the bushes with decayed chips from the door yard, or long manure.

After killing the worms as advised, in a few days look for any that may have escaped, kill them also, and repeat the process early in July. The result will be a good growth of wood, leaves and buds the first year, and the second year a crop of fruit.

By following the above plan, every good house-wife can again have her green currant tart: in June, the nice cooling acid fruit in midsummer, and may prepare her jellies or jams for winter use, as before this worse than Egyptian plague was known to us.

St. Catharines, April 1869.

L.

Currant-Bush Caterpillar.

To the Editor.

SIR,—Having seen in a recent issue of your journal a note addressed to you by a subscriber, desiring you to publish some receipt whereby "Currant Bush Caterpillars" might be destroyed. I send you an account of my mode of dealing with them.

As soon as the ground becomes dry, so that the surface earth about the bushes can be removed, I take it away to the depth of two or three inches, beginning at the stock and going out and round as far as anything would drop from the bush. I take a dung-fork and loosen the earth just to the depth which I want to take away, taking care of the roots. I then take away all the earth thus loosened by the hand, as it is much safer for the roots, and you can do it more effectually than with a hoe. I then take all this earth carefully out of the garden, and bring in new fresh earth and fill up the place. I have tried this plan often on bushes that had been totally stripped, and it carefully and completely done, I have never had a caterpillar on them the ensuing season. I have tried hellebore and various other remedies, but I have found that they only destroy what is on the bush at that time, but never touch the storehouse of eggs in the earth.

If the earth which was removed be examined when it has received the heat of spring, it will be found full of the larvæ.

A SUBSCRIBER.

Clinton, April 8.

NOTE BY EDITOR.—"L's" method of treating them is a thoroughly good one. "Subscriber's" plan is all very well as far as it goes, but it is not quite complete. It is the pupæ of the Saw fly Caterpillar that remains in the earth during the winter, and not the egg. From these pupæ the winged flies come out in the spring, and as they possess excellent powers of flight, merely removing the pupæ outside the garden would not in the least prevent their flying over the fence back again to the bushes. If the earth thus removed were, however, burnt or buried a few feet deep, the pupæ would be effectually prevented from hatching, and no crop of flies could appear to lay eggs, unless they came from some one else's garden. "Subscriber" must have mistaken some other larvæ or worms for those of the currant insects in the ground that he removed. The eggs are not in the earth, and I would never be laid by the parent in the earth, but only on the leaves of the bushes. Nor could the infant larvæ live for a day on the ground, away from their food.

Farmers' Enemies.

To the Editor.

SIR.—It is said that he is a public benefactor who can make two blades of grass grow where only one grew before, but Panch says Mr. Mechi is more than that, because he has made two blades grow where none grew before, and few will dispute his claim to that title, notwithstanding the few whose motto is *ne plus ultra*, who are now cavilling at his blank sheet.

We in Canada need such another benefactor to enlighten the public mind on the all-important subject of insects injurious to vegetation. The great mass of our agriculturists are either wholly ignorant of, or totally ignore the subject altogether, the important effect it has on their business to the contrary notwithstanding. The injury done by insects to garden and field produce is immense, almost beyond calculation, entailing serious pecuniary loss year after year, yet nothing is done to remedy the evil. Uncle Sam, across the lines, with his usual acuteness, did not fail to see the ravages of the insects in his crops, and set to work in a business-like manner by appointing a State Entomologist in New York, whose duty it was to ferret out the habits of the insects, the more easily to prescribe a remedy for their extermination. This gentleman, it appears from well authenticated documents, has already saved the State thousands of dollars.

A knowledge of the history and habits of those injurious insects would enable the farmer to ascertain the best time and means to

destroy them, and also to discover a way of increasing insect destroyers. Every cultivator should do his best to enforce the law, happily existing, for the protection of insectivorous birds, and thus prevent juvenile and other Nimods from destroying the insect destroyers which a kind Providence has created for the express purpose. Birds are undoubtedly the natural antidote. For example, in almost every orchard the tomtit is seen peeping into every cranny of the bark in search of the apple grub, and if he spy him, there is little ceremony used in dragging out and cramming him into the bird's crop, where the last moments of the insect are usually spent.

Will our farmers stand idly by with folded hands, year after year, and witness the ravages of the turnip beetle (*Haltica striolata*), which nearly annihilated our crop last year, and not rather invoke Ceres for a remedy? Or will our market gardeners tamely submit to be robbed of their cabbage crop by the newly imported *Pieris rapæ* (the white cabbage butterfly), said, by the way, to have been brought from England by the Canadian line of steamships, without enquiring where to look for the chrysalis in order to destroy it?

I do not say that every cultivator should be an entomologist, but I contend that every farmer and gardener should make himself master of the history and habits of insects injurious to his crops, and by every means endeavour to find out the best means of destroying them. It is also incumbent on him to ascertain who among the feathered tribes are his friends, that he may protect and cherish them as his best unpaid employees. To this end I would suggest that a handsome prize, either in money or a medal, be offered by every agricultural and horticultural society in the Dominion during the present year, for the best entomological collection of insects, &c., injurious to agricultural and horticultural productions, with brief practical notes of their history and habits, and, if possible, the best means for their extermination. Or what say you, Mr. editor, would it not be well to follow Uncle Sam's example, and urge our Government to appoint a Dominion Entomologist to enable us to eradicate our insect pests?

J. PAXTON.

Woodfield, Quebec, March, 1869.

NOTE BY EDITOR.—We quite agree with our correspondent in the opinion that farmers and gardeners should know something of the history and habits of their insect enemies, and friends too. We have given a practical illustration of this belief by the amount of care and attention that we have bestowed upon the entomological department of the CANADA FARMER for some years past. We strongly incline to the view, also, that the Government should appoint Provincial Entomologists to carry out similar investigations to those of the gentleman employed in the

same capacity in many of the neighbouring States. We referred to this subject in an article entitled "What is the Use of Entomology?" in our January number. We think, however, that there should be an entomologist appointed in each Province, and not simply one for the whole Dominion—the one in the latter case would be much too large for any one individual to look after. The Ontario Fruit Growers' Association, at its last meeting, resolved to petition the Commissioner of Agriculture of this Province on the subject, and we hope to hear that their application has been successful.

The Pea Weevil.

To the Editor.

Sir,—The destruction of the pea by bugs is, in some localities, a serious and increasing evil, for which no effectual remedy has yet been discovered. Some talk of early sowing, and others recommend late, but neither can be fully relied upon. Late sowing does somewhat diminish the ravages of the insect, but at the price of a smaller yield. The question, therefore, remains, in what way can the farmer make the most of his pea crop? In a late edition of your journal, I observed some very good remarks on the subject. The writer recommends using the peas immediately in fattening hogs, which, he urges, will fat on better, and command a higher price early in the season. It is true, if the weather be not too warm, hogs will fatten better than in cold weather; but if very warm, as sometimes happens in the early season, they will not; and again, fattening early may do very well in the immediate neighborhood of a packing house, but in very many localities no market could be found for pork at that early season, except perhaps in small quantities to butchers. I would, therefore, suggest the following plan:—As soon as the peas are harvested, and sufficiently seasoned, thresh them at once, which is best done just as they are brought from the field; clean them, and have them ground forthwith, either at a neighbouring grist mill, or by the "Little Giant" at home. By this means the insect, instead of maturing, will itself be, in the grinding process, destroyed, and the mischief to the future crop stayed. Peas thus ground up can be fed out at any season, and will fatten hogs quicker than unground peas, however sound. If the peas are dry, the meal will keep throughout the winter; but should the season be unfavourable, and the peas damp, the meal may be spread on the barn floor, and turned over occasionally for a few days, being a little more particular with such portion of it as is intended to be kept through the winter. If convenient, boiling the meal for fattening hogs is an improvement. Let farmers sow plenty of peas, try this process, and instead of sending their store pigs across the line, fatten them at home.

A FARMER.

Tilbury East, March 22, 1869.

NOTE BY EDITOR.—The Pea Weevil, (*Bruchus pisi*, Linn.) is a small beetle of the Cur-

culio family, which lives through the winter in its perfect state, generally in the pea where it passed its earlier stages of existence. In the spring it lays its eggs on the young and tender pods of the early crops of peas; when hatched, the little grub penetrates into one of the green peas within, and there takes up its abode, eating the contents of the pea, but always leaving the hull untouched till it has gone through all its changes to the beetle state. As there is but one brood of this insect in the year, an excellent mode of lessening its ravages is to grow a second crop of peas from the seed obtained from a very early crop, and keep the seed produced by the last crop for sowing the next year. The first crop will be attacked by the insect, but the second crop will be entirely free from it. For purposes of feed our correspondent's plan of grinding the peas is a very good one, though it need not be done till the peas are quite dry, for the insect will not leave its abode till the spring; but what will he do for seed? We should say, keep your late grown, or second crop, peas for seed, and grind all the rest; the next year your loss by the insect will be reduced to a minimum.

Curculio Remedies.

FROM AN ESSAY ON THE PLUM BY L. C. FRANCIS, OF SPRINGFIELD, ILL.

Remedies, offensive and defensive, have been proposed.

First in the offensive department, I will give the New York *Observer's* great curculio remedy.

To one pound of white oil soap add four ounces of sulphur, mix thoroughly and dissolve in twelve gallons of water. Take half a peck of quick lime, and when well slacked, add four gallons of water and stir well together. When well settled and clear, pour off the transparent liquid and add it to the soap and water mixture. To this mixture add four gallons of strong tobacco water. Apply this compound, when thus incorporated, with a garden syringe, to your plum or other fruit trees, so as to drench all parts of the foliage. If no rain succeeds for three weeks, one application will be sufficient. If washed by rains it should be renewed.

The receipt was effectual in raising, not plums, but the price of whale-oil soap, from one dollar and fifty cents per hundred pounds one year, to six dollars the next. We tried it faithfully upon a portion of our orchard, and finding the curculio had misunderstood the object of the syringing, or was obstinate and wouldn't take the hint, we fitted up a curculio catcher, similar to Dr. Hull's, and invariably caught as many curculios from the trees that were syringed as from those that were not.

Gas tar has been recommended, but it is utterly worthless for this purpose. Indeed, a gentleman informed me that he had tried the strongest smelling substance to be obtained

at the gas works—so strong that his neighbours complained of it as a nuisance—but without any effect.

Coal oil is also recommended, but as will not drive off lice from cattle, it is doubtful whether it will drive the curculio from the plum trees.

But after all that has been said, the only reliable plan of fighting "the little Turk" is the jarring plan. Knock the rascals down on a sheet spread under the tree, and pinch their heads off. Dr. Hull's curculio catcher is an admirable contrivance for doing this splendidly and effectually. It has been suggested that, if the umbrella plan was carried out more closely, it might be an advantage. A jointed handle, a handle that could be inserted so as to fold up the sheet from the barrow, would make it more convenient for passing through gates, and also storing away when not needed. In conclusion, I would say, whoever would be a successful plum grower must exercise the persevering unconditional surrender spirit of our President, and fight it out on this line (the jarring and sheet process) if it takes all summer.

Send Specimens.

Spring is now coming rapidly upon us, and with the advent of warm weather our insect enemies and friends may also be looked for. We beg, then, that our readers who observe any of these creatures, and desire information respecting them, will kindly send us specimens, the more in number the better, and also any information they may be able to afford about the habits, food, time of appearance, &c., of the insect in question. Every careful observer must from time to time see and find things that escape the notice or do not come in the way of others, and so may be in a position to render valuable contributions to the general stock of knowledge on these subjects.

Dead specimens should be sent in any little pasteboard box of sufficient size and strength, carefully packed with cotton wool or other soft substance. They should never be sent loose in a box, or without protection in a letter, as it is impossible to identify specimens from scattered fragments, or when crushed as flat as a pancake. Live specimens (in which condition we like to receive larvae, that is, caterpillars, grubs, worms, &c.) should be packed in a strong, tight box, with enough of their appropriate food to last them on their journey. A prolonged fast causes them to die and shrivel up beyond recognition, or even if they survive it is almost impossible to rear them.

We always like to receive the name and address of the sender, not necessarily for publication, but as an evidence of *bona fides*, and that we may know where to apply for further information if necessary. Specimens may be sent to the CANADA FARMER office, Toronto, or better, direct to our entomological editor, Rev. C. J. S. Bethune, Credit, Ont.

Correspondence.

Traction Engines.

A correspondent from Bee county, Texas, writes to us, enquiring as to the success of the Traction Engine brought into Canada during the last year for use on common roads. In reply, we must acknowledge that, for some reason or other, the engine first introduced does not appear to have been a success. The causes of the failure are variously stated, but we believe the chief difficulty has been the want of sufficiently strong bridges to carry safely such a ponderous weight. At all events, it broke through more than one bridge, and has for the present been abandoned as a mode of moving freight. This is the more extraordinary, as when exhibited in Toronto, the machine was so perfect a success as to cause its immediate sale. It does not seem to be suitable to the Province in its present state. It commenced its career under the best auspices, as every one was prepared to look on it with favour, but nevertheless its use, at all events for the present, has been abandoned.

These engines are made now in all the principal machine shops in England. Messrs. Garrett & Sons, Leiston Works, Suffolk, England, have taken a leading place in the manufacture. The originators seem, however, to have been Messrs. Aveling & Porter, Rochester, England.

On another point in the same communication we are unable to supply the information our correspondent desires.

SMALL THRESHING MACHINE.—A correspondent makes enquiry for a small Threshing Machine and Separator that can be worked by four horses.—We are informed that Mr. Joseph Sharman, of Stratford, manufactures such a machine, which has been found to work well.

DRAIN-TILES.—A correspondent from Windsor asks: "Can you tell me who makes drain-tiles such as are used by farmers?" Drain-tiles are made in most parts of Canada at any of the brick yards. In Westminster township, within 4 to 5 miles of London, large quantities are made and sold at from \$4 to \$14 per thousand, according to size. A brickmaker will make them to order if a sufficient quantity is required to make it worth his while.

"Finch" writes us to ask whether the place for holding the Exhibition of a County Agricultural Society can be fixed at a meeting of Directors, when the notice calling the meeting did not specify that it was called for this object. Sub. sec. 7 sec. 34 of 31 Vic. ch. 29 seems to provide very clearly that the object for which every meeting is called should be stated in the notice. Independently of this, it is always more convenient that those who are to legislate should have due notice beforehand of the subjects they will be called upon to decide.

SORGHUM SEED.—Mr. W. Weston, of Grovesend P. O., Elgin County, sends the following communication along with a sample of seed in reply to a recent inquiry by "Briar," respecting the Sorghum plant and syrup. Mr. Weston says "I have raised the Sorghum plant for the last three years. Last season I planted one-third of an acre, from the produce of which I manufactured fifty gallons of syrup. The greatest difficulty I met with was in procuring the proper kind of seed. Last season I planted three kinds, two of which matured; the other—a large kind, and if the climate were suitable, I believe a very productive kind—scarcely headed out. The two specimens of seed I send you are from the two kinds that matured; one is the scarlet Sorghum, the seed of which came from Illinois, the other is the kind usually grown in the western part of Canada. I can furnish your correspondent 'Briar' with seed, and any information in my power with regard to the raising or manufacturing of Sorghum."

ADVERTISEMENTS FOR THE CANADA FARMER should in every case be sent in to the office of publication not later than the 7th of each month. Particular attention to this notice is requested, as advertisements received after the above date will be too late for insertion.

The Canada Farmer.

TORONTO, CANADA, MAY 15, 1869.

Notes on the Weather.

April has been unusually cold, and the spring very ungenial and backward, with considerable rain, northerly and westerly winds prevailing. There have been 18 clear days, 12 cloudy days, and 9 days on which snow or rain fell.

The highest temperature during the month was 61° on the 26th, the lowest 22° on the 1st.

Owing to the land being wet, from the constant slow melting of the heavy snow banks going on, the farmers could not get ploughs to work till the middle of the month in most places, and the work of preparing the soil, and putting in spring grain crops, has been progressing very slowly.

A brilliant aurora, lasting several hours appeared on the evening of the 15th, followed on the mornings of the 17th and 19th by a heavy storm of rain, which did a vast amount of damage by flooding the rivers and creeks, and carrying away bridges, dams, and even mills and houses in many parts of the country, and put back spring operations some days. Since then the weather has been changeable, but cold. In fact, only one or two really spring-like days have yet occurred. The fall wheat is said to be looking

well, though not so forward as at this time last year, and if May should prove warm and settled, it is likely the season will prove more favourable than last year, when it opened early, but was followed by cold rains toward the end of May. The price of wheat keeps at too low a figure to induce farmers to sow much spring wheat, but barley and oats will be largely grown, and we anticipate that the high price of butter and cheese, as well as hay and meat, will induce our farmers to pay more attention to restoring the fertility of their land with grass, roots, and green crops, and the raising of stock to the exclusion of grain. Potatoes are now lower in price, cheaper in fact than they were in the fall, owing mainly to the low price of wheat, which is now by far the cheapest food for man or beast that can be used, and so curtails the consumption of potatoes.

Already has the tide of immigration set in, and the great amount of destitution among the labouring classes in Britain, has resulted in vigorous efforts being made by both Government and private parties to induce emigration, so that we anticipate our farmers will have less reason to complain of the want of labourers this year, and be able to raise large crops of roots at a less cost than they have hitherto done.

Canada and British Emigrants.

