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NOTES BY THE WAY.

"Mutton."—Such mutton as we had for dinner yesterday we have not tasted for more than forty years. We persuaded Mr. Lamb, the well known Montreal butcher, of University Street, to let us have a side of one of the Hillhurst Down-Sheep, and a wonderful change from the poor little lambs we had been eating since the autumn it was. Full of gravy, this meat plumped-up in the roasting till it was half as thick again to the eye as it was before cooking; it was juicy, tender, and we do not hesitate to say that we would rather pay 20 cts. a pound for such mutton than 10 cts. for the common run.

"Crops in Quebec, 1900."—Upon the whole, the crops in this province were fair as regards the grain but only very moderate as regards the hay. Clover was poor enough, a great deal having been cut up by the frost last winter.

In "Ontario," the Hessian-fly was more troublesome than it has been for many seasons, but upon the whole the yield of the "fall wheat" was good; so good, that the acreage sown with that crop this year is larger than last year, particularly in the eastern part of the province. We are surprised to see that wheat is sown as late as the middle of October in Ontario; we should have thought that, if the land was in a fairly moist condition, the 20th

September should see the sowing of fall-wheat completed. One thing is certain: if, on good land, well manured, 6 pecks of seed is found sufficient in the first week of September, at least double that quantity should be sown in October. On the poorer chalk soils of Southern England, the regular seeding is three bushels, and it is not found to be too much. It is a pity that our "Bureaux of Industry" seem to neglect the teachings of long experience as evinced by the universal practice of successful farmers in Britain. The quantity of seed sown in this and the other eastern provinces on poor land, out of condition too, is absurdly small. If some of our farmers would try an extra bushel of oats to the "arpent" this spring, to begin with, they would see how wrong their usual practice has been.

"Potatoes."—This crop has not yielded any too well in Quebec, but it is some years since those we have eaten have been so floury and of such fine flavour.

The "root-crop" has not turned out well, as the constant rains of early summer prevented the weeds from being cut up properly; they lay on the ground and took root again in many instances. Sowing turnips and other roots "on the flat" is a very good plan, where the land is clean and dry, but where the land is likely to be foul—especially when the dung used has not been well heated,—and damp, sowing on the drill is far better; the hoes, both horse and hand, can be used earlier, and the land in the line of plants can be cut up deeper.

The Ontario people are complaining bitterly of the damage done to the "pea" by weevils. Cannot this horror be destroyed in some way? The pea is too valuable a crop to be lost, particularly since it is next to impossible to make firm bacon without it.

A Mr. Peart has been lecturing in Eastern Ontario on farming in general. We borrow a short passage from the "Ottawa Valley Journal."

NITROGEN.

"Compare a crop of clover," said Mr. Peart, "with a crop of wheat as it affects the fertility of the soil. If you plough under a crop of clover that will produce two tons to the acre, you add to your land exactly 90 pounds of nitrogen. This nitrogen is appropriated from the free nitrogen of the air, and costs the farmer nothing. The wheat has not the power to do this. Nitrogen is worth, in the commercial world, when you go to buy it in the shape of a fertilizer, about 18 cents per pound. You have here then a gain of \$16.20 per acre. Take a crop of wheat on the other hand, and you remove from your soil two pounds of nitrogen for every bushel of wheat and the straw which accompanies it. At twenty bushels to the acre you, therefore, take from your land forty pounds which, at 18 cents, amounts to \$7.20."

"You have as a balance against this twenty bushels of wheat at the market price. This is the foundation principle of what is known as the "Norfolk Rotation," so popular in the old country. It is a four years rotation with roots, barley, clover and wheat, in the order named. Many English farmers, by following this rotation, have not only retained the fertility of their farms, but have actually increased it, although in constant cultivation for hundreds of years."

All very well, except the last statement that "many English farmers by following this rotation, etc.;" for very few farmers in England sow clover every fourth year, as the majority found, more than sixty years ago, that the sowing of that very valuable crop more frequently than once in eight years invariably ended in its refusal to grow at all. It is really provoking to see how the farmers in the States persist in assigning the failure of clover, so frequently noted in the reports, to any but the real course, viz., its too frequent repetition on the same land.

"Racers."—One of our exchanges has the following observation :

HORSES VS. MARES.

"It is a very remarkable fact that during the century only three mares have won the Derby. Eleanor in 1801, Blinkbonnie in 1857 and Shotover in 1882. They have done rather better in the St. Leger, which is run in September. This race was established in 1776, and in 124 years the St. Leger has been won 23 times by mares. Both in the Derby and St. Leger horses have therefore beaten mares very decidedly."

To our idea this is by no means remarkable, for the Derby is run on the last Wednesday in May, a season in which mares are very likely to be horsing. The St. Leger, on the other hand, is run on the Wednesday in the second week in September, a time when mares are mostly over their season ; never cared to back mares for any summer race when we were, "plus ou moins," on the turf ; can't depend upon their running true. As a proof of this, note that mares and geldings are always allowed a certain weight off in weight-for-age races.

"Stale-furrow."—Many years ago, we asked a farmer from one of the eastern counties of England how it came about that the heavy land of that district grew such superb malting barley. His reply was, that the seed was invariably "Chevalier" barley, and was always sown on a "stale furrow."

By a "stale furrow" is meant a furrow that has been ploughed some weeks previous to the seedtime and allowed to lie untouched, so that sun, rain, wind, and frost may work their will upon it. Hence the reason that in the reports of the farming in different parts of England, as sent to the agricultural papers, we so frequently see the following remarks :

"The prospects for barley-seeding are very good, as the weather being open, the plough is close up to the fold." This needs a little interpretation ; it means that the land on which the turnips, or

rape, is being fed off by the sheep in folds composed of hurdles, has been all ploughed up to the part on which the sheep are then folded, so that, when seed-time comes, the part ploughed up to the date in question will be "a stale furrow." This, of course, refers to the turnip-soils.

On the heavy land in Essex, Suffolk, etc., on the east coast, barley is sown either in fields that have born a crop of mangels, or other roots that have been drawn off, or after a "summer-fallow ; but, in both cases, the land is ploughed for the last time before Christmas, and the seed goes in on the same furrow, which, as barley, for malting, is always sown in spring, is of course "stale."

The advantage of this treatment of land intended for malting-barley is clear enough. The great desiderata of barley grown for the use of the brewer are, that when, after steeping, it goes on to the maltster's floor every grain should start into germination at the same time, continue its growth with regularity, and when arrived at the kiln-head every grain in the bulk should have the "acrosire" reaching as far up the back as its neighbour's. Of course, this would be an unattainable pitch of perfection, but the more nearly it is reached the better the quality of the malt.

Now, it must be clear to any one who thinks a little that land allowed to be acted upon by the weather, as our stale furrow is, must have its surface finely pulverised, and that it would be a blunder to turn that surface down with the plough, especially on heavy land, and run the risk of bringing up a lot of clods that will have to be worried about with harrows and roller with what often turns out to be the vain hope of bringing them to a fine mould ; whereas, if the stale furrow plan be adopted, the only treatment needed is the passage of the grubber across the ridges, the drilling in of the seed after one or two strokes of the harrow, and a trifle of harrowing after the seed is in, to bring about the desired condition that every grain has been deposited, at the same

depth, in a perfectly homogeneous seed-bed, and that, consequently, every grain will sprout contemporaneously, each plant go through its life up to ripening at the same pace, and when the sample is submitted to the maltster, he will buy it at once, instead of, as we have seen it happen in England, gravely hand it back to the farmer with the annoying remark: Thank you; I don't feed pigs.

GOOD ROADS.