A Mr. I. N. Keeble, of Toronto (a new name to us,) writes to an English paper as follows:

"The idea of having a 100 acres of land given to them seems very inviting to some of our countrymen, no doubt; but I would earnestly entreat them to pause before coming, as in the first place it will take fifteen years before the land can be thoroughly cleared of timber and stumps. And at last, when everything is in good order, the man will be completely worn out by hard work—that is providing he lives so long. There are many whose constitutions would not bear the hardships and privations of a life in the bush."

If this is meant for discouragement, we fail to see its appropriateness. There is no doubt that clearing up a hundred acres of land in Canada involves a great deal of hard work. Nobody who knows anything of the country would ever say anything else. It is no doubt also true that if the settler does it by his own labour he will find his joints somewhat stiff in many cases before he is done. But when the work has been accomplished he has something to show for it. Whereas, in Great Britain he would have equally hard work, quite as premature age, and in the end no shelter for his declining years, and no provision for his children. The great mass of emigrant Canadian farmers were mechanics or labourers in the old country. If farm labourers they were exposed, in the service of others,

to all weathers, and would have been unfit in ordinary cases for a full man's work by the time they were 45 years of age. As a general thing, are they so in Canada? But though they were, look at the difference of their position. By the time a ploughman in England or Scotland has turned 45, he has to take an inferior place, become a cattle or cow man; to do chores about steading or work at drains, &c., and at inferior pay. In nine cases out of ten he has become a martyr to rheumatism and has no prospect but the "parish" at last. Often, often has it been remarked that you see very few old ploughmen. Old shepherds may be seen. Old ploughmen very rarely. They are used up before their time, notwithstanding all the supposed invigorating influence of out door work and healthful fare. Even supposing, then, it were true that a man is pretty well worn out by the time he has cleared his hundred acres, though we have seen very vigorous men of thirty who have accomplished that feat, and others who have occupied their present farms for thirty or forty years, and don't seem "done" yet, supposing, however, it were really so, they are no worse in this respect than they would have been had they remained in the old country, and they have a valuable freehold and the ability to hire labour for its cultivation when the days of their own toil have come to an end.

It is too late in the day to talk of the hard work in Canada. It is hard work. We want none who expect to pick nuggets from our streets by merely stooping. But it is, taking all the year round, not such hard work as in Britain, and by no means either so thankless or so hopeless. There are thousands in Canada who came to it with nothing, who are now enjoying after their hard toil a green old age, in the possession of every comfort, and with their children settled around them. These people could never have done more in Britain than provided for their necessities in the days of their health and strength; aye, and they would never have tried any thing further. The thing was too hopeless for them even to make an attempt. When they came to Canada they found that it was possible, nay, that it was expected of them, to make provision for old age, and in cases beyond number they have tried and been successful.

Of course, all have not succeeded. In what country on the face of the earth has this not to be said? But the sober, industrious and intelligent have surely a better chance with two hundred acres of Canada freehold, than with fifteen or

twenty acres of heather or bog, leased to them in the United Kingdom for twenty years at a nominal rent, and at the end taken from them altogether. Every one to his choice; but there is force in the remark we once heard from a Scotchman: "I bless God, Sir, every day of my life for Canada. Had it had no been for the discovery of this and other like places, 'a' dinna see what puir folk would hae 'dune ava.'"

The Pork Disease.

Several of our readers have requested information on the trichinous disease, respecting which considerable interest and apprehension have been revived by recent reports of its appearance in various places in this Province. Amongst others a correspondent from Orillia makes the following enquiries: 1st. Does *Trichina spiralis* affect the health or life of the hog itself? 2nd. Does it exist in that animal in a perfect or embryotic form? 3rd. Does the *Trichina* or its embryo exist in all hogs? 4th. What are the symptoms and peculiarities of the disease? 5th. Is any remedy known?

Trichina (the accent on the first syllable) is the generic name, derived from a Greek word signifying a hair, of a minute hair-like worm *Trichina spiralis*; that is met with in the muscles, or flesh of a number of animals, and most abundantly perhaps in that of the hog. Its existence in the muscular substance of the human body had also frequently been observed before any morbid symptoms accompanying its presence had been noted. In 1822, we find mention made of it, and in 1835 it was accurately described by the eminent Zoologist, Professor Owen. But it was not till the early part of 1860, that public attention was directed to disease in connection with this parasite. In January of that year, a girl in the Dresden hospital was sick and died of a complaint that was at first regarded as typhoid fever, but some peculiarities in the case led the physician, Professor Zenker, to investigate its history very particularly, and it was ascertained that the illness had commenced almost immediately after the occasion of a pig killing in the family with whom the girl lived. Other members of the family had been similarly affected, and the butcher who killed the pig, and according to the custom of his craft tasted the raw flesh, had also been seriously ill, though he attributed his illness to having caught cold on the occasion. Portions of the flesh of the pig were carefully examined and found to be infested with trichinae. Other cases subsequently in the same year were noted in Edinburgh, Berlin, and elsewhere. One very peculiar case came under the notice of Dr. Langenbeck, of Berlin, who observed, while operating on a man for some tumor on the neck, a singular appearance in the exposed muscle, like little

encrusted spots, which on examination proved to be the remains of dead trichinae. On enquiry it was ascertained that fourteen years previously the patient had, with seven other persons, on the occasion of a "Church visitation" partaken of roast pork slightly cooked, and himself as well as all the rest of the party had afterwards been seriously ill. Four or five had died, and he had only slowly recovered after severe and protracted suffering. The case had excited suspicion of poisoning, and the host at whose table the party had dined was shunned by his neighbours, lost his custom, and eventually emigrated. It is probable that if the case had been brought before a jury at the time the innocent man would have been hung.

A tragic event that occurred at Hellstadt, a small Prussian village near the Hartz mountains, again excited great alarm, and led to very careful examination of the whole subject. On this occasion one hundred and thirteen persons sat down to a public dinner, the majority of whom in a few days after were taken ill. Within a month eighty had been attacked with the same malady, and twenty had died. The disease, which was at first taken for typhoid fever, presented the symptoms described by Professor Zenker, and the physicians were thereby directed in the right track as to the nature and cause of the fatal disorder. It appeared that a pig, not in good health, and not intended for slaughter, had by mistake been butchered, and its flesh used in making sausages, which were smoked, partly dried, and toasted—not cooked, but merely warmed through—and served up as the fourth course on the festive occasion referred to. Some of these sausages were examined, and trichinae detected in vast numbers.

On this continent, some of the earliest published cases of the trichinous disease occurred in New York in 1864; and in 1866, at Marion, in Iowa, a remarkable history was recorded of nine persons in one family who were all attacked with the disorder, and several died, after using ham smoked and dried and eaten raw. Two other persons in the same family had eaten of the ham; in one case the meat had been "rarely done," and a slight attack of the malady was the consequence; in the other case the cooking was thorough, and no ill effects followed. In the autumn of the same year the Committee of the Academy of Sciences at Chicago made a careful examination of the pork in the butchers' stalls in that city, with the view of ascertaining, among other things, what proportion of hogs were infected with the parasite. According to their report, one in fifty were found more or less so affected. This proportion is much larger than had been found in Germany, and has been attributed by some to the prevalence of hog cholera in the Western States—a disease which, it has been suggested, may be identical with trichinosis, as the disorder under consideration is

called; but this hypothesis needs confirmation. One thing has been clearly ascertained, namely, that where pork is eaten raw, or but slightly cooked, as in Germany, this malady has prevailed to the greatest extent; and in the States, where, for the most part, meat is sufficiently cooked, the occurrence of the disorder has been more rare; while among the natives of France, who are fastidiously particular in having all animal food thoroughly cooked, the disease may be said to be unknown.

The natural history of this minute but most destructive parasite has been carefully investigated, is now pretty well known, and can be summed up in a very few words. The trichina is born in the intestines of the animal, into whose system the parent has been introduced. The manner of this introduction is by the food, which may be the flesh of infested animals, or it may be herbage or water contaminated by the excrements of the living, or the decomposing carcasses of animals that have died with this affection. On its first introduction into its new quarters, the little worm is immature; but within two days it is perfected, presenting the form of a minute, thread-like worm, the male being about 1-18th, and the female 1-8th of an inch long. The latter is found to be filled with ova, in number from 300 to 500, which are further developed within the parent's body, and in six days are born alive. The young immediately perforate the coats of the intestines, and make their way to the various muscles of the body, among which they wander, till at length they become nested, as it were, in little oval cavities or sacs, technically called cysts, the walls of which gradually thicken and ultimately become hardened by a cretaceous or chalky deposit. Within this cyst the trichina is coiled up, and presents the characteristic appearance which has given rise to its specific name, *spiralis*. The tiny creatures run this course in about three weeks or less, when they become nested. In this condition, should the host, or victim, in whose body the intruders have found a lodgement, survive the irritation produced by their production, increase and wanderings, the encysted trichina may be said to be harmless. Their further development is arrested, and they ultimately die. Hence they have been found in the muscles of animals and men apparently healthy. If, however, during the lifetime of the encysted trichina, the infested flesh is eaten, and thus introduced into the alimentary canal of another living body, they are liberated from the cysts, become mature and breed, as already described.

It is a mistake to suppose that they are confined to the hog. They have been found in a number of animals of very different orders; such as, cats, dogs, badgers, among carnivora; in the horse, in the ox, sheep and other ruminants; in pigeons, moles, frogs, and a variety of creatures too numerous to mention.

The symptoms produced by their introduction into the human body are somewhat like

those of typhoid fever, though there are specialities that sufficiently point out the nature of the attack. Soon after the infested meat has been eaten diarrhoea comes on, followed by extreme lassitude, feverishness, great muscular pain and tenderness, with contraction of the joints and severe suffering on attempting to move; there is œdema (dropsical swelling) of the face, difficulty of breathing, and sometimes pneumonia, which not unfrequently proves fatal.

With regard to treatment, it is clear from the history of the trichina, that no effectual remedy can be applied after the young have left the intestine, and commenced their wanderings. To expel them from the body by purgatives during the first few days, seems the natural course indicated; but the case should be clearly made out before this class of remedies is administered. In diarrhoea, from other causes, cathartics would greatly aggravate the complaint. Various medicaments to destroy the young worms without injury to the patient have been proposed and tried, but with indifferent success. Prevention is here emphatically better than cure. This is to be sought by the careful and cleanly feeding of animals intended for food. Pigs fed on sound and wholesome grain, milk and pure water, are less likely to be affected than those that are allowed access to garbage and offal. But the chief precaution is secured by thorough cooking of meat before it is eaten. A temperature of 160° is said to destroy the vitality of trichina; but if any of the meat has at all the colour of raw flesh, it is doubtful whether this temperature has reached that part. The boiling temperature, 212°, provided it has affected the whole mass, is certain destruction to the creatures. So is thorough roasting or baking. Frying, as in the case of sausages, will also effect the same end: if it is performed over a hot fire and for a sufficient length of time. Slight frying, or toasting affords no security at all. Let these facts be borne in mind and acted upon, and we need have no apprehension of that terrible bug-bear—trichinosis, or the pork disease.

A New Class of Emigrants.

An English lady, Miss Rye, who is probably known to many of our readers as the person who sent out a number of females to Canada last year to supply the demand for servant girls, has a new scheme on hand, and is going to try the experiment of exporting a number of the Street Arabs and pauper children of London and other large English cities, to Canada and the Western States.

She proposes to send out only the female children between the ages of five and ten years, of three classes, namely:—

- 1st. Orphans.
- 2nd. Those who have been deserted by their parents for five years.
- 3rd. Deserted foundlings.

They are to be gathered into a temporary home in London, England, till ready to be shipped, and she proposes to send them to the village of Niagara, in Canada, where another temporary home is to be found for them, and from which they are to be distributed, principally among the farmers of Canada, who are expected to be ready and willing to adopt and bring up such children as she may send out.

Had Miss Rye proposed to send boys as well as girls, we think the scheme would have met with greater favour, among our farmers at least. Boys, even at a comparatively early age, can be made useful on a farm, and the education they will get will be such as to make them of great use in after life, in assisting to develop the vast resources of our fine country, which, now that the great prairies of the North-west are likely to be added to it, will offer a wide field for further settlement, and for agricultural and manufacturing enterprise, for many years to come. We hope the scheme will be enlarged so as to embrace boys as well as girls in its scope.

It will be necessary to have some guarantee on the part of both the children and those who adopt them, that the former shall be properly educated and cared for by those who take them, and that the latter shall have the full benefit of their services, and control over their actions up to a certain age, say twenty-one years, with power to enforce their claims. Otherwise, in the case of girls especially, they might find that after going to the trouble and expense of bringing them up, clothing and educating them, they were drawn away to the city by the numerous attractions held out to enter service, and once within its vortex, become led away by its gloss and glitter into any of the thousand and one roads to ruin so easily travelled by the inexperienced, and by none more so than a young girl without friends or relatives to watch over her welfare.

And while we bring this matter before the farmers, may we not ask if something of the kind cannot be accomplished for our own Street Arabs, of which we notice Toronto has more than its fair proportion; and is it not within the bounds of our legislature to make some provision for the prevention of crime in the future, as well as punishing it in the present? for it is morally certain, if something is not done to rescue this numerous class of children from the control of parents who are in too many cases utterly regardless of what becomes of them, or of their welfare in the future, they will grow up inured to every kind of vice and iniquity, and largely swell the ranks of our criminal population.

Private philanthropy and individual effort may, and probably does, do something towards reclaiming these waifs of humanity; but we can see no reason why the strong arm of the law could not be brought to bear in favour of making them useful instead of useless members of society, and thus lessening the cost of criminal justice in the future.

Editorial Notes.

The matter of growing corn, vetches, Alsike clover, or other succulent rapid-growing plants, in many of the now neglected park lots in the suburbs of cities and large towns, for the purpose of soiling cows during the summer, ought to attract attention. An acre of land, in good condition, sown with Alsike or White Dutch clover, will keep three cows up to their best flow of milk from 1st June to 1st October, if it is cut, and the grass fed to the cows instead of pasturing them upon it. It would pay to grow fodder this way, and supply it regularly to those in the city who wish to keep a cow of their own, and have stable and yard room enough to spare. Most of the city cows, we are aware, are fed on the refuse slops of the breweries and distilleries, at a cheap rate; but their milk, when so fed, is not merely unwholesome, and apt to generate disease, especially in children, but is so thin and poor as to be of little value except to sell to dealers in order to be mixed with country milk at a profit, a thing no doubt very often done. A good cow kept soiled in the stable or yard, and allowed two or three hours' liberty each day, ought to yield all the milk, and nearly all the butter, and that of the best quality, for a family of ten or twelve persons.

Supposing the cow costs \$60, and her feed from 1st June to 1st October \$1 50 per week, and during the rest of the year \$2 per week, or \$95 50 per annum, she would give a return of \$60 in butter and \$31 25 in milk, reckoning it only at five quarts a day the year round, which is about one-third less than a good cow ought to give. Let those who buy largely of milk and butter try keeping a cow at home for one year.

Testimonials.

The presentation of testimonials is a practice often grossly abused, and is not unfrequently the evidence of success rather than of merit, but there are occasions when some substantial mark of public approval is at once a graceful acknowledgment of benefits received, and an encouragement and help in furthering some important pursuit or undertaking. A proposal that appeared some time ago to present a testimonial to Mr. S. Beattie, who richly deserves an honourable recognition of his services in improving the stock of this country, had, so far as we can learn, elicited no other response than sundry communications in favour of the claims of other enterprising men in various fields of agricultural labour. One writer refers to the unrewarded services of Mr. Fife, the originator of the excellent variety of wheat that bears his name, and suggests that the Department of Agriculture should place at his disposal the means of following up his investigations in this line, and also that the Agricultural Association should take measures for obtaining from all sections of the community whom he has benefited contributions

towards presenting him with a testimonial of the public appreciation of his services to the country. By all means let assiduous and persevering efforts like these in the cause of progressive agriculture be recognized and rewarded; and there are certain public bodies with public money at their disposal, who can best inaugurate and carry out the fittest measures for such objects.

In connexion with this subject we cannot forbear calling attention once more to the very important experiments that have recently been made by Mr. Charles Arnold, of Paris, in hybridizing wheat, and which ought most certainly to be liberally aided by public bodies having the charge of the agricultural interests of this Province. Mr. Arnold asks for no testimonial, but he has a right to expect that his patient researches, extended now over several years, should be recognized, and that public officers or associations who have it in their power to afford material help should come forward and assist in developing his ingenious and very promising experiments, and securing to the country the benefits to be derived from them. We hope this matter will not be allowed to drop. Resolutions in council and testimonials on paper will be of little avail, unless followed by careful investigation and efficient action. We have reason to believe that the matter is receiving the serious attention both of the Bureau of Agriculture and of the Agricultural Association.

Health and Hygiene.

There is no life so conducive to health and happiness as that of the farmer. He breathes only the pure air of heaven. He lives as it were with nature, and it is his own fault if he does not enjoy to the full all the blessings she can give. His work, unlike that of the mechanic, the merchant, or the professional man, draws exclusively upon no one particular set of muscles or nerves in his body, but varies so, that it cannot but be healthy and invigorating to his frame, so long as he does not task him beyond his strength. Yet it must be admitted that there is a vast amount of general and easily preventable unhealthiness amongst farmers as a class.

Though they are the class upon whom all others must depend for their daily food and their very means of existence, possessing as they do every facility for using nothing in the way of food but what is of the purest and most wholesome quality, they are in too many cases content to live on that which is totally inferior to what they sell or dispose of to others, and much of what they do use is prepared without any regard to rendering it wholesome and easily digestible as an article of food. There is too much of sameness about their diet, so to speak.

Again, they are often careless in matters relating to dress and hygiene. A farmer will often work in all weathers with the same amount of clothing on one day as an-

other. He gets warm at his work, and while in a perspiration will cease working, neglect to put on his coat, and soon find he has become suddenly chilled, in which case the pores of the skin being closed, he becomes very liable to an illness that seems entirely unaccountable to him.

But on the whole, perhaps the greatest evil from which they suffer is the great faith they have in the quack nostrums and patent medicines so largely advertised in every country paper. Every country store contains a large stock of these worthless rubbish, and we are told that were it not for the demand for patent medicines among country people, their manufacture would have to be abandoned, instead of, as now, being the stepping stone on which many an illiterate quack has built up a colossal fortune out of the hard-won earnings of industrious farmers.

Perhaps most of these patent medicines are not of themselves poisonously injurious, but at the best they are utterly useless for any good purposes, and their virtues exist only in the advertisements of their proprietors and the imaginations of those who read them. They are, as a general rule, purposely made of such materials as have both a stimulating and soothing effect on the system, and so excite a desire for their continued use when once they have been taken, alcohol and opium being the base and principal ingredients in most of them; and their use, though it may seemingly result in relief from an imaginary complaint, ultimately deranges first the digestive powers, and soon the whole bodily frame, causing disease and general ill-health.

With good, whole-some, well-cooked food; enough work in the open air to sharpen the appetite and fully exercise the body, followed by balmy sleep, "nature's sweet restorer," the farmer may say, "Throw physic to the dogs, I'll none of it."

A New Strawberry.

We direct the attention of fruit growers to Mr. J. P. Whiting's advertisement, in our present issue, of a new strawberry, which he has named the Mexican Ever-bearing Strawberry, and believes to be a very valuable addition to our list of fruits. We cannot speak from personal knowledge of this new candidate for public favour, but we find that it is highly recommended by a large proportion of the American Agricultural press, and its merits are endorsed by parties of respectable standing whose testimony may be regarded as reliable. It is said to be hardy, prolific, fine flavoured, and a good market berry; but the chief superiority claimed for it is the length of time it continues in bearing, commencing earlier than any other variety of the same fruit, and producing successive crops of berries until late in the fall. If it prove as excellent and suitable for the climate of Canada as the testimony in its favour indicates, it will be a valuable acquisition. Full particulars will be found in our advertising columns.

Horticulture.

EDITOR—N. W. BEADLE,

CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

The Culture of the Currant.

TO THE DIRECTORS OF THE FRUIT GROWERS' ASSOCIATION OF ONTARIO.

I cannot but think that those fruit productions of the world which are able to assimilate themselves to the greatest variety of climatic influences, spreading themselves through vast territorial ranges, and appearing to be quite at home in the most heterogeneous soils and positions, are those designedly intended for man's greatest use. They appear to administer to his health, and to promote longevity. And of one thing we are certain, they are powerful levers of civilization and morals. For, after all that may be said, it is what we eat that plays the most determined part in our progression. There are few that take time to consider the high social and economical importance of fruit production. I may, on some future occasion, have opportunity to speak of these effects. My object now is to speak of the culture of the currant, one of the oldest fruits in cultivation, of high importance, yet probably the most neglected and last attended to of summer fruits, judging from the wretched specimens under the name sold in our markets. I venture upon this subject less from a hope of offering anything new on so old a theme, as from a sense of duty I owe to those who come after us, in assisting to keep up the status of this profitable and useful fruit. Should the seed of these efforts drop on congenial soil, take root and branch into goodly bushes, bearing fruit, I shall have gained all I seek.

HISTORY OF THE CURRANT.

This shrub has been long in cultivation. It is a native of the woods and thickets of Europe and America, found in almost all kinds of soil and situations. There are two very distinct varieties, namely, the *Ribes rubrum*, subdivided into red and white, and the *Ribes nigrum*, or black. There are in all about fifty varieties named; but many of these so nearly approximate each other in flavour, colour, and manner of growth, that it would be a matter of no importance to give detailed descriptions of them. They can be of little use except to make up collections. Of the white and red there are but five or six worthy of special notice. They have been tested and found suited to our climate in Canada. Highest among them stands the Cherry, a truly noble fruit where properly treated, very large, nearly twice the size of the old red; clusters rather short, berries round and dark red, very acid, large

and luxuriant growth, deep green foliage. It is sometimes unproductive, which may be traced to bad treatment. The fruit is greatly improved by allowing it to hang long on the bushes. When allowed to remain in this way till its best qualities are fully developed, pulled in a dry time, mashed fine, with pulverized sugar added an hour before using, it is a dish the palate delights in. The next is the White Grape. Then follow Victoria, La Versailles, Red and White Dutch. It is said that the inner bark of all the species, boiled with water, is a popular remedy in jaundice, and by some medical men has been administered in dropsical complaints. There are two varieties of Black, the English and Naples. The fruit of either of these, made into jam and jelly, is used with much success in the cure of quinsies. The leaves are fragrant, and an infusion of them in the manner of tea, is pleasant, and by some preferred to the Chinese tea plant. The young leaves tinge common spirits so as to resemble brandy, and an infusion of the young roots is beneficially used in eruptive fevers. I mention these various purposes for which we make this shrub administer to our wants. By compressing the juice of the well ripened red kinds, and boiling with an equal weight of refined white sugar, you get a healthy and agreeable jelly, such as is used for culinary purposes and in sauces. By mixing with this again sugar and water, a most palatable cooling summer beverage is obtained, far preferable to most of those summer drinks retailed at ten cents per glass. It ought to be more generally known that the pure juice of the well ripened red kinds is a valuable remedy in obstruction of the bowels. It readily quenches thirst by its cooling effects in the stomach, and is therefore extremely valuable in febrile complaints. By making a mash of the well-ripened berries, and adding thereto a proper quantity of sugar and water, and permitting the whole to undergo fermentation, an excellent wine is produced, which improves by keeping, and may be kept many years.

The dried currants of the shops do not belong to the family above named, but are a kind of small grape, grown in great abundance along the shores of the Corinthian Gulf.

Taking it all in all, the subject of our article among small fruits stands second to none, because it can be turned, by virtue of its sweet and acid properties, to such an endless variety of purposes, both in its ripe and green states, that no person possessing a kitchen garden should be without it. It completely fills a space of about two weeks after strawberries, raspberries and cherries have supplied our tables; and besides, it comes in at that particular season of the year when the intense heat of summer bears down so heavily upon our vital force, producing languor and debility, and derangement of that important organ, the liver. There are few tonics which seem to tone up this depletion so well and in a degree so last-

ing as the cooling acid juice of the currant. It would indeed be remarkable, were we able to trace exactly the quantitative relation which appears to exist between the body made languid by the dissipation of its acidity in hot weather, and that which is again so effectually supplied to it through the fruit of the currant and other kindred fruits. To the estimable qualities above enumerated, we might add those of profit to the skilled cultivator. The Honourable Marshall P. Wilder says that "a neighbour of his gets currant crops every year that bring him from \$400 to \$1,300 per acre, all grown under apple trees in an orchard." And I must add to this that some Cherry currants grown on my grounds last season were sold in the Hamilton market at twenty cents per quart, or \$6 40 per bushel. High-flavoured and well-grown fruit astonishes people accustomed to the poor, little, acid fruit which finds its way into our market. As a rule, we shall find that the profits derived from good culture are commensurate with the skill and care used in the production. This fruit is, indeed, tripled in size by skilled cultivation.

PROPAGATION.

This is done from cuttings of the previous year's wood of eight or ten inches in length, by rubbing off all the lower buds, only leaving two or three at the top of the cutting, and setting them along trenches made in any good friable soil, with two upper buds out of ground (this should be done at the earliest possible time in the spring, after frost is out of the ground), four inches apart in the rows, keeping down suckers, and the ground lightly cultivated the first and second seasons. This is all they require until set out in the plantation prepared for them in the third year. They will then require such heading in and trimming as suits the system intended to be adopted. Some of these systems we may find under the head of

TRIMMING AND TRAINING.

There are three or four ways of attending to this part of its cultivation. The most usual way seems to be, after sticking them in holes in some convenient out of the way place, just to leave them quietly alone to sucker up as nature directs, out of soil, in thick matted masses, as a happy and safe retreat for insects. I followed this plan for a short time, signally failed to get good fruit, and will not recommend it.

Another way is to train them up in single stem, which may be allowed to form a miniature tree head, about one foot from the ground, by pinching in the annual growth. This system will give satisfaction if the ground be kept clean from grass and weeds, and lightly cultivated, that is to say, by harrowing the surface with a rake made for the purpose. This is to keep the ground mellow and from baking, which is as important in this as in other cultivation. The exposure of the soil to the free action of the air is highly essential, but the ground should be kept con-

stantly mulched with well decomposed manures during the driest and hottest parts of the summer, and should have several applications of liquid manures, well diluted, at intervals, and just before showers. The bush will be short-lived under this plan of training, no suckers being allowed to grow.

Another way is to carry up three main stems to any height they can be made to grow, fastened to stakes made for the purpose, eight feet long, split from cedar posts. I have quite a number trained in this way.

From six to seven feet high. The result is gratifying. They bear well, and I can renew them from suckers. They require summer pinching in to make them look uniform. This can only be learned by practice. Thus thinned and trained, they afford a better chance to battle insects, and success in this is most decidedly one of the essential things, and the fruit is always clean, high up, and very ornamental.

There is also one other way, and the most profitable of all, because you will by this be enabled to keep up a constant succession of bearing wood from sprouts annually sent up, and it secures a greater area of bearing space than either of the two systems above described. It will at the same time contain its little drawbacks in the shape of difficulties in getting at insects. Yet, upon the whole, I should recommend it as the most profitable. Secure five or six of the finest canes sprouted from the main stool, rubbing or cutting all others away. Let these grow into bearing bushes, keeping the laterals shortened in and the head thinned out. From time to time take up a renewal cane as often as any of the old ones seem to be losing vigour, cut away the old one and replace it with the young one, keeping all side shoots rubbed off say eight inches from the ground. You will thus obtain constant bearing bushes. The fruit will not colour quite so well as in the last mentioned system, but you will have more of it.

MANURING.

This should be done with the best composted manure, applied to the surface. And here let me emphasize the word surface, for by no means would I have you understand that it should be forked into the soil, among the tender feeders which lie below the surface, for by rudely separating these from the main stem, you are destroying the very vehicle which can alone convey to the plant the food you have supplied. It is therefore better to apply to the surface, just before a shower, a sprinkling of liquid manure made from a compound of stable manure, cow-dung, night-soil and hen-dung, with a little lime, salt and wood ashes added. These should be well incorporated, and placed in a large tank with a small flood-gate at the bottom to draw off the liquor. One quart of this to a pail of water is sufficient for each bush, applied to the soil with a watering-pot. Keep a top mulching under the bushes, for the roots coming so near the surface

would suffer from the intense heat of summer. This question of the application of manures to the currant is a fundamental condition of success. A slight investigation of the physiology of the currant tree will permit us to see this point clearly. The immense load of fruit it bears in proportion to its size would indicate an equivalent in number and quantity of feeders. Upon removing a bush, which has not been previously mutilated, from the ground, we find this truth established. In other words, the correlation of force between the fruit and root and foliage is such, that if the balance of power is destroyed by mutilation of one or the other, of root or foliage, the fruit result will exhibit the effect. By cutting off the larger roots, we destroy the territory from which immense quantities of radicles may push forth, having their feeding mouths, the spongioles, attached, which can serve but one purpose, namely, that of sucking up the liquid which comes within their reach, and by the attraction and repulsion of the leaf this becomes aerated and elaborated into fruit and tissue. That manures play an important part in supplying the annual waste is now an established fact, as much so as that the steam engine would cease to move if not supplied with heat; and in this we see another proof of Dr. Mayer's philosophy, that "things are but transmuted energies."

GATHERING THE FRUIT.

This should always be done when there is no dew on the fruit, and never immediately after a rain, when fruit and bushes are wet. It should be handled carefully, without breaking off all the spurs on which the stems hang, and may be spread out on shelves in a cool room. It will keep many days in this manner, and can be packed in the ordinary strawberry boxes and sent great distances to market.

We may now speak of one of the most important parts of our subject, namely,

INSECTS AND THEIR DESTRUCTION.

It may be truly said that success in currant culture depends most particularly upon the effectual destruction of those tribes of insects and worms which, at certain seasons of the year, feed upon the foliage with such voracious appetites that whole bushes are soon denuded. In some sections its culture has, on this account, been abandoned; hence the proper management of these insects is a subject of great importance. There are several kinds which make the currant bush their home, at least, during the most destructive stage of their lives, which is when they are in the larva state. Taking them from the egg to the larva, and from the larva to the perfect winged insect, we should constantly give them battle at every stage of their existence, and we should know positively that their death is accomplished by what we do, because, as a rule, it will be found that those remedies are of no great value which only repel without destroying. It will thus necessitate a partial study of their habits, but

as this cannot be accomplished by some, I will try to give a few plain rules, so that a little vigilance in watching for the time of their appearance will enable one to fight them with a considerable degree of success. If it were possible to destroy all the larvæ, there would be no moths; but as this is not always possible, we must look after them too.

I will first mention the Borer. This is a worm which burrows through the canes, and is about half an inch long, with a brown head. They come from eggs laid near the buds, are hatched in a few days, and from thence eat their way into the stems. The parent of these worms is a small wasp-like moth, having transparent wings, with a band of black at the tips. These come about the middle of June, and lay their eggs as mentioned above. They are very active, and fly only in the daytime, so by setting shallow pans in convenient places, filled with sweets made like sticky paste, you will capture great numbers, and other game will fall into your nets beside; and as they get somewhat torpid in the cool of the day, they may be taken on the under side of the leaves. Early in the spring of the year you should hunt for the worm in the hollow canes, cut them away, and burn the canes. By a little industry and perseverance you will keep the "beastie" under.

The Span or Measuring Worm is in some localities very destructive. It gathers up its body from tail to head, having feet at either extremity, and moves as though it was measuring. It is of a yellowish colour, marked with blackish dots, and is the production of a pale yellowish moth, which lays its eggs on the leaf early in May. The worm changes to a chrysalis under the ground. I would recommend as a remedy a small hard wisp, made from green corn, to be used in brushing the leaves upwards. Upon their first appearance, they are readily swept from the bush to the ground, and may then be destroyed by sweeping the ground with a stiff broom. I recommend this with a great deal of confidence. It is the only method I have used for several years, and I have found it entirely successful. Two or three applications at different times are sufficient; but it should be known that I never allow foliage to grow around the base of my bushes, near the ground. This always affords insects a harbour. There is still another remedy, which consists in dusting the bushes with hellebore from a dredging box or hollows. I have, however, objections to this remedy.

The Aphis or Leaf Louse, which has appeared in my garden recently in such vast numbers, is found to damage the foliage to such an extent as to call for my most vigilant attention. The eggs are deposited under the leaves in the very warm weather of the last of June and first of July. The insect consists of a small, transparent, bright-eyed, long-legged, greenish creature, which can be seen in all stages of development by the aid of the microscope, but the unaided eye can-

not detect the egg or young larva. The perfect insect throws off its chrysalis (the shells of which may be seen lying profusely around) on the leaf. They are then fitted for reproduction. It appears to me that several of these changes must take place in one season, from their vastly accumulated numbers, which seem to spring up in so short a time. Like other insects, they feed voraciously in the larva state. They live by sucking the juices of the leaf, which soon curls up and around the insects, affording them protection against many casualties they would otherwise be subject to. The curled leaves, however, afford fine hunting grounds for the ants and lady-bugs, but the supply is too great for the demand. I get rid of them by several applications of the little hand broom. It is a grand instrument to disturb their breeding habits. By brushing them to the ground you tear them from their food, and their natural condition being thus changed, they perish.

Lastly, I shall speak of the Gooseberry Sawfly, for this is another prodigious pest which appears late in April. It deposits its eggs along the mid-rib, on the under side of the leaf. It soon comes out into a small green worm, which in due course goes into chrysalis in the ground, and in July the perfect insect comes again, lays more eggs, and gives a second crop of worms. The same remedies given above for the Span worm, of broom and brush and hellebore, will answer this fellow's case, and in addition I would add for this fly a light, set in a pan of water at night among the bushes; the light attracts, they fly and strike the glass, and tumble into the liquid.

I have now spoken of those insects which in my practice have been the greatest enemy to the currant. I would in conclusion remark, that a close observation of those conditions under which our enemies in the garden are most favourably developed, will often give us the power to control their reproduction; at any rate, if we wish to be successful we must learn their habits. Were it possible to estimate the annual loss which the fruit growers of Canada sustain from the depredations of insects, it would amaze us.

Hamilton 12th Feby. 1869.

Flowering Shrubs.

While many of our citizens are building for themselves suburban and villa residences, and some of our well-to-do farmers pulling down the antiquated frame or log houses, and rearing in their places homesteads of a more noble and permanent character, it becomes a question of importance with such how they can best lay out, plant, and decorate the ground attached. A reserve is made for kitchen and flower gardens, shelter and shade trees are required, and a judicious selection and good arrangement is desirable, not only that they may present an agreeable effect to the outside

world, but that they may afford the greatest amount of pleasure and satisfaction to the proprietor.