As the country becomes older, settlement more dense and the pioneer stage of farming a thing of the past, more attention is being given to the condition of the roads. This has perhaps been made more necessary than in the past by the rapid settlement of vacant lands in all parts of the province and through the fencing off of trails, which have in the past given serviceable roads, causing new roads to be opened up, frequently through places where it is difficult to make a good road. We need not dwell on the importance and value to the farmer of good roads, as they are patent to all. The Farmer wants, however, to call attention to the fact that the time has now come when some action should be taken by the Government in this matter. The city council and the councils of the municipalities adjacent to Winnipeg have interviewed the government, asking for aid in constructing good roads leading into Winnipeg. These people have realized the value of good roads, but why should this particular district be favored more than any other? On account of the heavy nature of the soil around Winnipeg it might be well that this section be the starting point of a system of aid that shall ultimately extend to all parts of the Province.

The road question is a big one and one with which the government will have to grapple in some way in the near future. Many new roads are being laid out and this work may as well be done on a permanent basis now as later. Therefore

there is great need of a permanent and properly qualified official being appointed to superintend laying out and constructing these roads. Ontario has seen the need of such an official and after a few years' trial has enlarged his sphere of usefulness by making him Provincial Engineer of Highways and Colonization Roads under the Public Works Department instead of simply Provincial Road Instructor. The Government has also pledged \$100,000 a year for 10 years for the construction of improved country roads. Again we say the time is ripe for a move in this matter in Manitoba. The main roads in each county might be first improved, then the side roads. It is plain to all that every one cannot have the improved road past his door, therefore there must be no small jealousies, but a spirit which will tend to obtaining the greatest good for the greatest number.

"N.-W. Farmer."

LOCAL EXPERIMENTS.

It should hardly be necessary to say—yet it may, perhaps, "clear the ground" somewhat to say—that local experiments in the growth of farm crops (and management of farm stock) deserve to be encouraged everywhere. These local experiments, should be upon ordinary crops, conducted—if I may be allowed the phrase—by ordinary men, who are using the ordinary implements and methods of cultivation. The value of such experiments will, of course, be very different from that of similar trials carried through, with the closest possible approach to precision, by experts, for purposes of scientific investigation. Yet the former will not be of necessity, be the less important.

Each class will have its own merit; and it must be added, for some purposes its corresponding defect. In local experiments, for example, we may hold it to be legitimate, and even desirable, to break off with some such statement as, "We did not pursue this further, because we did

not think we should get paid for our outlay and trouble." In the second class such an avowal would be nothing less than an avowal of a breach of trust; for the genuine student must follow knowledge at any cost to himself.

There is no doubt but that local experiments are made, and such are steadily on the increase, but there is no concerted action among farmers. Those experimenting in one centre do not combine measures with those of another. At least one inquiry in common should be simultaneously conducted over a good sized area of country. By all means let each district give the main part of its power to the solution of problems which most immediately concerns itself: but the share of the means employed in the general enquiry will be well repaid by the increasing interest, and stimulus to the faculty of making observations which this will involve.

Some few years since important trials were made in England, how to produce mangels on the most economical terms. They established the fact that mangels can be grown in large quantities per acre, and at a cheaper rate per ton, when no farm yard dung is employed. The lands cropped with mangel in the year of the trial were sown with barley and oats. In these the best results were obtained where the land had been "mucked" there being a material increase in bushels of grain, and a great superiority visible in the straw. The summary seemed to stand thus: first year, the average of the plots heated wholly with artificial manure, yielded 11-4 tons of mangel per acre more than the average of those which received dung, but the following year, these latter plots yielded 5 bushels more barley per acre, and 3 bushels more oats.

It would have been interesting if the cereal crops of the second year could have been all followed in the following year by a crop of barley, for in this way some evidence could have been deduced as to the unexhausted fertility, resulting from the use of farm-yard manure, which would have been valuable everywhere.

Such experiments as these have far more than a local value. They are good and genuine witnesses, speaking a language universally intelligible, on a subject which concerns all farmers to know. Still in these experiments there is still one thing more which the farmer should know—the properties of the variously grown mangels.

It certainly is quite possible that the feeding value of the mangels may be very different, and there is no doubt but that the keeping power of the variously grown mangels varies more than the analysis.

It is a peculiarity of agricultural experiments, that no result is a simple one, quality as well as quantity continually differs, and complicates the result.

The above trials were made in the West of England. Those in the East, speaking generally, confirmed the West experiment with mangels, viz: as to the superiority of the plots treated with artificial, over those manured with dung, and does as much as to the excess of grain and straw which follows upon the latter. In these trials, salt seems to have been of no value as a manure, nor did the land respond to potash, which occasionally on chalk soils has made wonderful records. It was proved that there is no fear of impoverishing land by growing heavy crops of mangels entirely by artificials: and that the subsequent grain crop is benefited by ploughing in the leaves of the mangel and by the more numerous rootlets left in the soil by a vigorous mangel plant. These experiments were supplemented by others with potatoes and cabbage; but these in the absence of others, wherewith to compare them, are of comparatively small significance. It is as agricultural statistics increase by repetition, and have local influences and those of the season eliminated by trials wide apart and in successive years that they are able to speak plainly. One or two trials are as likely to deceive as to guide.

From such trials as these practical hints, and manurial prescriptions should be drawn. There is no doubt that both the

hints and prescriptions are well worthy the notice of those whose farms lie on similar subsoils, and who are farming under similar conditions. Still, it is the very essence of all experiments by which we ask questions of Nature, that her answers are, as a rule, at first, only intelligible locally. It takes time and variety of applications to elicit her positive assurance of the existence of any law.

W. R. GILBERT.

Household Matters.

(CONDUCTED BY MRS. JENNER FOST.)

CUTTING OUT UNDER-CLOTHING.

The necessity that every young person should have a little knowledge how to do this, also some idea of the quantity of material to do so, was brought very forcibly to my mind the other day, on being asked by a young person, how many yards of calico it took to make a nightdress.

She had engaged a seamstress to make some who asked for 15 yards of calico for each two.

Now, this sounded rather a large supply, so I was asked to decide the question which I happened to be pretty well up in; so I could say at once, also show clearly, that there was a clear case of imposition on one who was not so well informed, and showed the seamstress would have a clear gain of 4 yards of calico, 5 yards and a half being ample to cut out any ordinary nightgown.

Take 5 1-2 yards of calico, 36 inches wide, tear off 2 lengths for the shirt which is, with yoke, one yard and a third, without yoke pleated up to the neck must be the depth of the yoke extra, which will be 1 1-2 yards. Now tear off the piece left, 12 inches, to form a gore at each side, which will give 24 extra inches to the nightgown at the bottom and must be cut to taper off, and not go higher than the armpit. This will give a wide skirt without too much bulk round the shoulders.

Take one of the long lengths and cut

down the very centre about 18 inches, on the left side face with a strip of one inch—this is the button-side—on the right side turn in a hem of one inch, which will be of course the button-hole-side as it laps over the left and makes a neat opening by stitching at the end across the bottom, buttons can be put on and button-holes made. At this stage, leave the last top one till the neck is cut out.

Now make just as many small tucks as liked, till the whole is tucked to within about one inch and a half of the selvage, as a little must be allowed to slope out the armhole nicely.

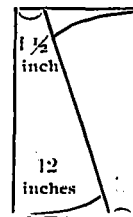
Tuck the back as well, but neither front nor back should be tucked below the bust, or there will be an uncomfortable drag; a half-inch strip of goods on the cross stitched at the end of tucks will give firmness.

Put back and front together on the outside, slightly slope down to the shoulder, open seam and cover with a small band stitched down to cover seam, cut out neck with a little more curve in front than behind, put on a one inch band, trim with lace or insertion round neck and down the front, a nice pair of sleeves with one inch band, slightly gather sleeve on the shoulder. Thus far we have disposed only of 4 yards and half of calico, and got a good nightdress out of it.

DRAWERS.

A good pair of drawers can be made from two yards of calico, 36 inches wide; they are made about 3-4 of a yard long, as the prevailing fashion, is plenty of width, with deep frills of lace or insertion round the hem. Nobody likes much fulness round the waist, so they are shaped to fit nicely and do not give bulk where it is not wanted.

How to cut out side-gore from the 12 inches.



CANNING TOMATOES.

When tomatoes can be grown so as to be ready for market very early or very late in the season, the most profitable way to dispose of them is in a fresh condition. But during mid-season, when huge quantities all ripen at once, prices for fresh tomatoes are apt to fall below a remunerative rate, and it will probably be found more profitable to convert them into sauce or preserves.

In some of the tomato-growing districts of the United States the tomato crops are so large as to warrant the establishment of canning factories, to which the farmers for miles around send their surplus, and very often their whole crop. It may be some time before we are in a position in this Colony to go in for the work on a scale so extensive as that described hereunder by Mr. L. D. F. Cone in the "American Agriculturist," but there is no reason why a start should not be made, even in a very small way.

The methods described are those practised at most of the factories in Delaware, Maine, New York, Indiana, Illinois, and Iowa :—

"A bushel of first-class tomatoes will fill about twenty-five 2-lb. cans. The first process is washing, to remove all dust and dirt. This is done by turning a few bushels into a deep vat filled with cold water, where they are slightly agitated a few minutes, and then transferred, by means of an iron basket closely fitting the vat, and operated by a windlass, to a second vat filled with hot water, where they remain but a moment. They are then turned into a trough, from which they are carried in pails to a small army of girls, who remove the skins, already loosened by scalding, cut out imperfections, etc.

"The tomatoes, now cleaned, are turned into the hopper of the filling machine—an ingenious device which automatically fills about 2,400 cans per hour when running at full speed. In its operation the

assistance of three people are required—a woman who gives a final inspection, removing any imperfections previously overlooked, and adding occasionally a sprinkle of salt; a boy, who fills the shute with empty cans to supply the machine; and a man to remove the cans, now filled, as they roll from it. They are placed on iron trays, each tray holding fourteen cans. About twenty trays are laid on a truck and rolled into a 'hot box,' where steam is allowed to enter and warm them slightly, to prevent chilling the solder, during the sealing process. After two or three minutes they are withdrawn, the tops of each can carefully cleaned, the caps put in place, and then they are sent to the capping machine, as it is called—another labour-saving device, which automatically seals six cans at a single stroke. The solder is wound on rolls suspended from above. A 'feed' furnishes the required amount for each can. The solder is instantly melted by gas jets, with which it is brought into contact. The capacity of this machine is 2,400 cans per hour. The caps each have a small hole in the centre to allow any steam to escape, and ensure perfect soldering.

"After leaving the capping machine these holes are quickly closed by skilled hands, and the cans otherwise inspected, after which they are ready for the cooking; 440 of the 2-lb. cans are now placed in an iron basket, a derrick conveying them to a vat, into which they are lowered and boiled for forty minutes. The 3-lb. cans require forty-five minutes, after which they are taken to a remote part of the building set apart for the purpose, and turned out on the floor to cool. The final act is sticking on the labels and packing in cases ready for delivery. As in nearly all industries the percentage of waste is considerable; every stage and process is carefully watched, and where defective cans are detected they are thrown out, the greatest loss probably being in swelled heads during the cooking, and caused by imperfect soldering. Cans remaining perfect in shape must necessarily be perfect.

The 2-lb. can is in greatest demand, about two-thirds of the output being of that weight. The balance are 3-lb., there being found little or no demand for smaller tins."

From "Agricultural Gazette" of New South Wales.

The Garden and Orchard.

(CONDUCTED BY MR GEO MOORE).

BOSTON CITY NURSERIES FOR PLANTS.

It is doubtful whether any city on this continent, and few in Europe, can boast a more useful and well arranged nursery establishment for tender or half-hardy exotics than Boston, Mass.

The "Hub of the universe" as the Bostonians were wont to call their fair city, certainly stands in a high position as regards the perception and adoption of the beautiful in nature and art, and her public parks, squares, and gardens are an apt illustration of this.

There is a popular idea that money can do anything, but to satisfactorily accomplish an end in view, brains are also required; and these in the case of Boston public gardening have been happily supplied in the person of Mr. William Drogue, whose skill, judgment and assiduity, of course backed by liberal appropriations, have brought the public service, in this respect, to a standard of excellence equal to that of its educational, scientific and artistic institutions, the like of which few places can boast.

Twenty-two years ago, Mr. Drogue received the appointment of "City Forester" after no little opposition, political, and otherwise, and with but very poor accommodations wherewith to exercise his abilities; only a very small greenhouse which he happened to own and which he appropriated to the city's use; no means of housing tender or half-hardy exotics, or propagating summer bedding-plants in

large quantities, and no land on which to grow the ornamental trees and shrubs necessary for the due embellishment of the parks and squares.

But Mr. Drogue proved to be the right man in the right place, and has succeeded by continuous efforts in establishing a "nursery plant," consisting of greenhouses propagating houses, cold frames, workshops, and offices, under his own supervision and according to his own designs, which for convenience and adaptability to the purpose can scarcely be excelled.

The main group of green-houses comprises 17, ranging from 12 to 30 feet in width, and 72 to 96 feet in length, and 12 to 20 feet high, covering a space of 22,388 square feet with a glass exposure of 30,943 square feet. The heating of these is done by two water-tubular boilers, from which issue 11,550 feet of pipes, varying from two to eight inches in diameter; they run on each side of all the houses, except the propagating-house, which has three lines of pipe inside each of the propagating beds. By this means the bottom heat is so well kept up that the rooting of cuttings is certain and rapid. When in action, the boilers and pipes contain 7,800 gallons of water. From the boilers the water is raised 10 feet, and thence flows through the system of pipes, and back to the boilers to be warmed again and again; by this means a steady, uniform heat is supplied to the 210,808 cubic feet of air to be heated. The system is controlled and regulated by 104 valves.

Outside the main group of houses, are two others, which are heated as circumstances may require, and another lean-to, 100 feet long, and then a cold frame which may also be heated if necessary. Besides these, there are several cold houses for protecting evergreens and other shrubs and plants which are not quite hardy enough to stand the cold of a New England winter, and a frame 230 feet long and seven feet wide, devoted exclusively to the storage of hydrangeas. One house is devoted to Echeveria, a plant which is used by thousands in producing pictorial effects

in the carpet bedding; it is 104 feet long by 13 feet wide. There is 1.17 acre, altogether, covered with glass. In another place are 2,600 square feet of cold frames, in which hyacinths and narcissus bulbs are stored for the winter. These are planted in pots, which are plunged in tan-bark, where they make roots; and in the early spring they are taken out of this and placed in warm pits and brought nearly into bloom before they are transferred to the flower beds in the public garden. By this means, a constant succession of flowers is kept up, first one species and then another, from the earliest days of spring until the late fall.

In the nursery, rock maples and shrubs, including evergreens, conifers, and deciduous trees, and a stock of about 5,000 rhododendrons, a shrub which is at home in this part of the United States, and is one of the most beautiful evergreens in existence. Pansies and daisies are here too by thousands which are only covered with marsh hay, and thus survive the inclemency of the weather. A large space is occupied by hardy hybrid roses, which are grown in pots and in the spring are taken up and placed in their allotted beds in the public gardens.

The present is a good season to inspect the plant-houses, so we will take a hurried run through them. From the office, which by the bye, is a most comfortable one, fitted up with all modern conveniences and accommodations, we enter the palm-house which, as its name implies, is fitted with large tropical trees, many 20 feet high. It is 30 feet wide and 90 feet long, and the plants are in such luxuriant health that it requires but a small stretch of imagination to fancy oneself in the tropics. No one would suppose that these plants are annually transferred to the public gardens and then re-transferred to these, their winter quarters, and yet such is the case.

On the south side of the palm-house are eight plant-houses, 90 feet long by 12 wide, filled with all the variety of plants usually employed for hedging out, and

from which, in spring, a numerous progeny, for the like purpose, will be propagated. These eight plant-houses run into another which runs cross wise at their south ends, about 100 feet long by 20 wide and which is chiefly occupied by the rare *Pandanus Veitchii*, a most picturesque exotic, greatly in favour.