The forest trees principally used and suitable for such purposes are in general well known, and a person of ordinary good taste, with due regard to variety, may succeed in making a selection that will give lasting satisfaction. But when this much is accomplished, something more is required, namely a collection of ornamental trees and flowering shrubs, which may be less known, but none the less necessary to the complete furnishing of grounds even of a limited extent. The contrasts of foliage and habits of growth they present—the various colours and varied form of flowers, each in its season becoming a special object of interest—and, as many of them may be as permanent as the building they adorn, they become links in family associations, and will be hallowed in the memories of the next generation.

It is important in planting to make a selection for which the soil and location are most suitable, and although it may be true that each plant has a soil peculiarly adapted to itself, fortunately we have a large collection that will do equally well in a common soil, deeply cultivated and well drained. Perhaps what we call a sandy loam is the most congenial to the greatest variety.

We are furnished with large and commendable lists by our enterprising Canadian and American nurserymen; but much that they contain, especially the American, is altogether unsuitable to our climate. Consequently such lists are unreliable to the amateur and the inexperienced.

Our object is to point out some of the most desirable flowering shrubs, which have been well tested, and found equal to the severities of our Canadian winters.

CRATÆGUS OXYACANTHA, *flora plena*, Double Hawthorn; a large shrub or small tree, red, pink and white varieties, suitable either for the shrubbery, or as small standards in the lawn, exceedingly pretty, and ought to be in every collection.

PHILÆLPHUS CORONARI, *Syringa* or Mock Orange, showy, white, fragrant flowers, double and single varieties.

P. GRANIFLORA, a larger and later flowering species.

P. NANA: a dwarf, compact, spreading bush.

WEIGELIA ROSA: a Chinese shrub, with light pink and lilac coloured flowers, one of the finest hardy shrubs that we have. The varieties *W. Amabilis* and *W. Variegata* are equally worthy of a place.

CRONIA JAPONICA, Japan Quince: red pink, and white varieties, large, showy flowers early in the season, like apple blossoms.

DEUTZIA SCABRA: a white, free flowering shrub, suitable for the border, but cannot be grown on a single stem. A double flower-

ing species, lately introduced, is exceedingly desirable, *D. Gracilis*, a dwarf, dense flowering bush, about two or three feet high.

LONICERA TARTARICA, Tartarian Honey-suckle: a quick-growing and profuse flowering plant, suitable either for the border or as single specimens on the lawn, various shades of colour, from red to light pink. *L. Tart. Alba*, a distinct white flowering species.

AMYGDALUS NANA, *flora plena*; dwarf double-flowering Almond: wrought on the plum stock as a small standard is very effective.

PRUNUS TRILOBATA, *flora plena*, dwarf double Plum; one of the best hardy shrubs, resembling the Almond, but larger.

CALICANTHUS FLORIDA, Carolinian Allspice; chocolate-coloured flower, with a rather large laurel-like foliage, very fragrant, both flowers and wood.

DAPHNE MEZERSON: very early flowering dwarf, compact habit, rather tender in exposed situations, pink and white varieties.

MANONIA AQUIFOLIA: an evergreen shrub, with prickly, holly-like leaves, yellow flowers early in the spring. A clump of them would look exceedingly well in a sheltered locality on the lawn, and would be worth protecting in the winter by laying some loose brush over them, which would have the effect of retaining the snow in winter, and would shade them from the strong sun in March.

SYRINGA, *LILAC*: a well known and popular genus, in great variety. Among the best common sorts are "Charles the Tenth" and "Charlemagne," deep purple and large frons of flower, with blue foliage; "Colmaricnsis" and "Noisetiana," pure white; "Jostea" a very dark-coloured and later-flowering species, very distinct both in flower and foliage. The "Persian," purple and white, are more dwarf in habit, but equally desirable in a collection.

SPIRÆA: a highly interesting genus in numerous species, principally small but showy plants specially adapted to filling up the fronts of shrubbery borders, flowering at various times through the season. A few of the hardy sorts are *S. Prunifolia*, double white; *S. Callosa*, large pink; *S. Callosa alba*, dwarf white; *S. Ulmifolia*, *S. Sorbifolia*, *S. Itead*, double and single varieties; *S. Douglasii*, *S. Loricata*, *S. Salicifolia*, *S. Bella* and *S. Crenata*.

BERBERIS VILGARIS, common Berberry, well known. *B. Purpurea*, a purple-leaved variety, very ornamental.

ROSA HISPIDA, Rose Acacia; a low-growing tree with spreading branches and numerous racemes of large pen-like flowers; would require judicious pruning, as the branches are liable to be broken by storms.

AMORPHIA FRUTICOSA, Bastard Indigo; has long spikes of purple or blue flowers, will do well in the shrubbery, but rather tender in exposed places.

COLUTEA ARBORESCENS, Bladder Senna; a very hardy shrub with yellow broom-like blossoms, flowers all the season.

COMPTONIA ASPLENIFOLIA; a small native shrub, delights in a sandy soil, cultivated for its elegant fern-like foliage.

CORNUS VARIEGATA, Variegated Dogwood; fine showy foliage, with white flowers. *C. Sanguinea*, principally conspicuous for its brilliant red twigs. *C. Florida*, large, showy white flowers, well suited for the shrubbery.

FRONTINUS AMERICANA, American Spindle-tree; inconspicuous flowers, but has bright red seed pods late in the fall; pretty up to Christmas.

FORSYTHIA VIRENSSIMA; yellow early-flowering shrub from Japan, tender in exposed places, but will do well with slight protection, and flower freely on last year's wood.

HYDRANGEA ARBORESCENS, a low spreading bush with large white flowers, about the only hardy species of this genus.

PORESTITIA FRUTICOSA, Shrubby Cinquefoil; a low scraggy-looking bush, with stray yellow flowers nearly all the summer.

RUBUS CORTICIS, Mist or Smoke Tree; a large-growing shrub, peculiar for the feathery appearance it assumes after the inconspicuous flowers. *R. Typhina*, the well-known Stag's-horn Sumach.

RUBUS GORDONII, Flowering Currant; pale red, low bush, very handsome. *R. Aerea*, yellow flowering. *R. Sanguinea* is the finest of the genus, but too tender.

SYMPHORA GLAUCATA, Indian Currant; a low shrub with inconspicuous flowers, followed by small red berries. Another species, *S. Racemosa*, is the Snowberry, showy white berries in the fall.

VIBURNUM OPULAS; Snowball or Guelder Rose; a large white globular flower. There are several other species suited for the shrubbery, though less attractive.

CHIONANTHUS VIRGINICA, White Fringe Tree; a large shrub with heavy foliage, and peculiar pendulous fringe-like flowers, very handsome.

LIGUSTRUM VULGARE, Common Privet; a very hardy compact shrub, with small spikes of white flowers, a very neat hedge-plant.

DIERVILLA TRIFIDA; a dwarf native shrub with yellow blossoms, allied to the honeysuckle, flowers nearly all the season.

CARLIPALUM, Honeysuckle or Woodbine; suitable for covering arbours or walls. Three very desirable varieties are the red, yellow and variegated flowering. The latter is very fragrant.

TAMARIX GERMANICA, and *TAMARIX GALICA*; both very pretty shrubs. Their long twiggy branches of fine foliage, and dense spikes of small flesh-coloured, heath-like flowers, make a fine contrast with other shrubs. Although some consider them ten-

der, I think, by judicious pruning, so as to keep the plants low, and secure plenty of young wood, they will do well in most situations.

Perhaps the cream of our really hardy shrubs will be found among those I have enumerated, although I would not by any means say that all are included.

The following are a few of the many fine shrubs that may be considered too tender north of the lakes, unless in very favourable localities:—*Arristolochia*, Dutchman's Pipe; *Bignonia Indicans*; *Cylissus*, Laburnum; *Carthorus Japonica*; *Morus*, Mulberry; *Magnolia*, all the species; *Illicia*, Snowdrop Tree; *Hibiscus Syriacus*, Althea; and others. The last named is very fine, both double and single varieties, having large, showy flowers late in the fall. They would be well worth protecting in winter. A good mode of doing so is to lift them before the frost, and lay them in where they may be covered with leaves, or some light material, and replant in the spring, which may be done annually without any apparent injury.

JAMES FORSYTH.

Toronto, March, 1869.

Orchard Culture for the Million.

HOW TO PLANT AN ORCHARD IN WET LAND.

Some years since, I had been travelling in the western part of Canada, and when in conversation with parties who contemplated planting orchards, the following spring, I found that the great difficulty, all through the section where I went, was, "the trees would not grow." And if they did not die, they did not thrive. In fact, the country was not what is generally called an "apple country." I am well acquainted with the soil and climate, and do not believe any insurmountable difficulty exists. The land is generally level, and the soil a clay loam, productive if well farmed, but as usually worked, the yield of spring wheat especially, is only about fifteen bushels an acre. There must, therefore, be something done, or the wives and daughters must go without apples, or buy them from more favoured districts. To buy them from the profits of any such yield as 15 bushels of wheat per acre is out of the question, and therefore they must look for a remedy. In travelling I passed an old sensible Englishman from Devonshire, who had for some years been trying to grow apples on the plan he practised at home, on soil similarly situated. He had planted 150 trees on about two acres of land, and as the few trees he found planted in the ordinary way on the farm when he first bought it "did no good," as he termed it, he determined to meet the difficulty of level land, cold subsoil, and consequent slow growth, and, if possible, amend them.

I found him intelligent, and not to be hesitated in his determination to grow apples.

He said he had always been accustomed to drink from two quarts to one gallon of cider each day, and did not come to Canada to be deprived of it or the apples to make it, if his own labour could obtain it. He had seen failures on all sides of him, and almost all the neighbours said it would be of no use to try, as they had planted orchards before he came, and they always failed. If you touch an Englishman in his appetite, whether in meat or drink, you certainly do somewhat to rouse the British spirit, and my old-countryman was no exception to this rule. After careful enquiry, he found that failure to produce fruit was attributable, first, to cold subsoil, undrained, and consequently slow to produce growth; second, frosts, also attributable to moisture, which did a great deal of harm just when the blossom was falling; third, short, bushy, scraggy growth, and insects, due to similar causes. He noticed one tree that did better, of those previously planted on his farm, and that was planted on what was termed a "cradle knoll," that is, as all my country readers well know, a small hillock raised some feet above the surface of the surrounding land, caused by the uprooting of trees of a former generation. The tree in question having been planted before the stumps were out, or the land ploughed, happened to find its place just on the top of the knoll. This turned his attention in the right direction, and he determined to make his new orchard all cradle knolls, only of a large size. I felt much interested in the idea, and after he had promised me all the information in his power, we adjourned to the orchard to see the result of the process tried by him some time previously, by which he had obtained cider and apples for himself and family, "on wet, level land, without underdraining." I found the *modus operandi* to be as follows:

He first marked out the land into 25 feet squares, and drove stakes firmly down. He then drew a furrow with the plough as deep as possible in the line of the stakes, say north and south, then turning to the left, he set the plough again somewhat deeper, and then cut a furrow on the opposite side, thus leaving a ditch about 15 inches deep. He then drew another furrow as deep as possible in the bottom of the trench into the subsoil, thus deepening the ditch considerably. He then turned about and did exactly the same across from east to west, leaving the field in a condition not unlike a chequer-board, but the lines were deep ditches, and especially where the ditches intersected each other, they were quite large. He then commenced hauling on old well rotted manure, and put several forks-full down at each stake, in the bottom of the trench, almost filling it, each stake having been again tightened in the ground if disturbed by the plough. After thus manuring, he again started the plough, this time, however, filling up the trenches as he had previously opened them, covering the manure well and deeply in. He passed

the plough north and south, and this time he ploughed all the land, throwing up the centre as high as possible. When completed north and south, he commenced again east and west, and did the same, still ploughing to the stake, not away from it. When completed, the field was left in a continuous succession of squares, each 25 feet apart from centre to centre, and raised fully 39 inches above the bottom of the furrows, which, by this course of ploughing, ran all round each square. These furrows were cleaned out, and all water allowed to find its natural outlet, and though little fall was apparent, still it did drain off, and even during heavy rain, the centre was high and dry. The land was at once seeded to clover, and the trees planted in the centre of each square, in a depression like a saucer, of 3 feet wide by 6 inches deep. Now you will easily see that the land just under each tree had been moved (including the trench first made, and the subsequent heaping up of the soil by the plough both ways) fully thirty inches deep, well manured, and the soil deeply broken up each way, north, south, east and west, thus forming a drain to intersect the furrows left, when filled up again by the plough. A small circle of about six feet at the foot of each tree was kept quite clear from clover or weeds, by the application of a coat of thoroughly rotted manure every fall for some time.

I was certainly astonished at the rapid growth of the trees. They grew most wonderfully, and had been, just before I saw them, loaded with splendid fruit. I was much pleased with my old-countryman's good strong common sense, and still more at the splendid results. To my mind, one of these practical applications of a known principle is worth a great deal of theory, and I was too much pleased to neglect the opportunity which your journal affords for others to benefit by my friend's experiment. I myself have lately bought a wet farm of several hundred acres, about fourteen of which I intend planting with apple trees next fall, and certainly will follow the above plan to the letter, having already bespoke twelve hundred trees from the nurseryman. If we were all to examine every practically successful experiment that comes under our notice each day, and acquire the habit of recording them clearly and truthfully, so as to be readily understood, what a mass of useful information would be obtained and distributed, especially since the pages of your agricultural journal are always open to such communications.

C.

Strawberry Troubles.

All the troubles of strawberry-growers date from the advent of the seedling varieties in England, about the year 1827. Before that time—all the best English gardens had the old sorts, of which the following were the chief: The large white strawberries of

various kinds, all larger than the *Triomphe de Gand*, and which were certainly of as fine flavour, if not better, than any now produced. The leaves were high, strong and dense, and crowded out all weeds and interlopers. "The small Alpine White"—was a great bearer; but small and very good. The scarlet Hautboy—(really "*haut bois*" French)—which was, from its beautiful colour, perhaps the favourite. There were other sorts red and scarlet, but in those days they were never named. These sorts (with the exception of the Alpine,) all carried their fruit high, and well out of the dirt; and the beds scarcely ever wanted renewal. A strawberry-bed once planted, was like an asparagus-bed, "an institution for life." It was manured yearly, the old plants threw out but few suckers, and the parent plants became woody, and often times the woody part would be several inches long—all spreading away from the stock. In the writer's garden, here were strawberry-beds planted by his grandfather, and never from that time once renewed; and Cobbett in his works, mentions strawberry beds that he had seen in various gentlemen's gardens in England—the grounds of which formerly belonged to monasteries—which had existed from the time of Henry the Eighth, and how much longer no one could tell. So also in most of the old granges and better class of farm houses in England, the strawberry beds continued where they always were, and no doubt in many cases, where innovations have not taken place, they exist there still. All these sorts bore well, the fruit being grown on such a mat of old roots and leaves, never was dirty; and the strawberry bed was a real pleasure.

The introduction of the seedlings, however, altered all this, the time-honoured institutions were done away with and new ones introduced, and then began your troubles. These new plants (with some exceptions) often proved sterile when planted alone, and it was not for some 15 or 20 years that the "bi sexual" theory was started, and the fact discovered that unless several sorts were planted together, the blossoms would not fructify. The new sorts proved great runners; for one fruit-stem you had a thousand young plants, and but few of the young plants would even flower; and when those which did not flower were allowed to increase, they went on *ad infinitum* as "barreners." The consequence was the loss of our dear old sorts, and a general disgust at strawberry-growing, which for some years almost ceased. When the sexual theory was once understood, things began to mend. But the "Foxes," as the male plants were called, increased faster than the females, and the consequence was an absolute failure of crop after a certain time.

We then abandoned these new sorts, and search was made for "bi-sexual" kinds, which fertilized themselves, and these in America, finally, for all practical purposes,

culminated in the "*Wilson's Albany*," and "*Triomphe de Gand*."

Now the seedlings are again on the increase. Such wonderful success has attended the advertising of new sorts, that we have almost had the tulipomania over again, in strawberries. There are now hundreds of sorts advertised—all no doubt of greater or less excellence, or they would not have stood the test of experiments; but all to be successful, must be bi-sexual, and all must be scarlet. All must be sufficiently firm in the flesh to resist the accidents of carriage, and must not lose colour seriously when bruised.

Growers, however, who by tradition know anything of, or can remember old times and old sorts, look backwards to the days when strawberry beds were permanent, when runners were so few as to be unimportant, and when the fruit was kept clean by its own native bedding of leaves and woody stems, and when it was not necessary to re-plant and make new beds every third or fourth year. Up to the last year strawberry advertisers promised every thing but permanence. Now a new era begins, and we are promised not only permanence of root, but permanence of fruit—not only that the beds should last from year to year, for many seasons, but that the fruit should continue in a state of excellence during every month in the year. The last new sensation is the "*Mexican ever-bearing strawberry*," warranted to endure for ever, to fruit every month in the year after June, till the frost stops it, to be of great excellence in quality, to increase from the root without a superabundance of runners, and, in short, to carry us back from fifty to one hundred years, and place us again in the old monastery garden, when the strawberry bed was a pleasure to the amateur, and a profit to the gardener, where all the labour necessary was the manuring once a year and the pleasant task of gathering. Truly there is nothing in this world so new, but it has been old, or so old, but it is likely to become new again. E. L. C.

* "*Triomphe de Gand*" is a European Variety.—Ed.