Running north from the opposite side of the palm-house are five other plant-houses each 20 feet high, 20 feet wide, and 80 feet long; in the easterly one we find succulent plants, such as agaves, aloes, cactuses, and the like; next to this are, hibiscus, dracena, and pandanus. The third contains caoutchouc plants and palms and the fourth crotons, the charmingly variegated, and richly coloured foliage of which is a delight at all seasons; and, last of this range, the propagating house, admirably arranged as to the regulation of the surface and bottom heat, so that, in charge of an expert, the science of propagation is rendered an easy and delightful task.

Again, at the north end of these fine houses is another large cross-house the size of the Palm-house, and in it are another lot of Palms, Bananas, caoutchouc plants, and tall hibiscus. And still, beyond this, a lean-to in which are a variety of plants, including the large Standard Lantanas which are so conspicuous for their beauty when planted out in the summer, and which have been raised and trained under the care of the superintendent.

As forcing is not the object so much as keeping the specimens in their normal condition, the temperature is not kept up during the winter to a very high point, and the atmosphere is well saturated with moisture, a most important consideration in the healthy development of plants under in-door cultivation.

The actual cash value of this collection is very large, but its value to the public, to whom it really belongs, as a refining and moralising influence, is incalculable; beside the pleasure to be derived from seeing the wonders and beauties the veget-

able kingdom can, and does produce in regions remote from that in which we happen to reside. And yet, further, the admiration we must feel for the knowledge, skill and industry which have been used to provide these glories of nature for our edification and gratification.

It is to be regretted that we, in Canada, do not do a little better; especially in some of our larger cities; in the direction of public gardening; not but that we have skilful gardeners, and good soil and climate, but we lack the public spirit which should be exercised so that the necessary funds may be provided to enable these gardens to exercise their skill in so laudable an endeavour.

GEO. MOORE.

The Dairy.

SOME THINGS IN WHICH WE DIFFER FROM OTHER COUNTRIES.

One cannot help noticing nowadays, what great strides the Dairy Industry is taking in all those countries, where soil and climate are at all suitable to such pursuits. We read of such a new thing being practised in Australia, the adoption of some new practice in Great Britain, or the further perfecting of the already seemingly perfect dairy organization in Denmark. It is only natural that we should occasionally ask ourselves are we keeping pace with our competitors? If we are not, we certainly cannot complain that it is for lack of better example.

We have had the example of Denmark before us for years, and we must know it to be a fact that in that prosperous and wisely governed country, any improvement in the dairying industry, needs but to be suggested, to be adopted throughout the entire State. Already have we profited not a little by their experiences and methods, but there seems to me to be a pause in our progress, and in the time which it affords us for looking round to take our bearings,

we seem to be more eager, to adopt as many as possible of the labour saving devices and systems, which our American neighbours are so apt at initiating, than, to endeavour to raise the standard of our dairy produce by establishing the industry upon a sounder and more permanent basis; that is, the manufacture of all our dairy products from one kind of milk only,—good milk.

In Denmark, to-day, we witness an almost ideal system of discrimination between good and bad milk at the factories, in connection with pasteurization. By this means, the farmers who supply good milk suitable for pasteurization, receive direct financial encouragement from the extra value of the butter produced from the pasteurized milk over that made from the unpasteurized milk. Here, we see the wisdom of those at the head of dairy affairs in that Country, for, to produce results, the farmers' pocket must be made assailable, and in this Canada of ours too, I feel confident that one Almighty Dollar will appeal more forcibly to the interests of the average dairy-farmer, than all the advice and Departmental bulletins extant.

At present, in this Province generally, there is no chance to draw the line satisfactorily between the producers or suppliers of good and bad milk. Is it possible to compete with the pasteurized product of the Danes? Yes, if we do the same as they do. Is it not possible to follow their example in this matter? I am sure it is the most important question that confronts our Quebec dairy industry at the present day. These are the questions which the creamery proprietor must ask himself, but even here again we find more difficulty, as the number of creamerymen who are willing to sacrifice milk for fine quality of product are few and far between. Do we not see one proprietor accepting readily, milk considered unfit for manufacture by a neighbouring creamery? Of course, the trouble is that we have too many in the business, too many small factories, all having the one object,—milk, milk before everything. These small proprietors are

by no means all a credit to our Dairy-Industry. Some need a good deal of check, but who is to give it? The Provincial Government. Why not?

Is there no system available to overcome this growing scourge? With a cold storage depot established at each port, under Government control, is it not possible to have every package of dairy-produce intended for export, tested and branded according to its quality? Say, for instance, there were three grades of butter established for export, to be known both here and on the English market, as Grade 1 for finest, Grade 2 and 3 for inferior articles according to quality, whilst all butter that did not come up to the lowest grade, would be prohibited from being exported. This is the sort of thing the Danes are doing, only with far more minute attention to details, they also notify any butter-makers whose butter is at fault, the nature of the defect in their product, and how to remedy it. It should certainly be as advantageous to us as it has been to the Danes, to adopt their system of pasteurization. It would very soon elevate the standard of the milk delivered at the factory. The plan adopted now in Denmark, in some American creameries, and in many Australian factories, is to test each lot of milk for acidity by the alkaline tablet test at the same time that it is weighed, and such milk that contains beneath a certain standard of acidity (20 per cent) is considered fit to be pasteurized, whereas all milk containing more than the standard acidity is manufactured in the ordinary way, and the produce sold on its merits.

This offers some inducement to the patrons to keep their milk properly, as the pasteurized product invariably grades higher than the unpasteurized. In Denmark there is no place for the negligent dairyman, he would soon lose caste, and be very glad to mend his ways. Here, all is different, it is impossible to reason with some farmers; is it anybody else's business but their own how they keep their milk, forsooth? If one won't accept it, another

will. In Denmark, Sweden, Germany, Australia, New Zealand, Great Britain, and some parts of the United States, rules are made, which govern the patrons in the care and delivery of their milk, care of cows, condition of stables, etc., etc., infractions of which are punishable by fine and otherwise. Would that such conditions could become possible in this Province! A friend of mine, has kindly translated for me out of the Danish, the following rules which were in force in 1899, at the large butter factory to which his milk was sent. I give some of them in abbreviated form, there are forty-two in all, and they would fill more space than this article if I wrote them all in full.

1. Only that milk will be received which is the product of a cow or cows, whose perfect health and sanitary environments is vouched for by the official veterinary surgeon.

2. Every patron must be able to prove by certificate that his premises, stables and cows have been inspected by the official veterinary surgeon at least four times a year, at stated intervals.

3. Any disease breaking out amongst any of the Patron's family, labourers, or amongst any of his stock whatsoever, must be reported to the manager immediately.

4. Every Patron must deliver daily not less than three-fourths of the largest quantity of milk which said Patron delivers on any day throughout the year.

5. The Patrons must adopt some approved method of aeration, must cool all their milk to 54 deg. F. within half an hour of milking, must transport their milk to the factory in a covered vehicle, and it must arrive at no higher temperature than 58 deg. F.

The above, cover some fourteen or fifteen of the original rules; these I have given in demonstration of how the leading dairy Country in the world considers a basis for the production and delivery of good pure milk must be established. Other rules state just what care cows and utensils must receive under nearly every condi-

tion imaginable, also what feed is and is not allowed to be fed, at different seasons of the year. However, space will not allow me to enumerate more than I have done. Wouldn't there be a rumpus, if we attempted to enforce such regulations in the Province of Quebec ? ? ?

H. WESTON PARRY.

THE CHEESE TRADE.

To the Editor of the "Journal of Agriculture."

Dear Sir,—At the annual meeting of the Eastern Dairymen's Association of the Province of Ontario, held recently, there were many complaints about the quality of our cheese product deteriorating.

This, if true, is a very serious matter to consider, and one that requires prompt measures to find the cause, and suggest a remedy. Your humble servant started in the cheese business over a quarter of a century ago; knew nothing of the cheese business at all at first, some may be inclined to say I never knew very much at any time; we will let that pass without comment at the present moment.

Our exports in 1873, the first year I began, were very small—they kept on growing gradually—sometimes by leaps and bounds; until the past year they were a tidy source of income to the farmers of our fine Dominion. In quoting Mr. Alexander, one of the cheese buyers of Montreal, at that convention, his statement is that the cheese of to-day is not equal in quality to what it was 4 or 5 years ago. Mr. Hodgson, another shipper's words were: Oh for the kind of cheese of 3 or 4 years ago. I am proud to say that I had something to do in the improvement of our cheese in the Province of Quebec from 1873 until the close of 1895. For 23 years my best efforts were directed to the improvement of the quality of our cheese. I am not egotistic enough to suppose that all the improvement was due to my efforts and to mine alone; no, there were others.

I might mention my associate for many years, Mr. D. M. Macpherson, of Lancaster, Ont., to whom a great deal of credit is due.

At first, cheese was made on what was then styled the United States system; before long, about 1874 or 1875, the Cheddar system was introduced. This last was a great improvement on the former, I may state that 99 per cent of the cheese in Canada is made after this system, now. About 1895, one of the firms in Montreal, A. W. Grant, who is the third largest of the exporting firms in Montreal, got some factories to make a softer cheese than had heretofore been made. This product was paid the same price as the drier one; and the consequence was, patrons received more per 100 lbs. of milk than their neighbors who were making the good product. Farmers, as a rule, want to patronize a factory that pays the highest price for milk, no matter how it is obtained. Now, Mr. Editor, my theory is just this, that what one firm has done others followed to keep their customers, and the consequence is that we are selling too much moisture in our cheese; in other words, too much whey is being left in it, and the general good quality of our fine cheese has fallen accordingly. When you know the cause, it is quite easy to give a remedy; let each and every one go back to where they were previous to these soft cheese being made, and make what we were making then. There are many factories which never made any of this soft cheese; they deserve great credit. They were very well aware of what would happen. But it requires quite a force of character for one to take a stand like that. They see their neighbors paying more for milk than they can do, although they know it is not right. It will take very vigorous efforts on the part of the instructors of Ontario and Quebec to remedy the evil, but it must be done, and that soon too, or we may be placed in the same position as our neighbors to the south of us, i.e., lose our trade with Great Britain, and if we did, what would become of our thousands of patrons

that supply the milk for the cheese that is made to-day? Honesty is the best policy, is an old proverb, it is very true as regards cheese-making. Some farmers no doubt think these Montreal merchants should not interfere and give advice. Some one has got to handle the product, and I can assure you those merchants in Montreal have not made such fortunes for the quantity of money they turn over in a year. There are lots of expenses in connection with the handling the product; besides, it is only for 6 months in the year. These merchants know what their customers on the other side want, and, of course, are in a good position to let the makers know what is required, but I must say, that the Montreal merchants should never dictate and tell a cheese maker how to make a cheese, for in nine cases out of ten, they do not know how to make a cheese, but they can tell what kind they want, and leave the technical part to those whose business it is to attend to it, that is, "the instructors." Hoping there may be a long pull and a strong pull—and a pull altogether on the part of makers, instructors, and patrons to get back into the good old rut of making good cheese, and do away with those stinkers that we hear so much complaint about,

I am, yours very truly,

PETER MACFARLANE.

February 15th, 1901.

The Poultry-Yard.

FOWLS: CARE AND FEEDING.

The wide distribution of domestic fowls throughout Canada and the general use made of their products make poultry of interest to a large number of people. Breeders are continually striving to improve the fowls for some particular purpose, and to excel all predecessors in producing just what the market demands for beauty or utility; but the mass of people looks at the poultry products solely as

supplying the necessary elements of food in an economical and palatable form. For a considerable time each year eggs are sought instead of meat by people of moderate means, because at the market price eggs are a cheaper food than the various kinds of fresh meat.

Large numbers of the rural population live more or less isolated, and find it inconvenient, if not impossible, to supply fresh meat daily for the table aside from that slaughtered on the farm; and of all live stock poultry furnishes the most convenient means of supplying an excellent quality of food in suitable quantities. This is particularly true during the hot summer months, when fresh meat will keep only a short time with the conveniences usually at the farmer's command.

The general consumption of poultry and poultry-products by nearly all classes of people furnishes home markets in almost every city and town in Canada and at prices which are usually remunerative if good judgment is exercised in the management of the business.

Although fowls require as wholesome food as any class of live stock, they can be fed perhaps more than any other kind of animals on unmerchantable seeds and grains that would otherwise be wholly or partially lost. These seeds often contain various weed seeds, broken and undeveloped kernels, and thus furnish a variety of food which is always advantageous in profitable stock feeding. There is less danger of injury to poultry from these refuse seeds than is the case with any other kind of animals. As a rule, noxious weed-seeds can be fed to fowls without fear of disseminating the seeds through the manure, which is not generally true when the weed seeds are fed to other classes of live stock, particularly in any considerable quantity.

VENTILATION.

Some means of ventilating the building should be provided. A ventilator than can be opened and closed at the will of the attendant will give good results if given

proper attention, and without attention no ventilator will give the best results. All ventilators that are in continuous operation either give too much ventilation during cold and windy weather or not enough during still, warm days. As a rule, they give too much ventilation at night and too little during the warm parts of the day.

Ventilators are not needed in severe cold weather, but during the first warm days of early spring, and whenever the temperature rises above freezing during the winter months some ventilation should be provided. Houses with single walls will become quite frosty on the inside during severe weather, which will cause considerable dampness whenever the temperature rises sufficiently to throw out all the frost of the side walls and roof. At this time a ventilator is most needed. A ventilator in the highest part of the roof that can be closed tightly by means of cords or chains answers the purpose admirably and may be constructed with little expense. The ease and convenience of operation are important points and should not be neglected when the building is being constructed. It is a simple matter for the attendant to open or close a ventilator as he passes through the house if the appliances for operating it are within easy reach. This figure represents an efficient and easily operated ventilator.

THE HEN OF THE FARM.

The farmer's hen is very apt to be a mongrel fowl, and in truth the care which she receives would put one of finer breeding to shame. Is it not a fact that on the majority of farms the poultry are treated with less attention than any other living thing about the place? The average henhouse is a disgrace to the farm and to its occupants. It is filthy, ill lighted and ventilated and swarming with insect life. Is it any wonder the hens desert it in summer and take to the trees, the farm implements or the fences?

Very many farmers declare that hens are a nuisance, and as commonly kept there is no doubt that this is true. They say with emphasis that they do not get eggs enough to pay for half the hens eat, and this is also true yet the hens ought not to be blamed for the mismanagement which brings such poor results. If one-half the care and attention which they deserve were given these much maligned bipeds, there would be no more complaints in this direction. Properly treated, there is no better money producer about the farm than the hen. She will give a greater profit "pro rata" than a cow.

The spring is the time to begin business if we would have good material to work with the following winter.

If egg production is the desideratum, select one of the laying breeds and obtain eggs for hatching as early in the season as possible.

Older hens often lay during winter, but it is the pullets which must be the main dependence for eggs. If hatched early and carefully tended, they will begin laying early. In order to get best results cornmeal should not be fed as a steady diet to growing chicks. Wheat is excellent, as is also bran slightly moistened. Ground oats are good, fed in the same way, but avoid feeding this grain whole, as the sharp ends may pierce the crop.

Chicks should be fed regularly and in a cleanly manner. Avoid wet ground if you would not invite disease. Give milk either sweet or sour. Chicks are particularly fond of cottage cheese, or "Dutch" cheese, as it is called, and it is perfectly safe food for them. The trouble is to supply the demand.

Drinking vessels should be kept scrupulously clean. Wash them out frequently and fill with fresh water daily. Fowls are very fond of water and often suffer from an insufficient supply. Water is the first thing they want in the morning, and they will take a drink of it last thing before going to their roost at night.