LOAM DEFINED.—A good loamy soil is one that is neither too sandy nor too clayey—one that when moderately moist will squeeze tight in your hand and retain the traces of your fingers, and yet when dryish will crumble into pieces. If very sandy it will not be cohesive enough. If there is too much clay it will be too close. Sandy loam, such as you will find at most roadsides, is the best for plants. Turfy loam is loam taken from the green sward of a pasture, or the sides of roads and lanes, taken off thin, from one to two or three inches in thickness, and allowed to decompose for a few months after being piled in a heap. When broken up for use such loam will be found full of decayed vegetable fibre, and hence its use for nourishment and keeping the soil open.—*Collage Gardener*.

C. carpatica. The plant forms large tufts, and throws up its flowers to a height of six or eight inches. It has been introduced from the mountains of Transylvania by Messrs. Backhouse & Son, of York.

GALANTHUS LATIFOLIUS.—A distinct-looking hardy bulb, with broad, flat, spatulate-lanceolate green leaves, and white flowers, having the petaline divisions tipped with green. The plant is most remarkable as a Snowdrop for its leaves, which resemble those of the Hyacinth, while the flowers are about the size and appearance of those of the common Snowdrop, but appear in May. It has been introduced from the Caucasus, 7,000 feet elevation, to the St. Petersburg Botanic Garden.

HYDRANGEA OAKSA.—A fine hardy shrub, with bold, opposite, cuneate-obovate deeply serrated leaves, and large, terminal, globose leafless cymes of large showy flowers, of a pretty flesh-colour, nearly all of them being sterile, with roundish-obovate, entire sepals. It is of Japanese origin.

LILIA PURPURATA NELSON.—A beautiful variety of one of the finest of stove epiphytes. It has all the characteristics of *L. purpurata* itself, but the exterior surface of the sepals is of a rich violet-rose colour, and of the petals rather paler, the interior of both being bluish-white, while the lip is of a very rich crimson hue. It comes from Brazil, and has been introduced by M. A. Verschaffelt.

LYCENIS LAGASCI.—One of the most beautiful of dwarf rock plants. It forms a hemispherical mass, with short, dichotomously branched, slender, tufted stems, small sessile lance-obovate or ovate lanceolate leaves, and numerous five-petaled rosy-pink flowers, resembling those of a *Silene*, whence the generic name *Silenopsis* has been proposed for it. It is difficult to conceive anything more sparkling, and at the same time delicate, than the rose-coloured white-eyed blossoms. It comes from the sub-alpine region of the North-west Pyrenees, and has been introduced by Mr. Niven, of Hail.—*Gardener's Chronicle*.

DENDROBIUM CRASSICORN.—This is the famous "Knotted Dendrobium." Known for some time in English gardens, a very singular plant, the flowers of which have been looked for with no little curiosity. We are informed by Mr. Henry Veitch that at length the plants have flowered simultaneously at the Royal Gardens, Kew, and at the Royal Exotic Nursery, Chelsea. The stems are very curious, from four to ten inches high, bearing knotty rings, alternating with the simply constricted parts. The knobs are by far more developed than in the well-known *Dendrobium Aphrodite*. The stems remind one much of those of *Dendrobium crystallinum*. They are of very thick texture, and are glossy, milk-white, the petals much broader than the sepals, and all tipped with beautiful violet purple. The lip has a very dark orange expanded disc and ungues. The anterior

limb is white. The column is greenish white, with some dark purple marking below the stigmatic lollow and on the sides. All the surface of the lip is velvety. This is one of Colonel Benson's best discoveries. Such Orchids, which by their peculiar appearance give a character to the scene even when out of flower, must be very welcome. We obtained a specimen from the Royal Exotic Nursery, where we admired the plant last autumn, as also at Kew. May we allude to the fact that there are still some other great Bensonian surprises to be expected?—but we will not speak before time.—*Gardener's Chronicle*.

THE GIANT LILY.—Several of these bulbs were started in the greenhouse in February, of which two were planted out in March, when they were in full leaf. These stood twelve degrees of frost, with only a few spruce branches for protection. They grew to seven feet in height, and each perfected seventeen blooms. Two remained in the greenhouse, and of these the largest produced a stem eleven feet in height, and ten inches in circumference one foot above the soil. It furnished twenty blooms, each bloom measuring seven inches across. The bulb does not die after the flowering is over, but the leaves disappear in autumn and are again renewed in spring. *Gardener's Chronicle*.—It is stated in *Tillon's Journal of Horticulture* that this superb lily has flowered in the open ground in the State of New Jersey, and endured the winter there with slight ground protection.

Growing Celery.

A correspondent in Chatworth asks how to grow celery "from the seed bed to the table." I will endeavour to supply the information for which he asks. Celery requires a friable, well drained soil, and also one of exceeding richness. Too much manure cannot be used in its production, from the seed bed to the time of the final planting; upon the goodness of the soil, and the preservation of the roots in transplanting, depends the greater measure of success in the cultivation of this much esteemed vegetable.

The following method is that ordinarily pursued by market gardeners and others in this part of the country. The seed is sown in a hot-bed during the month of April, the soil being made smooth, before sowing, with the back of a spade. After the seed is sown it is covered lightly with fine earth sifted over it, and the bed kept covered with a mat, until germination has taken place. The moment the plants are ready to handle they are transplanted, six inches apart, into another frame, with a little bottom heat, and then gradually hardened off for final planting out into trenches in June or July. The trenches are laid out six feet apart, and dug eighteen inches wide and eighteen inches deep. In the bottom of the trench is placed six inches of thoroughly rotted manure, and on this, six

inches of good rich soil. The plants are set six inches apart along the centre of the trench and earthed up as they grow, receiving a final covering, for the purpose of blanching, about the middle of October—some even as early as September. Care must be taken to keep the earth out of the hearts of the plants, which should never be handled when wet, although they require copious waterings, particularly until the roots are well established.

My own plan of growing celery is to sow the seed early in May, in a warm, sheltered spot in the garden. When the plants are an inch and a half high they are carefully transplanted, six inches apart, in a nursery bed, which has been prepared to receive them, and kept well watered. No trenches are made, but the ground thoroughly and deeply dug, and a large quantity of rotten dung incorporated; in this the plants are set in rows three or four feet apart, (according to the sort planted) and six inches apart in the rows. The earthing up is done either with a spade or plough. I prefer this method to any other, as celery is never wanted early, and by this plan of growing it comes in quite soon enough. It grows more in September than any other month in the year.

Another excellent method is as follows:—Dig out a trench four and a half feet wide, and one foot deep, placing the earth half on one side and half on the other side; this done, give a thorough good manuring; let it be well dug in, and the surface made smooth as the work goes on; then lift the plants with a trowel from the nursery bed, to insure their having good roots; plant them precisely one foot from row to row, and six or seven inches from plant to plant; the rows cross-ways of the trench. Thoroughly well water, and in the course of a week after planting the earth should be carefully stirred over the whole bed. The first earthing up should be done with a trowel, holding the leaves of the plants together in one hand and stirring and drawing a little earth to the plant with the other; the next earthing is done by the help of two light boards six inches broad, and the same length as the trench is wide, these to be placed between two of the rows of plants, then place between the boards well broken earth, as much as required; draw up the boards steadily; do the same in the next space, and so on until the work is completed.

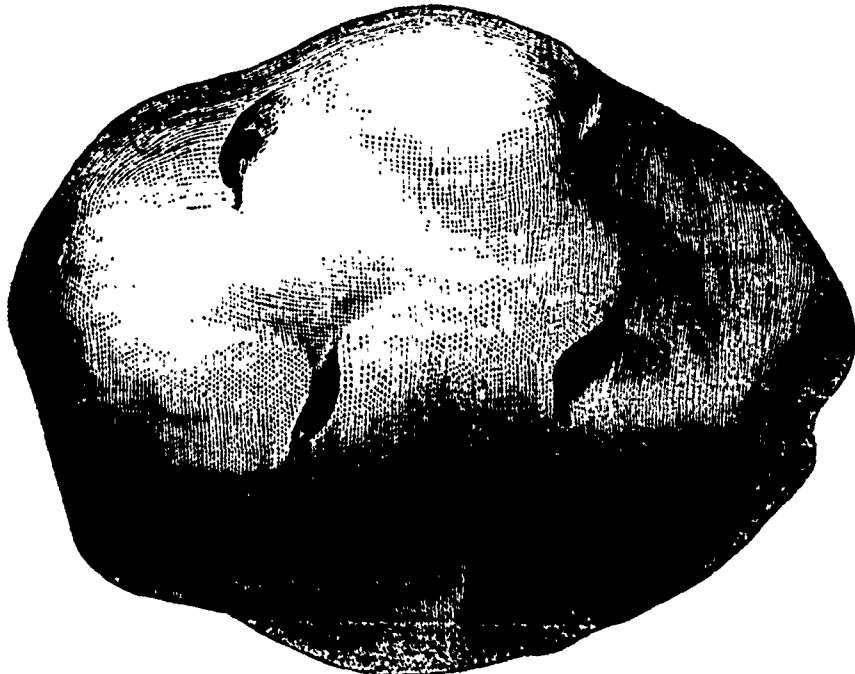
The sorts to grow are Cole's Superb White, Seymour's Giant White, Cole's Superb Red, Manchester Champion Red, Turner's Incomparable Dwarf White, Ivery's Monarch, Dwarf Red.

W. T. G.

MANURE FOR GRAPE VINES.—The best is surface soil, leaf mould and decomposed vegetable matter or compost. Animal manures should be used sparingly, and should always be well decomposed before they are used; they create a rank, succulent growth, if used fresh, and also impart a disagreeable flavour to the fruit and wine, making it also more liable to rot and mildew.—*The Grape Cultivator*.

The Early Prince Potato.

We are so favourably impressed with this new variety that we give our readers an engraving of the Early Prince Potato. Many have planted the Early Goodrich, in the hope of securing a valuable, prolific and early potato, and while it has proved to be all that could be reasonably expected in productiveness and early maturity, yet in the estimation of most persons it has not been found to be a choice variety for table use, the flavour and lack of dryness when cooked rendering it quite undesirable. The Early Prince, on the contrary, we are assured by very competent and credible gentlemen, is very dry and mealy as soon as the tubers are large enough to be dug, and quite fit for table use for some time before the crop matures. It is well thought and quite



solid, and when boiled is dry, mealy, white and very fine flavoured. We shall plant it this season, and carefully watch its growth, yield and time of ripening, testing it with the Early Rose, for it is claimed to be fit for use ten days earlier than that variety. Those who wish to give it a trial can obtain it only of Mr. Edward A. Wood, Geneva, N.Y. The Geneva Horticultural Society recommend it as a new variety of great promise, and some of the members speak of it as larger and superior in quality to the Early Rose.

A Few Good Vegetables.

ASPARAGUS BEAN.—This may be called one of the finest beans in existence—very prolific, and of excellent flavour. Should be in all gardens.

HENDERSON'S PINK-APPLE BEET.—The finest grained and best flavoured of all beets. Is also a good keeper, being exceedingly dwarf and compact in growth. It is very useful in an ornamental way in the flower garden, where ribbon beds are in vogue.

LITTLE PIXIE CABBAGE.—The earliest cabbage—well flavoured, sure to head; should be better known.

ROBINSON'S CHAMPION CABBAGE.—This is the largest cabbage in the world. A consecutive half-dozen have been shown in England, of which the average weight was sixty-two pounds. It is one of the Drumhead tribe; quality good.

LESLORD'S CAULIFLOWER.—This is of cauliflowers what the foregoing is of cabbages the champion. Heads well in this country; very firm and close; altogether first-class.

CHARLWOOD'S RIDGE CUCUMBER.—The largest, best and most prolific ridge cucumber I have ever seen, surpassing every other variety grown.

WHITE NOCERA ONION.—The very earliest; most superb for pickling, being so white and of such uniform size.

STURGEON PARSNIP.—Superior for table use to any other variety, smooth, of good shape, and delicious flavour.

McLEAN'S LITTLE GEN PEAS.—The earliest and most prolific dwarf wrinkled pea, excellent for a succession of sowings by which green peas may be had all the season through.

ADVANCE PEA.—Not quite so early nor yet so dwarf as the preceding, but a most valuable sort. The wrinkled varieties are much superior in flavour to the smooth sorts.

ORANGEFIELD DWARF PROLIFIC TOMATO.—The earliest tomato in existence, ripening before any of the American sorts, very prolific and of excellent flavour. Should be in every garden.

All these vegetables have been tested in our grounds for several seasons. In fact, I think I may claim to have been the pioneer cultivator of most of them in Canada. They will all or any of them be found to be a decided improvement and advance on the older varieties.

W. T. G.

Transplanting Evergreens

(To the Editor.)

SIR—Having had considerable practical experience in transplanting Evergreens on my own farm, and also having had what is generally termed *hobby* in getting them to grow, so that persons have often enquired "how I did it," and as the season is fast approaching when they should be transplanted, I thought you would be willing to favour your numerous readers with some information with regard to the best method of doing it. In the first place, there are very few exotics which will succeed in our climate. I have tried a number, namely, the Holly, Laurel, Ivy, and several others; they will grow from seed the first year, but the winter kills them although protected; but the pine tribe, which is indigenous to Canada, and which, I believe, numbers upwards of twenty varieties, may all be transplanted successfully after the following plan:

First, the season for taking them up is the end of May and beginning of June, when the sap has risen in the plant, and the buds started about an inch; as a guide to the time, they should be removed when the dandelion first blossoms. As they are all resinous trees, care should be taken not to break or lacerate the limbs or body. They should be taken up, if possible, where they are growing in sod. Take a sharp spade, cut the sod round them as far as possible, and take up as much earth as will hold to them without disturbing it, and carry them carefully, if at some distance, on a waggon rack, to where you wish to plant them. Then dig the holes, as close as possible to each other, and plant them thick, as the bodies require to be protected from the heat of the sun as much as possible; and when carefully planted, and dirt filled well round them, mulch them well with a quantity of coarse straw from the barn yard, stuff it well in between them, say one foot deep or more; this draws and retains the moisture. During the first summer they require no water. This applies to trees taken from the forest, which, of course, cost nothing, as they can be obtained in almost any part of the country; and if the above plan is properly followed out, I will guarantee nineteen out of every twenty to live and grow, if properly protected for two or three years.

There is nothing that I am aware of that will give more satisfaction than a tasty, judicious laying out of Evergreens round a farm, dwelling, and premises, as they can be planted to form a screen of protection in our cold winters, they impart a healthy fragrance to the air, no insects will gather in them, they throw out no shoots, and they are a relief to the eye from the gloomy snows. A few days in each year devoted to the planting will not be missed, and in the course of a very few years they will add hundreds of dollars to the value of the place, in comfort and appearance to the occupants, and should it be sold at any

time, it would bring ten times more than the cost of labour in planting, as it is likely that as the country progresses and becomes better known, a more wealthy class of persons with cultivated taste will come to this country.

Few things have made England the theme of praise of poets and writers so much as the taste displayed in the laying out of their beautiful estates, and in ornamenting the grounds around more humble homes.

Dereham, C.O.

The Edinburgh International Fruit and Flower Show.

This show is announced to be held at Edinburgh, Scotland, on the 8th and 9th of September, 1869, and the following prizes are offered for collections of fruit from British North America, namely, a medal for the finest collection of pears, and another for the finest collection of apples.

What is there to hinder the Province of Ontario from carrying off these medals? The necessary funds to defray the expense of gathering together and sending to Scotland the collection of fruit would, no doubt, be promptly furnished by the Commissioner of Agriculture, who has in charge the interests of emigration, for no better advertisement of the climate and soil of Ontario could possibly be furnished than such a display of our apples and pears, and the publicity that will be given to the winning collection. We are sure that the President and Directors of the Fruit Growers' Association would take up the matter with great zeal, if only the requisite funds could be furnished, and would bring together a collection of both pears and apples that could not be beaten by any of the sister Provinces. Perhaps the President of the Fruit Growers' Association, who is fully alive to the fruit interests of the Province, has already made enquiry of the Commissioner of Agriculture if Government will defray the expense, and we hope very soon to learn that he has received a favourable response, and that steps will be taken in good time to secure a splendid collection of our pears and apples at the Edinburgh show.

WINTER APPLES FOR CANADA.—A correspondent from Kilmannah inquires:—“Could you or any of your correspondents let me know what are the best varieties of winter apples, as I intend planting an orchard all of winter fruit? Which are the most thrifty, best bearers, and keepers?”

REPLY BY THE EDITOR.—The *best keepers*, that are also good bearers and thrifty trees, are the Roxbury Russet and Golden Russet, of Western New York. The *best bearers*, that also keep well through the winter, and are thrifty trees, are the Baldwin, R. I. Greening, and Northern Spy.

Wine Grapes for Canada.

(To the Editor.)

SIR,—In making a few remarks on grapes for the purpose of wine manufacture, I can only say that, so far as my experience goes, I have not been able to find, besides the Delaware, anything better than the Clinton and the Oporto.

The Clinton used alone is not so valuable as when used in combination with the Oporto. When used with the Oporto it is of great value. The reason of this is that the Clinton does not contain enough gum matter to form a good bodied wine alone, but as the Oporto holds the gums in abundance, by the combination of the two a wine can be made equal to any of the European red wines. None of the German red wines can be compared with it, if properly made.