If you would have a garden, keep it fenced or else keep the fowls confined. It

is useless to expect the two to thrive otherwise, hens will scratch, and they delight in digging round growing plants and vines.

A two foot width of wire netting will be sufficient to keep them out of the garden if it is securely fastened and staked to stand erect. They will rarely attempt to fly over it, but will creep underneath if there is a chance to do so. A flock of 50 Leghorn hens rightly managed will keep an average family in groceries besides supplying the table with eggs. Among the residents of any town may be found those who are anxious to secure guaranteed eggs and willing to pay an extra price for them. Many farmers' wives obtain from three to five cents a dozen over market price for all their eggs in this way.

The Flock

STARTING A SHEEP FARM.

L. B. Harris, Maine.

In the western states a man will isolate himself in a barren country miles from a village to conduct a sheep ranch. He has none of the comforts of life that our people of New England enjoy, and takes his chances whether he succeeds or not. Now, why not stay at home where he can enjoy the society of good people and where he will not be compelled to live a hermit's life to succeed. There is plenty of land just suited for sheep farming.

A man who couldn't pay his bills at anything else, better not enter into sheep raising. Don't go into the sheep business unless you love sheep. You must be in perfect sympathy with your flock. You must even know sheep dialect and tell by the looks of the sheep what she wants. It takes brains to be a successful sheep breeder.

Sheep don't mind the cold, so much as they do dampness under foot. See that they have a chance to go in and out of

good dry sheds. I haven't fed my sheep under cover for 15 years and never used a feed-rack.

For fence I use the common barbed wire with posts 50 ft. apart. Eight wires are the best, although five wires will do. Put three cleats between each post. This fence will "give" when a sheep tries to go through. They don't like that and will not try again. When the posts are near together and the wires tight they will be sure and get through. Wire netting makes good fencing, although more expensive than the barbed wire. A breechy sheep is a bad animal and I have known sheep that wouldn't jump a chalk line, soon learn to scale any fence just by introducing a breechy sheep into the flock.

For feed there is nothing better than clover hay, cornstalks and turnips. Whole oats are excellent. Corn is also good. In selecting your breeders, don't buy of a dealer. The sheep that he has picked up shouldn't be sold except to the butcher. Buying of a dealer is a good way to spread disease. There are also other ways, one is exhibiting at the fairs and importing stock. I have been taken in all these different ways. Buy of a reliable breeder and take nothing but the best.

One breed is as good as another, but you must get the breed best suited to your own conditions. The Shropshires answer the purpose here. Southdowns are also good, but you must study your locality. Start with 100 native ewes, every one a good one, and a \$600 run-out farm, and there is no business that will require so little labor to obtain a living as the sheep business. I know of one man who started at 45 years of age, bought an \$1800 farm and with a good brood mare and a flock of sheep he paid for the farm and laid up a good competence besides.

"Homestead."



SHEEP INDUSTRY.

The sheep industry of New England is very small compared to a generation ago. It has been driven out through various causes, such as sharp competition from the west, dogs and unstable price of wool. Fashions in woolen goods change radically and a grade of wool which may be in great demand one year is not wanted another. Tariff laws will not help this, nor will they stop the competition from wool raised on the great free pasture ranges of the west, where a man, horse and a dog take care of 2,000 sheep. Butter, cheese and milk are not influenced by the dictates of fashion, hence dairying has been found to give a surer, steadier income. The dog question has proved a serious one also. Dogs have all the rights and privileges of wild animals to roam the country at will and there is no open season in which they can be killed. While one has a perfect right to kill foxes, wolves, bears or other animals roaming at large which destroy his sheep or poultry, the laws are such that the dog must be respected, unless found in the act of killing or molesting sheep. As the dogs have multiplied in numbers the sheep have decreased, and it will be a long while before the sheep industry will return to New England. The meeting of the New England wool growers' ass'n, at Rutland, Vt., next week, will tackle some of these problems.

GRAZING BY ELECTRICITY.

We are promised many wonderful things in the new century, and there is no doubt that farm life will be greatly affected by some of them. We have been told quite confidently that the horse was to be superseded by the automobile, that mineral wool would take the place of the genuine article grown on the sheep's back, and a lot more similar yarns, but the man who reads and thinks is not frightened by them. The latest invention to claim attention is a device to save pastures by

grazing sheep by electricity. "Chained lightning" is going to play an important part in agriculture in the future, and this may be the beginning of it. We give it for what it is worth.

The invention consists of a pen made of wire mounted on wheels, so that it can be moved across a field by wires connected with an electric motor at one side of the pasture. The pen creeps across the field and the sheep in it graze as the pen moves along. The following description is given by Wool Markets and Sheep: "A machine of this type is being experimented with at the agricultural experiment station of Michigan at Lansing. Two lambs and part of the time an old ewe have been pastured in the pen during the summer. The field is planted with lucerne, growing thick and heavy. The pen is so arranged that it crawls the full length of the pasture in one month, travelling about two feet an hour; at the end of this time it is switched around and travels back again. As it moves, the sheep eat every bit of the fodder, eagerly cropping next the forward side of the pen as it runs over the new ground. A bit of canvas duck is hung over one corner of the pen, so that the sheep may be well-sheltered, and, curious as it may seem, they have become so accustomed to the moving of the pen that when they lie down to sleep they snuggle close up to the forward end of the pen, so that they may lie as long as possible without being disturbed by the rear end of the pen as it creeps toward them.

When the pen has passed, of course, the lucerne that has been cropped by the sheep immediately grows up again, and by the time the pen has made its monthly circuit the pasture is again in good condition. The advantages of this electrical pen lie in the fact that the sheep are kept from running over, half eating and tramping down a large amount of the pasture, and it keeps the sheep quiet, so that they lay on flesh rapidly.

"But it has its disadvantages. The sheep must have water carried to them daily, and the electricity is somewhat ex-

persive. Still, the experiment thus far has shown striking results for this curious Yankee invention. One wonders what the inventor will do next. Will he devise a method of planting turnips and harvesting pumpkins by electricity? Already he has produced a mechanism by means of which the farmer on arising in the morning may push a button at his bedside and feed all his horses, there being an electrical connection with the barn so arranged that when the button is pushed instantly a certain quantity of oats is let down into the feeding box of each horse."

"N.-W. Farmer."

Swine

THE TIME TO INVEST.

One of our prominent and well-known swine breeders writes us that, notwithstanding the high prices being paid at the present time for swine products, he has recently castrated nearly a dozen pure-bred boars. These pigs were well advertised and could have been purchased at a very slight advance on pork values. They were a very choice lot, and some of them were old enough for service. It does seem peculiar that some many farmers will persist in breeding from scrub sires, when pure-bred ones of the choicest breeds and breeding can be had at very reasonable prices. No doubt the immediate cause of the shrinkage in the demand for young sires is the scarcity of money on the farm, owing to the short wheat crop last year. But we would like to ask farmers if this is not the time to invest rather than not? If breeders are finding it difficult to dispose of their stock, is it not a good time for farmers to buy? Aside from this, owing to the adverse past season, the supply of hogs in the country is undoubtedly small—fewer will be bred, and the man who goes ahead now will reap a good harvest while hogs are high, before every one starts again. In this work the use of pure-bred

sires will help increase the profits. This is looking at the question from the farmers standpoint. But there is also a view for the breeder who is feeling the pinch of hard times now, in that there is less demand for his young sires. The knife used judiciously may be the means of greatly improving the herd. Save only the best, cull out the worst and pay more attention to selection in breeding. Continued prosperity and ability to sell all he breeds may lead a breeder to think he can sell anything, regardless of its quality. If adversity teaches him to select and strive to produce the best, then he will make greater progress for a set back. Having got a clearer view of what he wants, should the breeder not prepare for the increased demand that is sure to come when farmers have good crops again? We think so.

"Ex."

ECONOMY OF PORK PRODUCTION.