The Delaware stands first in my estimation, and may be safely compared with the Riesling of Germany, from which is made the famous Riesling wine. I have used the Delaware, both exclusively pure and in combination with the Diana, and found it always to make a good wine, very much resembling Moselle.

Although I have made wine of the Isabella and Catawba, I cannot speak with satisfaction concerning them. I only made the wine in small quantities. These varieties are not suited to our climate, and should not be planted.

The Concord I find very hardy, but cannot prize it very highly for wine.

I think Mr. Arnold's new grapes, especially the Brant, Canada, Cornucopia and Antichon, will prove to be good wine grapes.

The Adirondac appears very well to me, and I think it will make a good wine.

I suspect that the Ives seedling, so much talked about, is the same as my Oporto. However, next autumn will decide that question, as I have them both on my place.

After all, we can make an excellent wine from the Clinton, Oporto, and Delaware; and I think we shall not find much better wine grapes than these, unless we find them in those new grapes raised by Mr. Arnold, which are certainly very promising.

HENRY BAUER.

Hamilton, Ontario.

Grafting the Grape Vine.

The weight of authority upon the best time in which to graft the grape is decidedly upon the side of the *growing season*, in which this operation can be most successfully performed. Mr. Ellis, who has grafted many vines, says that the first leaves should be fully developed before attempting the operation, because the crude sap has passed up become chemically changed through the agency of the leaves, and is now in a more glutinous condition, and the albumen of the scion and stock readily unite. In order to have the scion in a condition similar to that of

the stock, he is in the habit of bringing the scions into the same temperature as the stocks are growing in, some time before they are inserted, believing that in this way the sap in the scion is brought more nearly into the same condition as that of the stock, and greater certainty of a union effected. Mr. Ellis also advises that, when it is practicable, a few green leaves be left on the stock to draw up sap above the graft. In this way it is claimed that the grafting of the vine can be as certainly performed as the grafting of the apple.

New Books, &c., Received.

MY TEN ROD FARM, OR, HOW I BECAME A FLOURISHER. By Mrs. Maria Gilman, Loring, publisher, Boston. This is a very interesting account of the experience of a lady who suddenly found herself thrown upon her own resources for a livelihood, and was gradually induced, by finding out the market value of flowers, with which her husband had stocked their little garden, to cultivate and sell cut flowers. The insurance of \$2,000 upon her husband's life enabled her to put up and stock a green-house, and from that, after a little instruction from others already in the business, she succeeded in supporting herself and children during her novitiate, and now realizes a clear income of \$2,000 per annum. The author says that she has given this account of her experience in hope of aiding the hundreds of women living near large cities, who are eager and willing to do something to add to their slender income. We commend it to the perusal not only of such, but of all who can sympathise with and rejoice in the success of one who, with true womanly delicacy and decision, could conquer a foolish pride, and open a new field of labour to her sex.

THE SMALL FRUIT RECORDER AND COTTAGE GARDENER is the title of a new paper devoted to the interests of small fruits. Purdy & Johnston, editors; published at Palmyra, New York. Messrs. Purdy & Johnson are extensive cultivators of small fruits, and their own experience alone ought to be well worth the price of the paper.

ELLWANGER & BARRY'S DESCRIPTIVE CATALOGUE of hardy ornamental trees, shrubs, roses, &c., cultivated and for sale at the Mount Hope Nurseries, Rochester, N. Y. This is a very complete list, and is profusely and beautifully illustrated with engravings of interesting trees, flowering shrubs and roses.

Rules and Regulations of the Picton Horticultural Society, with the office-bearers for 1869 and the prize-list. Exhibitions will be held on Thursday, July 1st, and Friday, October 1st, 1869. President, Walter Ross, M.P. Secretary, Thos. Bog.

Annual Descriptive Catalogue of Flower Seeds, imported and for sale by W. Sanderson, Market Square, Branford.

Natural History.

The Passenger Pigeon.

(*Ectopistes migratorius.*)

The large order Columbæ, or the Pigeon tribe, is widely extended over the globe, and comprises a great variety of birds, all graceful in form, and some of them, more especially in warm climates, distinguished by the most brilliant plumage. Their general characteristics, giving to the whole tribe a family likeness, are sufficiently marked to enable a novice to recognise them without difficulty. There are, however, one or two exceptions to this rule. The Tooth-billed Pigeon, and the now extinct Dodo, dissimilar as they may at first appear are nevertheless members of this order. They are distinguished from poultry and gallinaceous birds by the shape of the bill, which is arched towards the tip, and has a swelling at the base caused by a gristly plate which covers the nostrils. Their method of feeding their young is peculiar, the gullet being expanded into a sort of double crop, furnished with glands, the secretion from which, during the breeding season, softens the food, which is then thrown up by the parent to feed its young. They mostly frequent trees and forests; but the Rock Dove, the origin of the domestic pigeon in all its varieties, prefers, as its name implies, rocks and caves for its place of abode, a peculiarity inherent also in its domesticated progeny, who, if they make their escape from human haunts, take naturally to old walls and ruined buildings, rather than trees, however abundant. In this country we have two representatives of the order, the Passenger and the Carolina Pigeon. The former is much the most common in Canada, and indeed the most abundant throughout the whole of North America. This well-known bird occurs in vast flocks, whose migratory habits have given the name to the species. The cause of their wanderings appears for the most part to arise from a deficiency of food in the place where they are sojourning. Their migrations cannot always, however, be accounted for on this supposition. They have been known to congregate in immense numbers in districts covered with ice and snow, where the means of subsistence must have been much less abundant than in other places within their reach. Still, when the supply of food happens to be ample in any particular region, they will sometimes stay in it for several years. The immense num-

ber in which they congregate usually render it necessary that they should make frequent changes of residence to obtain the means of supporting life. In order to effect this, nature has provided them with remarkable powers of flight. Audubon has stated that pigeons have been killed in the neighbourhood of New York with their crops full of rice, which they must have collected in the fields of Georgia and Carolina, these districts being the nearest in which they could possibly have obtained a supply of that grain; and as their food is completely digested in twelve hours, these birds must in that case have travelled between three and four hundred miles in five or six hours.

The breeding places of the Passenger Pigeon present a most extraordinary spectacle,



and are sometimes of enormous extent. Wilson has given an account of one near Shelbyville in Kentucky, which was several miles in breadth, and more than forty miles in length. The pigeons visited this place about the 10th of April, and left it with their young about the 25th of May. The ground was covered with their excrement to the depth of several inches, and vegetation was entirely destroyed. Large branches were broken from the trees by the weight of the birds, and the young pigeons, or "squabs," thus precipitated, furnished an acceptable meal to the pigs of the neighbourhood, who flocked eagerly to the spot; while innumerable hawks committed incalculable havoc overhead, and the human inhabitants of the country were not behind in the work of destruction. The noise in this nursery was said

to be so great that it was impossible for any person to make another hear him without bawling in his ear.

The whole plumage and form of the Passenger Pigeon is very elegant. The wings are long and pointed; the second quill feather being the longest. The tail is also long, the middle and upper feathers black, the rest white, with a slaty tinge at the base. The bill is black, the legs are red, short and strong. The iris is red; the beautiful iridescent, metallic tints on the neck elicit the admiration of all who have observed the bird; the softly shaded slate colour of the general plumage on the head and back, with the reddish purple hue of the breast, are too well known to require any particular description.

THE TOAD'S EAR FOR MUSIC.— We have all heard of the serpent charmers of India, who by the aid of musical notes contrive to exercise a wonderful control over those reptiles. There can be no doubt that other animals of the same order, as well as savage beasts of a higher rank, are susceptible to the influence of music; and that toads are not deficient in this respect seems highly probable from the incident mentioned in the following communication from Mr. James Hawkins, of Columbus: "While reading an article in a recent issue of your journal, on the Toad, I was glad to see the innocence of the animals maintained, and that it had been generally much misrepresented, as this prejudice against them is the cause of many of them being subjected to ignominious deaths. When I was younger, I was told that the spittle of the toads would cause warts, a statement which I very much doubted, but took good care never to let them try the experiment. One fine summer evening in 1868,

I was sitting outside the door trying my skill on a concertina, when I observed a large toad at a little distance off coming towards me. I do not profess to be an excellent performer on this instrument, but whatever other folks might think of the performance, the toad evidently enjoyed the treat. He advanced by hops, stopping at intervals to listen, until he got underneath the chair on which I sat. To test him further, I changed my position, when he immediately followed, giving, to my mind, satisfactory proof of the attraction which music has for the toad.

A novelty was introduced at the recent Barrow in-Furness Dog and Poultry Show in the shape of prizes for different kinds of cats. The winner in one class weighed eleven pounds.

Apiary.

Italian Bees.

Now that it has been some time since the Italian bees have been introduced into Canada, we are better prepared to speak of their merits as compared with our native bee.

That they are deserving of all that has been claimed for them we do not believe; but that they are superior to the common bee, and make with them an excellent cross, there can be no doubt. It has been claimed for the Italians that they gather freely from red clover; such, however, is not the rule. There are circumstances under which they will work quite freely upon the second crop of red clover, and possibly upon the first crop, if it be somewhat dwarfed in its growth; but such instances will be found to be rare, and they never work as freely upon red clover even when it is most favourable for them to do so, as they do upon either white or Alsike clover.

It is certain, however, that they gather more honey, owing no doubt to the great prolificness of their queens causing hives to become more numerous populated, and to their greater activity. That the pure Italians are more peaceable, when not provoked, there is no doubt; they will, however, defend their stores from robber bees with far greater vigour, and if irritated by rough handling until their vindictiveness is fully aroused, they are more difficult to subdue or control. It is true, however, that with proper care they are more easily managed. They are hardy, and will endure more cold than the common bee, hence will be found working more freely in cool weather.

All that can be said of the pure Italians is equally true of the cross between them and our common bee, except that the hybrid are more wicked than even our native bees; but as regards the prolificacy of their queens and their disposition to labour, they have no superiors. For this reason alone the introduction of pure Italians is desirable, in order that the stock may be improved.

J. H. THOMAS.

Brooklin, Ont.

Pea Meal for Pollen.

To the Editor.

Sir.—Your bee-loving friends will, I am sure, feel grateful for a little bit of information concerning a discovery I made last spring. I had seen a statement in various agricultural papers and bee journals that rye-meal was a very good and acceptable article of food for bees in the early spring, before nature had opened her stores and spread her bounteous table for their daily repast, and had accordingly been at some trouble to hunt up some rye-meal for the benefit and

delectation of my wintered stock. Whether it was because this newspaper paragraph had its origin in a mere theoretical notion of some editor, with a bee in his bonnet, or whether it was because the bees needed to be trained, like young calves, to their new diet, I do not know; but this I do know. I could not tempt my bees to touch it. With all my coaxing it was no use. They slighted my kind endeavours, and, metaphorically speaking, turned up their noses at the meal of my providing. However, *ex nihilo nihil fit* did not prove true this time. Having tried Graham Flour with no better success, I, as a last chance of getting a meal that would suit their fanciful taste, put some pea-meal before them. This they at once attacked most heartily, and they continued to work in it, whenever the weather was warm enough, until there was a plentiful supply of pollen. My bees did much better last year than ever before, and much better, I believe, than any of my neighbours' bees did last year. Whether, however, my success was due to the pea-meal or not, I leave every one who may care to try it to judge for himself after trial.

Whitby.

W. O. E.

Bee Queries.

To the Editor.

Sir.—The patent or double hive is now quite common with farmers through this section of the country, but in general they are not thoroughly posted in the management of bees. The hive referred to is constructed with sliding frames, for the purpose of taking out the cards of comb, and avoiding the destruction of the old swarms of bees. Answers to the following queries would be acceptable to others besides myself:—

1. What season of the year is the proper time to take out the cards of comb, and not interfere with the egg or new comb that is coming forth that season?

2. What is the most convenient mode of taking out the comb, so as to avoid injury from the bees during the operation?

M. SPOOR.

Wolfe Island, April, 1869.

Reply.—Frame hives properly constructed, allow the frames to be taken out of the top of the hive. Sliding frame hives are now considered objectionable, as they cannot be operated without more or less injury to the bees.

Combs may be removed from a hive at any time of the year, whenever it is desirable to do so. In the spring it may be done for the purpose of cleaning the hives and ascertaining if the stock has a queen, and plenty of honey. In the swarming season, for the purpose of making artificial swarms, taking honey, looking for moths or miller-grubs, finding queens, &c., &c. In the fall, for the purpose of exchanging cards or combs of weak stocks for those of strong stocks, and preparing the hives for winter quarters. It

matters not when the combs are removed from the hive, the eggs or swarm will not be affected the combs are placed back again.

If Mr. Spoor wishes to know when the combs may be removed for the purpose of taking honey, we answer, during the honey harvest, as soon as the outside cards are filled and capped over. It would be of little use to remove any combs for honey except the outside ones, as all others are more or less filled with eggs and young brood, which would, of course, be destroyed by removing them from the hive and not returning them again. In hives of medium size the outside cards contain but little or no brood, and when filled with honey may be removed, and empty frames put in their places.

The proper manner of operating with frame hives is, first, to remove them from their stands a few yards, then blow a little smoke into the hive and not returning them again. In ten or fifteen minutes, often much less, the bees will fill themselves with honey, when they may be operated with safety and without difficulty.

We would refer Mr. Spoor to a small work on bees called the "Canadian Bee Keeper's Guide," which may be had for 28c., post-paid, either in the city of Toronto, or of the publisher, Brooklin, Ont. It gives full directions for the management of bees in frame hives.

J. H. THOMAS.

Bee Manuals—Italians.

Dr King, of St. Catharines, makes the following inquiries:—"I shall feel much obliged if you will kindly inform me, in the next number of the CANADA FARMER, the best work published on the culture and rearing of Bees; also, if you would recommend the Italian in preference to the common bee."

Ans.—It would be difficult to say which is the best work on bee culture, as there are several good works published. "Bee Keeping" by Quinby, or "Lang-troth on the Honey Bee," are both excellent works. "Bee Keeping," by Quinby, is the more practical. Both of the works can be had in this city (Toronto). As a hand book the "Canadian Bee Keeper's Guide" is all that can be desired. No bee-keeper should be without it. It can be got in this city, or of the author, J. H. Thomas, Brooklin, Ont., price 28c. post-paid.

We would recommend the Italian Bee as being more productive and better workers.

FIRE IN BEE-HIVE FACTORY.—A steam mill used partly as a bee-hive factory, owned by Mr. Nelson Thomas of Brooklin, was destroyed by fire on the morning of April 10th. The loss of property was estimated at \$3,500, and the amount of insurance was only \$1000. There were in the building, manufactured and under way, nearly 2000 bee-hives, all of which were burned. In an adjoining building were stored some 200 hives, which were saved. Mr. Nelson Thomas manufactured for his uncle, Mr. J. H. Thomas. We understand that, notwithstanding this heavy loss, it is expected that the demand for hives during the ensuing season will be promptly supplied as heretofore, as arrangements have been made for resuming the manufacture immediately.

Miscellaneous.

Privies and Water Closets.

To the Editor.

Sir,—I detest bad smells, and fully believe that half the cases of cholera and dysentery are propagated by privies and water-closets. As one of a prudent class of people, I always use a disinfectant, such as chloride of lime, burnt peas or coffee, or the usual preparation of carbolic acid; but it is impossible to convince the majority of people of the necessity for any such thing. They naturally enough reason thus: "I never have used anything of the kind, and we are all well enough, except a case or two last summer, and that was attributed to this, that, or the other cause." I am quite convinced that half the fevers are taken from insufficient accommodation in this way, especially scarlet fever, which we all know is most prevalent in the winter season, when, from other causes, the system seems most likely to be in the right state to receive infection.

With children, where water-closets do not exist in the house, and from bad weather or other causes it is inconvenient for them to be taken out, all offence can be avoided by a jar of chlorine water, made with half a pound of chloride of lime put into, say, two gallons of water, well stirred up in the jar, and half a pint used each time as occasion requires. This will prove a most excellent disinfectant, and great comfort, and the cost is but five cents.

To obviate all offensive smell from the privies, I have adopted the following plan with complete success. Construct a trunk, or square pipe, carefully planed and smoothed inside, about 12 by 5 inches across, and of sufficient length to reach from the under side of the seat to within about six inches of the bottom of the pit. The trunk should not be tapering. It should be attached, air-tight, to the under side of the seat, the joints of which must also be tongued and grooved. The top of the pit must be boarded over with double-sheet flooring, and all egress or escape of air carefully guarded against. The cause of smell from the pit is simply circulation of air—not at all requisite so far as keeping the place free from bad smell is concerned—and the entire absence of any circulation whatever will render the trunk perfectly unobjectionable so far as smell is concerned. At the back and outside I have a common wooden pump, arranged with spout and handle, so that I can at stated intervals (as when the vines in the garden require manure), pump out the contents of the pit into pails, and by being careful, there is nothing more offensive than a smell for half-an-hour during the operation. If a stoppage in the trunk should occur, a few pails of water and a piece of plank, a little smaller than the trunk, with a long handle inserted into a hole in the centre, will form an excellent plunger

to force all obstructions down. But my experience goes to show that once a year only it may be requisite to use it, and about the same time the pit may require emptying. I use an ordinary 200 gallon puncheon, and a small square hole through the double floor, fitted with cover, air-tight, and easily raised, will afford easy means of access to stir up the contents with the aforesaid plunger when pumping it out.

When we consider the number of times each member of a family is offended during the year, and exposed to the infection arising from the dreadfully foul gases generated under the usual arrangement, not to mention the bad odour attached to the clothes, we cannot wonder if infections of all kinds are communicated. With the trunk there is no circulation, and the bad gases are not perceptible, and, besides, a continued sinking takes place as soon as the pressure of the column of water overcomes the resistance, and the stop emptied remaining on the surface effectually act as a stench trap.

Advocates of the dry earth system may condemn this plan, but I would say in its favour that it needs no attention, is always in order, and readily cleaned out; whereas, the dry earth system, although, of course, quite right in principle, fails with the million for want of the necessary buildings constructed for its use, and without them and plenty of dry earth, the plan must fail. And I just want to ask the advocates of the dried earth system where people in cities are to get dried earth and a privy constructed to use it, with the means of constant supply and removal, and all this in an ordinary rented house, without, in ninety-nine cases out of a hundred, any man servant to do the work, which must be done every week. Besides, few men employed as house-servants can be got to do this kind of thing, whereas, once a year people regularly appointed for the purpose are easily obtainable. Either plan in the country will, of course, do, but we all know that the plan which wants least attendance in the country will always be most popular.

Remarkable Oaks.

To the Editor.

Sir,—In a recent issue of your journal, I saw a short notice of some venerable oaks growing in Welbeck Park, Notts., England, the seat of the Duke of Portland. Being well acquainted with that park and the neighbourhood, I am induced to give you a few more particulars respecting those celebrated "Monarchs of the Forest." The Duke's Walking-stick was 111 feet 6 inches high, the trunk rising to the height of 70 feet 6 inches before it formed a head. The circumference of the trunk at the ground was 21 feet, and at 3 feet high was 14 feet. The Two Porters are so called from having a gateway between them, the roadway leading from Welbeck Abbey to the Village of Whic-

well. The height of the Large Porter in 1790 was 98 feet 3 inches, but it is now only 75 feet. The circumference of the trunk at the ground, 38 feet. The Little Porter in 1790 was 88 feet high, but now only 74 feet; the circumference at the ground is 33 feet. Another, called the Seven Sisters, from its having anciently had seven trunks issuing from one stool, about 4 feet from the ground. I and three others have stood quite comfortably within the space enclosed by the seven trunks. The tallest of them measured 83 feet 7 inches, the others being nearly of the same height. The Game Keeper's Tree is quite hollow, and remarkable for having, notwithstanding, a flourishing and vigorous head. In this tree the game-keeper secretes himself when he shoots the deer. On the inside is cut the date 1711. The Greendale Oak has long been a very celebrated tree. In 1724 a roadway was cut through its venerable trunk sufficiently capacious to permit a carriage and four horses to pass through it. The height of the archway is 10 feet 3 inches, the width of it 6 feet 3 inches, circumference of the trunk above the arch 35 feet 3 inches. There is only one living branch, which is 51 feet in height. Acorns from off this tree have been sent to numerous places in the kingdom. Its age is computed to be upwards of 900 years. But the Parliament Oak is considered to be the most ancient tree, it being calculated to be upwards of 1,100 years old. The Parliament Oak stands in Clipston Park, and derives its name from a Parliament having been held under it by Edward I. in 1290. Clipston Park, about six miles from Welbeck, is also the property of the Duke of Portland, and is supposed to be the oldest park in England, having been a park before the conquest. Both John and Edward I. resided, and kept a court in Clipston Palace, some of the ruins of which are now remaining.

The Shire Oak, near Worksop, had a head 90 feet in diameter, which extended into three counties, York, Nottingham, and Derby, and dripped over 777 square yards.

JOHN MOSELY.

In cold northern countries, by a wise provision of nature, the mountains are clad in "firs."

Agriculture, being a science as well as an art, requires an educated head and an educated hand. Singly they can do little, conjointly everything.

CARE OF HARNESS—It has been ascertained that the ammonia which is evolved from stable manure has a very injurious effect upon leather, causing it to crack and rot after being for some time exposed to its effects. It is, therefore, a bad practice to keep saddles or harness in the stable. They should be kept in a separate room, from which the fumes of stable manure should be carefully excluded. This room should be provided with saddle and harness racks, shelves for buckets, and other stable furniture.

Jaxton—S Corbet, Oakhill.
 Eldon—G W Miller, Woodville
 Fenelon—J D Naylor, Fenelon Falls.
 Muskoka—J B Browning, Bracebridge.
 VICTORIA, S—W J Thibell, Lindsay.
 Ops—W Boynton, Lindsay.
 Mariposa—J Barnart, Oakwood.
 Emily—J R McNielle, Omenie.
 Verulam—W B Bead, Bobcaygeon.
 Lindsay Horticulture—C Neale, Lindsay.
 WATERLOO, N—M Springer, Waterloo.
 Woolwich—J Hall, Winterbourne.
 Wellesley—G Oakley, Crosshill.
 WATERLOO, S—A Macgregor, Galt.
 WELLAND—A Bead, Crowland.
 Bertie—A Dickont, Point Albino.
 Crowland—W Buckner, Crowland.
 Humberstone—J Thomson, Humberstone.
 Stamford—J Law, Drummondville.
 Thorold—R Spencer, Alaburgh.
 Willoughby—J McCredie, Chippawa.
 WELLINGTON, N—J Isles, Arthur.
 Amaranth—T Cayen, Whittington.
 Arthur—J Isles, Arthur.
 Minto—A Melkiohn, Harrison.
 WELLINGTON, C—J Beattie, Fergus.
 Garafraxa—A Nichol, Garafraxa.
 Erin—J W Hunt, Coningsby.
 Kramosa—W Tolton, Kramosa.
 Nichol—G M Todd, Fergus.
 WILKINGTON—R Cronar, Salem.
 WELLINGTON, S—G Murton, Guelph.
 Guelph—J Laidlaw, Guelph.
 Guelph—J Grant, Aberfoyle.
 WENTWORTH N—J Weir, jr, W Flamboro'.
 Beverley—J Armstrong, Mockton.
 Flamboro' E—J Stock, Waterdown.
 Flamboro' W—C Durrant, W Flamboro'.
 WENTWORTH S—W A Cooley, Ancaster.
 Saltfleet & Binbrook—J Davis, Mount Aiden.
 Glanford & Barton—C Grey, Hannon.
 Ancaster—F Bolder, Ancaster.
 YORK N—E Jackson, Newmarket.
 Georgia and North Gwillimbury—Angus Ego, Ge-
 gina.
 Whitchurch—M Jones, Bloomington.
 King—S Machell, King.
 RGwillimbury—A J Hughes, Sharon.
 YORK E—J Robinson, Markham.
 Markham—J Spright, Markham.
 Scarborough—J Crawford, Malvern.
 York E—J McCarter, Toronto.
 YORK W—B Bull, Davenport.
 Etobicoke—W A Ide, Islington.
 Vaughan—T Graham, Woodbridge.
 York W—J McCarter, Toronto.
 Fruit Growers' Association—D W Beadle, St. Catha-
 rines.

European Grain Markets.

English papers speak of the prices of grain, and of wheat especially, as having still a tendency to rule low. From a recent issue of the *Mark Lane Express* we learn that, in England, a large breadth of spring corn has been well got in, as well as of potatoes, and after all past vicissitudes, the aspect of the country has a reasonable character for the time of year. The wheat trade has again lost ground, London, as usual, sounding the key note, which has been answered in the country by a decline of 1s. to 2s. per quarter, though the general condition of samples has improved. In fact, the downward course that prices have taken since last harvest has driven out all spirit from the trade. The heavy losses sustained by the whole corn trade have entirely banished confidence. But in proportion as English orders fail, importations must diminish, and thus it appears that a series of fluctuations are probable up to next wheat harvest, unless marked events produce a total change. The wheat trade in France, which was lately rising, appears to have felt English influence, Paris and many other places having given way about 1s. to 2s. per quarter, while the drought in Spain, which was to have made that country the land of Ophir to expectant shippers, has hitherto given very little en-

couragement, the Spaniards appearing to live upon their new liberties and leeks. Belgium has become dull and drooping, but not so Holland, and Germany keeps dull, having lost the upward movement at Dantzic. New York has fluctuated. The contemplated abolition of all duty on corn, while encouraging imports, is against prices.

Monthly Financial Statement.

The following is the Treasurer's abstract statement of receipts and payments of the Agriculture and Arts Association of Ontario, for the month ending 30th April, 1869 :—

Dr.	
To balance last month.....	\$1,244 44
To cash received	35 50
	\$1,279 94
Cr.	
By cash paid on account of pre- miums	\$ 110 00
By cash paid on account of Board Expenses	420 00
Do. do. do. Salaries.....	30 00
Do. do. do. Miscellaneous	2 00
	562 00
By balance to next month.....	717 94
	\$1,279 94

GEORGE GRAHAM,
Treas. Agl. and A. A.

Agricultural Items.

A gentleman in Guelph is importing thirty pairs of house sparrows this spring to exterminate the insects.

It appears that the cattle plague is still widely diffused in Eastern Europe, very little diminution having taken place in the number of cases, in either Galicia or Hungary.

Small pox in sheep is still very far from being exterminated in many parts of the continent. It is admitted that the malady prevails in two or more of the provinces of Holland.

SEPARATE GOVERNMENT DEPARTMENT FOR AGRICULTURE.—English Agricultural Societies and papers are urging the establishment of a separate Government department for the benefit of the agricultural interests of the kingdom, the same as the Board of Trade for the commercial and manufacturing interests.

A recent number of the *Farmer* (Scottish) says that there are sixty-six vessels now en route to Great Britain from San Francisco, with cargoes aggregating 1,700,000 sacks of wheat, besides eight vessels for domestic Atlantic ports, with 165,000 sacks of wheat, and ten vessels for Rio de Janeiro, with 51,000 barrels of flour. The Californian flour and wheat now afloat for China and other countries aggregates 2,300,000 sacks of wheat, valued at \$1,000,000.

Among the items of Mr. Lowe's Budget is the repeal of the present import duty on corn. One shilling a quarter seems little better than a merely nominal impost, but it has produced no less than £900,000 per annum, and it has, of course, hitherto, to a certain extent, acted as a protection of the British grower against foreign competition.

The U. S. Woollen Manufacturers' Association of the North west have decided to hold their annual Exposition at Cincinnati, Ohio, on the first Tuesday in August next, to continue four days. A cordial invitation has been extended to wool growers to take part, and furnish samples of the produce of their flocks.

A HAM FAIR was recently held in Paris, continuing open several days. More than three hundred dealers from Belgium, England, Germany, Hungary, Italy, Switzerland, and from about forty of the French departments, were on the ground exhibiting their wares, consisting of bacon, pork, hams, sausages, &c. The fair was supplied with upwards of three hundred thousand kilos of eatable produce.

UNIVERSAL EXPOSITION OF INDUSTRY IN NEW YORK.—The U. S. Congress has adopted a resolution instructing the committee on manufactures to enquire into the propriety of rendering Government aid to the project of the American Institute to hold an International Exhibition of the industry of all nations in New York in 1876, the centennial anniversary of American independence.

Western grumblers about the high price of hay, may find consolation in the statement of the *Arnprior Times* that on the Upper Ottawa hay has reached a fabulous price: even in Pembroke it readily brings \$40 a ton. We learn that one gentleman in the village of Cobden has been offered \$100 a ton delivered at the Mattawan, about 100 miles above Pembroke. Hay recently brought \$35 a ton in Ottawa.

The Guelph April Fair was held on the 7th. The *Adv-riser* says the influx of country people was more than usually large. The quantity of beef that was on the ground was of a very fair description. Charles Casley, of Eramosa, had 2 steers for sale, aggregate weight 2,800 lbs., and E. G. Tolton, of Erin, a thorough-bred bull, weight 1,830 lbs. M. McShane, from Montreal, who is a very extensive cattle-dealer, purchased three car-loads of cattle between here and Elora, at prices ranging from 4½ to 4¾ per lb. Alfred Reeves, of Toronto, who is likewise engaged in the same line of business, bought from 70 to 80 head, paying as high as 4¾ per lb. The milk cows numbered from 25 to 30 and of medium quality, averaging from \$25 to \$40; while one, the property of W. Steel, brought as high as \$58. James Walsh, of Toronto, bought 20 head of cattle at \$48 per head. Edward Thomas of Nassagaweya, had 1 bull, 2 steers and 1 cow for sale. A. W. Atkins, of Toronto, bought 30 head at \$50 each. Jackson C. Price do, 16 head at \$48. Mr. Isaac Simpson, of Guelph Township, sold 6 fat cattle for \$500. Mr. Sutton, of Everton, sold 5 head for \$270. Arthur Jones, Eramosa, 5 head at \$41. Although the fair may be considered rather dull, there was nevertheless a large quantity of cattle on the ground.

The Dutch are talking of draining the Zuyder Zee, which it is computed that they could do with steam power in twenty-one months. The land reclaimed would amount to 300,000 acres, representing in value a clear profit of £10,000,000.

There are now in Australia says the *Mark Lane Express*, some four millions of cattle and forty millions of sheep, while there are not a million consumers, and the live stock, with abundant pasturage, increases enormously.

REAPER TARIFF IN HUNGARY.—There is to be an international trial of reaping machines, under the auspices of the Royal Hungarian Board of Agriculture and Trade and projected by the agricultural society of the County of Wieselburg at Ungarisch Altenburg, from the 5th to the 10th of July, 1869.

The *New York Times* says, under the operations of the reciprocity treaty the value of goods imported into the United States from the British Provinces in the year 1865 was \$36,175,977, on which the duties amounted to \$8,387. In 1868 upon \$28,599,135 worth of goods imported from the same Provinces the duties amounted to \$3,259,916.

The *Galt Reporter* notes an auction sale at Mr. William Sterling's, in Dumfries, on Tuesday, April 16th. Prices ruled very high. Three good common cows sold for \$182—the highest one going for \$67. The sheep also ruled high—ewes in lamb selling as high as \$14 50 per pair. Pigs—good brood sow, \$27; shoats, \$10 each. Horses sold well, one 4 year old, "Golden Hero," colt bringing \$136. Implements of all kinds brought very high figures.

The cattle fair at Mount Forest, on the 21st April, the *Examiner* says, was rather poorly attended by both buyers and sellers, and as prices were low very few cattle changed hands. There were several fine fatted cattle on the ground, but they were mostly held by their owners for future fairs—the only animals of this class disposed of being a couple of cows belonging to Mr. Neagle, of Arthur, which brought \$71. The average rates we quote at about the same as last month, viz.:—Oxen, per yoke (small demand), \$70 to \$90; steers, \$10 to \$35; cows, \$16 to \$25; heifers, \$10 to \$14.

IMMIGRATION.—Returns in answer to the recently issued circular of the Minister of Agriculture, relative to the number of immigrants that can be accommodated with work in the different townships throughout Ontario during the present season, are being already received by the Department here. In each of these the statements are of the most encouraging character. A large deduction could be made, and yet the number be much larger than the total emigration for the last two or three years. The returns specify the nature of the employment, rate of wages, and the number likely to be employed, and include a guarantee that the authorities of the municipality will use their best efforts to find employment for the number mentioned. Farm labourers seem to be in great demand, and a very large number of these, with female help in the more settled districts can be absorbed. Blacksmiths, shoemakers, and tradesmen of other classes are also mentioned as among the wants in nearly every locality.

THE AGRICULTURAL SOCIETY OF NEW SOUTH WALES.—The council of the above society have issued their schedule of prizes to be offered at their Great Intercolonial Exhibition, which is to be held in the Prince Alfred Park, Sydney, on the last day of March, 1870, and the two following days. The programme is as large as could reasonably have been expected, and seems to be as complete as it was possible to make it. The exhibits are divided under the heads of Live Stock, Implements, Machinery, Farm Produce, Poultry, Dogs, &c., Wine, Sugar, Manures, Articles of Colonial Manufacture, Mining and Geological Collections, Local Works of Art, and three special prizes for Station Produce.

PRICE OF CATTLE.—A friend in Hamilton writes, two or three weeks ago I was given to understand, by farmers whom I conversed with, that cattle generally were scarce and dear, and that the Americans were clearing the country out at high prices. Further inquiry shows that the statement must be considerably modified—or, rather, that what was true enough a month or two ago is not true now. The American demand was brisk lately for milch cows, but this has slackened off somewhat, and I am assured that cows that two months ago would have brought readily \$35, will not now bring more than \$28 or \$30. Beef cattle are, it is said by some who ought to know, much more plentiful in the country than has been represented, though it is added that they are mostly half-fatted beasts only—those well-fatted being none too many for the demand. I am told that cattle are being crowded on the market just now by the reason of the lateness of the grass season, and the scarcity and high price of hay, which is here from \$15 to \$18 per ton. Butter sells here now at all prices from 22c to 30c. Eggs from 12½c to 15c. Potatoes, and other roots, are being taken out and are more plentiful and cheaper. Poultry very scarce and dear.

American horse buyers are scouring the country around Stratford. The *Beacon* says that Mr. R. Thompson, grain merchant, Stratford, was a few weeks ago commissioned to purchase all the better class of agricultural horses he could procure, and subsequently he shipped an instalment of as fine animals as the county of Perth ever produced. Thus far he has paid very high prices for all he has bought—prices being apparently of secondary consideration.