Some very interesting and profitable experiments were conducted during the course of last year at the Ottawa Experimental Farm by the Agriculturist, Mr. G. H. Gridale, in view of determining the cheapest method of producing pork. These experiments are especially valuable as they bring out in a striking manner the value of fodders in addition to grain for pork production, and also the value of newfood-stuffs for the purpose. Cheap pork production ranks certainly foremost among the agricultural problems of the day, and any attempt to reduce the cost of this production will no doubt be greatly appreciated by farmers. Too long has the value of forage plants for the purpose been overlooked, as well as the comparative value of the fodders. (1) Of course, other conditions, besides the mere value of a forage in pork production, have to be taken into consideration, but most of the fodders tested could be grown with success in our own province.

The meal fed in all these experiments

(1) They have been used over Britain for at least 150 years.—Ed.

consisted of one half corn, and one half oats, peas, and barley, equal parts. An average price of 90 cts. a cwt was charged for the grain. The pigs experimented upon were not all of the same age, and the larger profits in some cases may, to some extent, be attributed to the difference of age. Yet this difference was in no case so large as to account wholly for the difference in profits.

No plants among the fodders tested gave more satisfactory results than Rape, the growing of which has frequently been advocated in this paper. We are glad at being able to give such another striking instance

of the value of this plant, and hope those farmers who have not yet given it a trial may thereby be induced to do so. Rape was also fed to other stock, but its greatest value would appear to be as a pasture for pigs. (1) The study of six pigs put to pasture on rape is most interesting, and we give here the full data of the experiment :

The plot used as a pasture measured three sixteenths of an acre. Rape was sown in drills on June 18th. The pigs were allowed upon it on August 14th and pastured it at first and were fed upon it later until December 6th.

LOT OF SIX PIGS ON RAPE PASTURE.

No. of Pigs.	WEIGHTS.							
	Aug. 14.	Aug. 28.	Sept. 11.	Sept. 25.	Oct. 9.	Oct. 16.	Oct. 30	Dec. 6.
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
279	61	76	80	85	96	108	125	179
280	60	73	80	95	105	121	147	195
281	64	73	91	103	111	127	160	201
282	60	73	90	99	109	120	143	171
283	60	72	82	99	114	135	157	203
284	53	68	78	90	105	118	141	182
	358	435	499	571	640	729	867	1127
Total gain.....		87	64	72	69	89	138	280
Daily rate of grain		1.03	0.76	0.85	0.82	2.12	1.64	1.20
Daily grain ration.....		1	1½	1½	2	3	4	5

Statements of cost of proceeds of the above lot of six pigs :

To six pigs at \$3.....	\$18.00
3-16 acres rape at \$14.17 per acre...	2.66
2,067 lbs. meal at 90 cts. per cwt ...	18.60
Gross amount.....	\$39.26
By 1127 lbs. pork at \$6 per cwt.....	67.62
Profit on lot.....	28.36
Profit per pig.....	4.73

Let us now compare these results with those obtained from a clover pasture, the same amount of grain, of the same quality being also fed :

Lot of 5 pigs on clover pasture and grain :

To 5 pigs, average weight, 90 lbs. at \$5.50.....	\$27.50
1-2 acre clover pasture.....	44.50
1600 lbs. of meal at 90 cts.....	14.40
Total.....	\$46.40

By 900 lbs. pork at \$6 per cwt.....	\$54.00
Profit on lot.....	7.60
Profit per pig.....	1.52

As these experiments clearly indicate, Rape offers a great advantage over clover for pork production ; the difference in its favor amounting to \$3.21 per pig, which is well worth considering.

Equally interesting were the results of the experiments with pumpkins and Jerusalem artichokes. The latter fully justified the reputation which they have gained recently in several experiments stations, as the following data will prove :

(1) And how about sheep? En.

HIGH PRICES FOR HOGS.

A plot about one sixteenth of an acre was planted in May, with about seventy pounds of tubers'. They were planted 4 inches deep, in row 24 inches apart, and in hills about 20 inches apart in the rows. The growth of the plants for about three months was confined to the stem, leaves and roots alone. In September only, small tubers made their appearance and slowly developed. On October third, only small tubers, the size of hen's eggs, were found in digging, although the plants had made a most luxuriant growth, standing 10 to 13 feet high, and about 50 per cent of them being in flower. Although the tubers were immature, it was decided owing to the lateness of the season, to turn the pigs in at once. Accordingly, 6 cross bred pigs were turned loose into the lot. They were allowed one and a half pound of meal each per diem in addition to the artichokes which they rooted upmost industriously and ate most greedily. Until October 22, the pigs made an average daily gain of 1.57 lbs. They weighed, at the beginning, an average of 105.5 lbs. a piece, and at the end 137.7 lbs.

In addition to the artichokes, they consumed in the 21 days 189 lbs of meal worth \$1.70. In short 197 lbs of pork were produced at a cost of \$2.25, leaving a net profit of \$9.27, which put the cost of the production of a pound of pork at 1.8 cts.

However, the long time required for the development of the tubers is a serious drawback in growing artichokes. (1)

The results obtained with pumpkins were also very satisfactory. One lot of pigs fed on raw pumpkins made a gain of 745 lbs. in 107 days, at a cost of \$3.08 per 100 lbs. of gain. They ate 2090 lbs of turnips, and 1981 lbs. of meal.

Another lot of six pigs fed on cooked pumpkins did still better, making 706 lbs., increase in 99 days, at a cost of \$2.96 per 100 of gain. They ate 7500 pumpkins and 1002 lbs. meal.

C. M.

(1) Enough tubers will be found in the ground, left by the pigs, to produce a crop next season.—Ed.

Ontario farmers have been making good money out of their hogs this year and the men who had a large number to dispose of are particularly pleased. The large increase in the number of hogs grown by the average farmer is one thing that strikes a visitor to the province. In districts where a few years ago only enough hogs were raised to supply the need of the family on each farm, there are now 60 and 70 being turned off annually. The experience gained in handling these is paving the way step by step for better things. Special pasture is being arranged for summer feeding, so as to grow the pork as cheaply as possible and an acreage of roots for winter feeding.

Discussing the present high prices for hog products, the manager of the Wm. Davies Co., of Toronto, said that prices are no higher than the conditions in England warrant at the present time. Wiltshire bacon, the special kind cured by Canadian packers, is now in great demand and packers cannot get hogs enough.

Farmers in Manitoba should take a leaf out of their Ontario brothers' book in the way of hog producing. With a small acreage for pasture and coarse grains for feed greater returns can be obtained per acre by feeding hogs than in any other way. To reach the highest returns, effort has to be made to market the hogs somewhat between seasons, i.e., between the usual fall and spring rushes of hogs which always send the price down. There is no stock a farmer can get into quicker than into pigs and none he can make more money out of, if rightly handled.

"N.-W. Farmer."



The Horse.

HORSE BREEDING.

Messrs. Telfer & Climie, of Montreal, have received an interesting letter from the Hon. Mr. Fisher relating to the question of horse breeding, which reads, as follows :

"I am glad to receive the information from you that you are importing a number of English thoroughbred stallions for use in this country, and especially am I pleased that you have secured the services of Major Dent to choose these horses for you in England.

"I have thought for some time that one of the chief needs of our country in horse breeding is a larger infusion of the English thoroughbred blood.

"I know there is a certain prejudice in the minds of many against this breed for ordinary purposes, but this I think is due to an attempt to use comparatively high-bred animals for rougher and heavier work than they are suited for. I am satisfied that a slight infusion of this blood is needed in the mares which are to be used for breeding purposes, and this I believe to be true of any grade mares, even though the rest of their breeding may be of a very different strain.

"The most evident lack on the part of our breeding mares is quality, and this can be best attained from the English thoroughbred. Until we have a considerable number of thoroughbred sires in the country we cannot secure this strain of blood in our mares, even though it may not be considered necessary to have more than a very slight infusion of it.

"Too often the class of thoroughbred used in Canada has been of the weedy, second-class racehorse type. This does not serve the purpose above indicated at all.