The 300 emigrants are parties sent out by the Hon. Mr. and Mrs. Hobart, Miss MacPherson, Miss Logan, Mr. Pennifather, and the Clerkenwell and Central London Emigration Club. Of the latter, carpenters, 21; Jewelers; Smith and farmers, 17; women; Book mounters, 20. (C. Clifton); Model engine makers, 21, (D. Clifton); Cabinet makers 26, probably will go to Toronto. Should any one wish to hire them, Mr. Donaldson will give them every information.

The *Times* says the Elora cattle fair on the 6th April was better attended by both farmers and buyers than expected. The cattle were numerous and of every variety; while there were some prime heaves on the ground there were a great many wretchedly poor ones, perfect skeletons, unfortunate brutes which gave unmistakable proof of the hard winter and scarcity of feed. The fat cattle sold well and buyers were keen to purchase. We quote a few sales:—Mr. F. Reynolds sold six head for \$310; Mr. H. Roberts sold seven head at \$70 each; Mr. Wm. Ewing sold his Durham heifer for \$100, and five others at \$50 each. These sales will suffice as examples of the way cattle sold.

DUTY ON CANADA STOCK.—The Kingston *News* states that the owner of 52 Canada cows which he was bringing into the United States at the port of St. Vincent, entered their value at the custom house much below the actual price paid, and that, as a consequence, the cattle were confiscated, entailing a loss of over \$1,200, in lieu of the petty gain expected. On this the Country Gentleman remarks:—We notice the fact because we have been assured by parties conversant with the facts, that dishonest drovers engaged in the Canada trade are in the constant habit of entering both cattle and sheep under value, to such an extent as to be a serious bar to the honest management of the business. And it has been repeatedly suggested that the duties on Canadian stock might advantageously be changed from the present *ad valorem* rate of 20 per cent. to a fair tariff *per capita*. There is no fair objection that we can see to this change, which is not overbalanced by the objections that arise to the system now in force.

Markets.

Toronto Markets.

"CANADA FARMER" Office, May 12th, 1869.

FLOUR AND GRAIN.

The market since our last report has been dull and inactive. Very little has been done, and prices remain unchanged as follows:—

Flour—No. 1 Super, \$4 10. Do. Extra, \$4 50.
Oat Meal—\$5 50 to \$5 75
Corn Meal—\$3 50.

GRAIN.

The market has been quiet, with, for the most part, a very small supply.

Wheat—Spring, 90c. Do. Fall, \$1 to \$1 05.
Oats—53c. to 55c.
Barley—\$1 to \$1 05
Peas—75c. to 78c.

SEEDS.

Clover—Unchanged. Dealers are selling at \$6.75 to \$6 in retail lots, and are buying \$5.25 to \$5.60.
Timothy—Market advancing. Dealers are selling at from \$3 to \$3 50, and buying at from \$2.75 to \$3.
Flax—Selling at from \$1 75 to \$2.

HAY AND STRAW.

Hay—Not much coming in. Selling at from \$12 to \$18.
Straw—Very scarce and wanted. Selling at from \$6 to \$8.50.

SALT.

American 5 lbs at \$1.50, Canadian at \$1 60, Liverpool, coarse, \$1 40.

PROVISIONS.

Butter—Dairy, choice, per lb., 23c. to 21c.; do. lb. rolls on the market, 25c. to 28c.
Cheese—in lots, 15½c. to 16c.
Pork—Mess, No. 1 per barrel, \$26.50 to \$27.
Bacon—Hough, 11c. to 11½c. Do. Cumberland cut (boxed), 12c. to 12½c.
Hams—in salt, 12c. to 11c. Do. sugar cured and smoked, 14½c. to 15c.
Lard—in crocks, 17c. to 17½c. Do. in kegs, 16½c. to 17c.
Eggs—in lots, 12½c.

THE CATTLE MARKET.

Beeves—The market has been fairly supplied. We quote per 100 lbs., dressed weight. 1st class, \$6 to \$6.50; 2nd do., \$5 to \$5.50.
Sheep—Not many offering, with a fair demand existing. 1st class, \$7 each; 2nd do., \$5 each; 3rd do., \$3 50.
Spring Lambs—in plentiful supply and in fair demand. 1st class, \$3 each; 2nd do., \$2.25 each; 3rd do., \$1.75 each.
Calves—Market well supplied. Only first-class find ready sale. 1st class, \$8 each; 2-d do., \$5 each; 3rd do., \$2.50 to \$3 each.

HIDES, SKINS AND WOOL.

Calfskins—Green 10c. dry, 18c. to 20c.
Sheepskins—Long wool, \$1 30c. to \$1 02½.
Wool—Fleeced, 25c. to 31c.; pulled, 25c. to 27c.

Monireal Markets.—Bag Flour, 100 lbs. \$2 20 to \$2.25. Wheat—Canada Spring, \$1.02 to \$1.02½. Oats, per 32 lbs.—45c. to 46c. Barley, per 48 lbs.—\$1. Hutter—Dairy, 16c. to 18c., store packed, 16c. to 18c.

PROVINCIAL MARKETS.

Guelph, May 4.—Mess Pork, \$26 per cwt.; Hams, \$12 to \$14 per cwt.; Bacon, \$11 to \$12 per cwt.; Lard, \$16 per cwt. Flour, \$2 to \$2 25c. Fall Wheat per

bush., 95c. to 98c.; *Spring Wheat*, 90c. to 91c.; *Oats*, 53c. to 55c.; *Barley*, \$1 to \$1 10c.; *Peas*, 75c. to 80c.; *Hay* per ton, \$17 to \$20. *Turnips*, per bush., 12c. to 14c. *Eggs* per dozen, 11c. *Butter*, dairy, per lb., 20c. to 25c. do. store packed, 18c. to 22c. do. in rolls, 17c. to 20c. *Apples* per bag, \$1 25c. *Dressed Hogs*, \$8 to \$9. *Potatoes* per bush., \$1 to \$1 12c. *Sheepskins*, each, 80c. to \$1 10c. *Hides*, per wt., \$5 to \$5 50c. *Beef*, per cwt., \$8 to \$9. *Mutton*, per lb., 4c. to 6c. *Ham*, per lb., 10c. to 12c.

Hamilton, May 4—*Fall Wheat*, 95c. to \$1; *Spring Wheat*, 85c. to 88c. *Barley*, \$1 10c. to \$1 15c. *Oats*, 51c. to 55c. *Peas*, 65c. to 80c. *Corn*, 62c. *Potatoes*, 1c. per bag, \$1.

Galt, May 4—*Fall Wheat*, per bushel, 95c. to \$1 03c. *Spring Wheat*, per bushel, 85c. to 90c. *Barley*, per bushel, \$1, to \$1 10c. *Oats*, 48c. to 50c. *Peas*, 75c. to 75c. *Potatoes*, 75c. to 80c.

Battle, May 4—*Fall Wheat*, 80c. to 95c. *Spring Wheat*, 85c. to 90c. *Barley*, \$1 20c. to \$1 25c. *Peas*, 9c. to 10c. *Oats*, 60c. to 65c. *Potatoes*, 75c. to 95c. *Pork*, per 100 lbs., \$9 to \$10. *Beef*, per 100 lbs., \$8 50c. to \$9 50c. *Butter*, per lb., 25c. to 30c. *Eggs*, per dozen, 10c. to 12c. *Hens*, per 100 lbs., \$5 to \$5 50c. *Hay* per ton, \$18 to \$20. *Sheepskins*, \$1 to \$1 10c. *Calves* per lb., 8c. to 9c.

Milwaukee, May 10, noon—(Wm Young & Co's Report) *Wheat*—Receipts 49,000 bush. Shipments 50,000 bush. No. 1 unsettled, at \$1 18, No. 2 unsettled at \$1 11. *Flour* quiet and unchanged. *Pork*, nominal and unchanged.

Advertisements.

THE MEXICAN EVER-BEARING STRAWBERRY.

This new variety of Strawberry, now attracting so much attention, was brought in a hand-satchel from Jalapa, Mexico, in the fall of the year 1853. But one of the plants survived the journey. From this one plant the present extensive plantation of Messrs J. P. WHITING & CO., has been propagated. Four years ago, Mr Fenelon Scranton, of Dundee, Monroe County, Michigan, had a patch about two rods square, when Mr. S. B. French, (who is a practical nurseryman) first saw them, and immediately made a contract with Mr. Scranton to propagate the plant for the purpose of introducing it to the public. J. P. WHITING & CO., now have a large plantation of thrifty plants, which are offered to the public for the first time, with full confidence that they will be found all that is required in a good strawberry, either for the home garden, the market garden, or the more extensive plantation.

ITS HARDINESS.

The plant came from the mountain range in the State of Vera Cruz, Mexico, in the immediate vicinity of Jalapa, which is some five thousand feet above the level of the sea, and a few miles west and north from the City of Vera Cruz. Many of the mountains in this region are perpetually covered with snow. This will account for the extreme hardness of the plant, and shows why it has succeeded so well in this Northern State. It does not winter-kill, being entirely unlike most, if not all familiar varieties of the strawberry, while the Mexican shows green and thrifty fruit-stalks and leaves when the snow goes off in the Spring, the others show scarcely any signs of life.

ITS PROLIFIC QUALITIES.

The single plant, or crown, forms a stool, similar to the garlic, the potato-onion, and plants of that nature. While the parent crown is flowering and bearing fruit, new crowns are being formed, sending forth new fruit-stalks, which, in their turn, blossom and bear fruit. These stools or crowns often cover a surface of from twelve to fifteen inches in diameter. The stools may be readily separated, as the roots are nearly tuberous. They may also be propagated by runners, which form stools and bear fruit the same season.

THE FRUIT.

The plant is bi-sexual, very perfect in its blossoms, and each blossom perfects a berry. The size of the fruit is rather above the average, being neither

small, nor yet a mammoth. The fruit stalks stand erect, are of a great length, and staunch enough to support its burden of fruit without propping it to droop into the dirt. The flavour is rich and aromatic in a remarkable degree. The superior excellence of this variety was first discovered to Mr French by the grateful fragrance of the fruit. The flesh is solid, melting but firm, and as a berry for transportation it has no superior. Its form is an irregular conical, its colour a bright scarlet, the calyx partly ready from the fruit; in this respect it is nearly as free as the raspberry.

A CONTINUOUS BEARER.

It does not bear fruit periodically, or monthly, but continuously. Ripe berries have been picked as early as the twenty-eighth day of May, and continuously from that time until the eighth of November. It would be regarded as very productive if it yielded but one crop (like other plants) during the season, but in bearing continuously, it has decided advantages over all other known varieties.

Soil seems to make but little difference with the plant. It has been successfully cultivated on sandy land, on gravelly loam, and on heavy pure clay land; the better the soil the more thrifty the plant, and the more abundant and better the fruit.

It may be transplanted at any season with satisfactory results. When a bed is once set, there is no need of disturbing it for years. The stools are constantly enlarging and will cover the ground completely, without interfering with the productivity of the plant.

TESTIMONIALS.

A large number of persons, whose testimony is unimpeachable, have expressed the most favourable opinion respecting this remarkable fruit. A few only of these need be cited. The

EDITOR OF THE WESTERN RURAL,

in its issue of April 15, says:—

"One of our editors recently visited Dundee and Petersburg, Michigan, where the Mexican Ever-bearing Strawberry has been propagated for a number of years, for the purpose of eliciting information in regard to it. His enquiries, as far as practicable, were directed to disinterested parties. The fruit has been grown by a number of persons, some of them residing at Dundee and others at Petersburg, merely for family use. The testimony of every one conversant with this fruit coincides as to its characteristics. They agree that it is a vigorous grower, hardy, forms new crowns throughout the season, sends out a large number of runners, that it is a prolific bearer, and bears continually throughout the season from early June until the snow falls or frost cuts the vines.

Its continuous fruiting habit was corroborated by every person we questioned about it, and among them a prominent gentleman at Petersburg, whom we have known for a number of years, who has no interest in it, and who would not, under any circumstances, misrepresent it. The fruit is represented by these parties to be of good size, sub-acid, fine flavour, flesh firm, seed prominent. We found hills where trusses of decayed fruit, as they stood when the frost came last Fall, attested to its late bearing habit."

MR. SAWTELL'S TESTIMONY.

A well-known and prominent Canadian agriculturist, Mr. R. W. Sawtell, Secretary of the North Riding Agricultural Society of Woodstock, Canada, recently visited Dundee, Michigan, for the purpose of investigating the history of the Mexican Ever-bearing Strawberry, and obtaining information in regard to it, and, by request, furnished the result of his investigations for publication. He states that when he first saw the plants and testimonials exhibited by the agent, he, with others, looked upon it as a doubtful affair. Subsequent examination and observation, however, led him to a different conclusion. He says that having ascertained the standing and position of the propagators, he was satisfied that they were not parties to a conscious swindle.

Referring to his personal inspection of the plants, Mr Sawtell says:—"On removing the snow, I found very many berries, of all sizes, as they had been, when the frost destroyed them last fall; also, blossoms dried on the vines. In the hot beds of Mr Whiting, at Detroit, they were in full bloom, from the root to the top of the fruit stalk, six or seven inches high. It has a small leaf and blossom, which does not indicate large fruit; but nearly all who have seen them in the garden state that the fruit is of medium size and delicious. I have been thus in haste to show you what grounds I am satisfied that there is no humbug, and I will add, what I learned from strangers, that such men of wealth, position in society, intelligence and long citizenship, cannot possibly be parties to a scheme that would victimize thousands, and which can speedily be brought to the test—as the habit of the plant is to blossom as soon as it fairly takes root, and the runners also bear fruit the same season. If I am then deceived in this instance, I shall scarcely ever have confidence in any one again."

HON. C. W. CLINTON'S CERTIFICATE.

Mr Gillman, of Detroit, in a commendation to the *Western Rural*, writes: "A few days ago, the plant was placed by me, at the request of J. P. Whiting, Esq., before the Society of Natural Scientists, Buffalo, of which I have the honour of being a Corresponding Member. After a thorough examination, the President of the Society, Hon G W Clinton, so well known to science by both the old and new worlds, in consultation with D F Day, Esq., the acute and critical botanist, pronounced it a new species, and named it for me, as having been "the first to indicate its claims to specific rank," giving it the botanical name of *FRAGARIA GILMANI*.

Hon G W Clinton, writing to Mr Gillman, on the 19th— "The evidence of its excellence and productiveness is conclusive, and leaves no doubt in my mind that it will be eagerly sought by all judicious horticulturists, and prove the chief among the favourite strawberry varieties of our land. The young plant you have given me is beautiful exceedingly. I expect it differs from any and every strawberry I ever saw, and I believe it to be hitherto undescribed. Certainly it is not described in any book to which I have access."

OPINION OF DR. J. M. SICELOW.

Mr. Gillman adds.—"Further testimony might well be considered unnecessary, yet we will add that Dr J M Sigelow, the celebrated botanist of the North-east Bounda'y Survey, and of the Pacific R. & E. Expedition, arrived at conclusions similar to the above, and, in a letter to me (in reply to mine, giving him description of plant, etc) after regretting his not having the ripe fruit to establish the position of the achenia, expresses himself thus:—

"The most remarkable and distinctive feature of your plant is the racemose form of the scape, the eyemose being so constant that Dr. Gray makes it a generic distinction. Your plant will therefore obliterate that characteristic distinction. In this respect your strawberry is different from all others that I have seen. The question whether your plant is a hybrid, is difficult to determine; but the appearance of the growing plant would seem to indicate that it is a true species and not a variety.

Experienced horticulturists having already testified to its merits as a valuable fruit, the circle of evidence is therefore complete by the addition of these scientific opinions."

The plant is for sale by J. P. Whiting & Co., and cannot be obtained anywhere in Canada or the United States except from them or their Agents. Persons desiring the best Strawberry, in every particular, to be found in the country should purchase this

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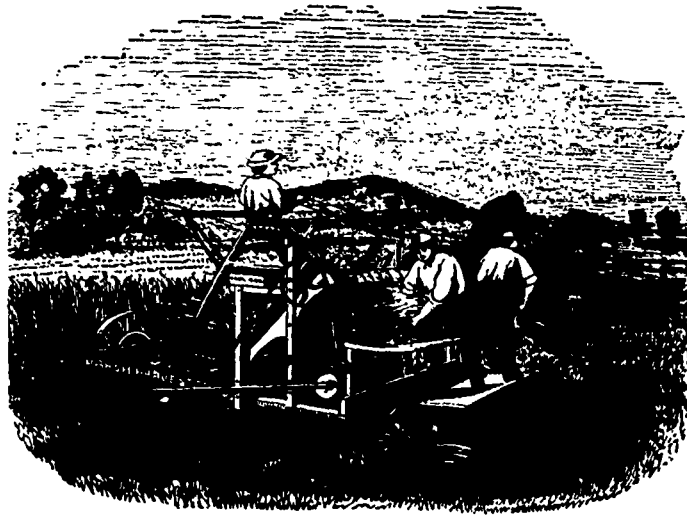
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Parties who have Farms and Lands to sell are requested to send the particulars to the undersigned, when they will be inserted in this list free of any charge. Printed forms for descriptions can be had on application, or will be sent by mail on receipt of stamp to cover postage.

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Contents of this Number.

Table listing various articles and their page numbers, including sections like THE FIELD, VETERINARY DEPARTMENT, STOCK DEPARTMENT, THE DAIRY, POUSTRY YARD, ENTOMOLOGY, CORRESPONDENCE, EDITORIAL, HORTICULTURE, NATURAL HISTORY, APICARY, MISCELLANEOUS, and AGRICULTURAL INTELLIGENCE.

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