"I have had so much personal discussion with Major Dent upon these subjects that I am sure the animals he will choose for you will be of an entirely different

type, strong-boned, muscular, with good constitution and impressive power.

"Your enterprise in bringing these animals out is very praiseworthy, and I trust that the venture will be most successful financially, as it deserves to be. I am also pleased to think that it is the direct result of the presence of an Imperial officer purchasing army horses in Canada last fall, which action on the part of the Imperial Government was brought about by representations from the Canadian Government, and the active personal work of Lord Strathcona, our High Commissioner.

"I shall be glad to see these horses as soon as they arrive, and am confident that they will prove to be exactly what is wanted."

CONSTITUTION OF THE POTATO.

One reason why the potato came but slowly into favour was, no doubt, the fear many entertained of its poisonous qualities and it certainly has some cousins which are the most painfully fatal to animals when taken into the system. Among these is the deadly night shade, "atropa belladonna," which is the type of an order of the botanical family, "Solanum," to which the potato belongs, and is one of the most powerful narcotic poisons. The potato itself is not free from dangerously narcotic qualities in a raw state, but its tubers, the only edible part, lose all their injurious narcotism when cooked, yet both raw potatoes and the juice or extract of boiled ones must be shunned by man. It is only the tubers which have been kept from the air by being buried deep in the earth which are fit for food, if they have grown on the surface, or have been exposed to the air after being dug they become unwholesome, occasioning sickness and greatly disordering the body.

The leaves and stems are of no use as articles of food for man or beast, whether cooked or raw, but are indispensable in the economy of the production of the tuber which is so useful; they also make excellent manure.

That part of the potato plant below the surface and growing within the soil is called the root, but it consists of four parts, radicles, fibres, stolons, and tubers. The radicles, however, are the only true roots, for they alone perform the function of taking up the nourishment from the soil, necessary to the development of tops, leaves, and tubers.

Four main radicles spring from the stem, and these send off numerous lateral fibres, and these again sub-lateral ones at the ends of which are numerous spongioles or absorbent mouths, and as the plant increases in growth, new filaments and spongioles appear.

The necessity of keeping the potato plant in vigorous growth by good culture will appear when we see that this process is continually going on during the growing season and does not stop until nature has exhausted her powers by a completion of the products the plant was destined to form. We may also learn, from a close study of the roots of the potato, that the number of the absorbents, is so great and they are so actively employed in seeking water and inorganic matter for the sustenance of the plant, and that the web-like filaments on which they exist are so delicate and easily broken, and are many of them so minute as not to be discerned by the unassisted eye, and yet they consist of a porous mass of tubes of the most fragile description. An obvious and practical inference from their extent and widely spread diffusion is, that any method of planting or after culture which represses or curtails their growth, in a like proportion, impairs the health, decreases the vigour, and diminishes the produce of the plant.

The stolons spring alternately from the root stalk, and in opposite directions from each other. At their commencement, they grow upwards for a few inches at an angle 18 deg. or 20 deg. with the stem. They are simply prolongations or off shoots of the organism of the main roots, and act as ducts conveying the secretions of the plant to the tubers, serving also to

place the tubers in a drier position than the roots.

They live only till the plant has completed its communication of its secretions to the tubers: for whenever it ceases to elaborate matter to convey through them, their function is accomplished, and they dry and shrivel.

Here again, we see how necessary it is to do all we can to keep the crop healthy and vigorous; for, if the powers of the elaboration of the sustaining secretions are checked, the stolons, especially in damp seasons or situations, are liable to decay, and, in consequence, to occasion disease and death in the tubers.

The tubers which are the only valuable part of the potato are masses of cellular and fibrous tissue, protected by external coverings, and containing germs of future plants, they are formed by expansion of the vessels of the stolons, and fed by communications through them from the stem. They have no external means of obtaining nourishment, and when they are ripe, that is when the skin is set or hardened, they are quite impervious to water. They comprise bark or outside covering, their cuticle, tubular vessels, and germ feeding channels.

The bulk of the tuber consists of cells, which are its storehouses. Besides these are channels in which the germs are located: these channels are filled with starch and granules which are the food of the germs while germinating.

These germs are situated, one at each eye of the tuber, and could they be carefully cut out, each one would exhibit a miniature potato plant, perfect in all its parts. When active vitality or germination commences, these germs elongate themselves, advance their bud or apex through the eye, and appear at the exterior of the tuber.

The eyes or germs of the potato tuber do not all push at once, but ripen and germinate in a series or succession. The eyes nearest the extremity are generally the earliest, and those nearest which the tuber was attached to the stolons the

latest: Sets with one or two vigorous eyes are the best to plant, and not the whole root as used to be considered the proper way.

(To be continued).

Note.—We still hold the best sets for planting are what used to be known as "middlings" in England; i. e., potatoes too large to be kept for the pigs, and too small, to appear in the London market. Ed. J. of Agr.

SELFISHNESS.

Selfishness is an inherent and necessary quality of the mind, and only becomes hateful when allowed to entirely supplant the interest we should take in the welfare of others. It is natural for every one to labour for himself, and, were he not mercifully drawn out of self by the benign influence of love, his mind would soon be contracted and his heart hardened.

But happily, man is social being, capable of social sympathies and affections; hence, when he mingles with his fellow, if he has not entirely abandoned himself, like Scrooge, to a life of misanthropy, his struggles in his own behalf have a reflex influence upon his neighbour. If he discovers some new scientific process, he is not benefited alone, but the world in which he lives; if he invents some wonderfully intricate machine, the motion of which is almost akin to human intelligence, and which spins, weaves, or manufactures a fabric more perfectly and uniformly than it could have been made by hand, whatever motive the inventor may have had in spending his time to bring his machine to its present state of perfection, whether his ambition be the acquirement of wealth or honour; I say, whatever his motive, the public have been the greatest gainers by his invention.

It is impossible for a person to benefit himself without benefiting the community; every transaction of his life has a bearing on the interests of others as well as on his own.

The farmer who contributes to the maintenance of good roads, while benefiting himself is a public benefactor. He who gives due attention to his fences and drains does so do to the advantage of the neighbourhood in which he lives, and so his personal profit and enjoyment is enhanced together with that others. The good farmer tills his ground to raise food, not for himself only but for those engaged in other pursuits, and he introduces im-

proved methods of culture to enable him to increase the quantity and improve the quality of his crop, the first motive being unquestionably a selfish one, but these improvements are the means, not only of increasing his income from his own farm, but of advancing the agricultural wealth of the country, because his action has given rise to a healthy spirit of rivalry and initiative.

What an incentive have we then for exertion, when we consider that all we do, like the pebble thrown into the pond, causes a ripple throughout the surface of its waters; that we are all members one of another, some occupying one place of duty, some another, some with more talents and endowments than others, some learned and some unlearned, some surrounded with the lights of science and the glories and beauties of art, and some occupying humble positions in districts, away from the haunts of refined society and mental culture, and yet each exerting a certain amount of influence according to his position and opportunities. "The man with the hoe," no less than the king on the throne, can, by his life and example, benefit or retard human progress to the extent of his influence.

One of the most gratifying facts connected with the moral trend of human advancement during the last 75 years is that the world has been blessed with one in the highest place in society whose disposition has been to be good, and to do good, and the name of Queen Victoria will go down to posterity as the good Queen who endeared herself to her people by setting them a pattern of domestic rule of her household, and in being an exemplary wife and mother, she made it fashionable for ladies of quality to exercise the duties of maternity, and to pay that attention to the rearing, and education of their children which it was natural, they should, but which, in past times, was, too frequently delegated to nurses and tutors. All the advances made in the arts and sciences, however much they have benefited mankind, are not of greater importance than the improvement in the actual and social condition of all classes of the people, thus affected by the example of those who have been placed by Providence in the position of leaders of society.

We have thus seen that the natural selfishness of our nature will contribute to the public good if kept within bounds and guided in the right direction.