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THE ILLUSTRATED Journal of Agriculture

Montreal, February 1, 1895.

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Notes by the Way.

Butter.—Who makes the butter at the Compton Agricultural School, we do not know, but judging from the samples we have tasted he should travel and give lessons round the country. Anything more perfect, in flavour, firm, and fracture, we have never met with since we first came to Canada.

Bacon and hams.—By the subjoined report of the London market prices for these articles, the vast difference between "Best Irish, lean sizeable" bacon and the same quality, as regards size and leanness, of Canadian, appears clearly enough. The propa-

ration must be in fault. Fancy, too, the American ham of heavy weight being worth only 46s., and special brands of Irish 108s. the 112 lbs. All those who can get the chance should consult M. Gigault's Report on his European tour, in which the Asst. Commissioner of Agriculture fully treats this important subject.

Bacon and hams.—London, Friday.—

Irish bacon, although in fair demand, has ruled easy owing to large supplies, while Continental, although in better demand, is still quiet, with prices slightly better. Irish, lean sizeable, 48s. to 50s.; best, 52s. to 54s.; stout, sizeable, 42s. to 46s. Danish, lean, No. 1, 48s. to 50s.; best, 52s., and exceptionally 56s.; No. 2, 45s. to 47s.; best, 49s.; No. 3, 44s. to 45s.; best, 48s. Canadian, lean sizeable, 36s. to 39s.; fat and heavy, 35s. to 37s. Ham's—Irish being scarce for small sizes, has had a better trade for medium and large at 70s. to 74s.; small, 78s. to 84s.; special brands, 86s. to 98s. and 108s. American are quoted 47s. to 50s. for light, and 44s. to 46s. for heavy, both long and short cut.

Seeds.—The price of seeds in England, and that we need hardly say governs the general price throughout the world, is, we regret to say, likely to be very high. There was a very short acreage of clovers, many pieces of which the great drought of 1893 had left thin in plant and therefore full of weeds. The rainy spring of 1894, followed by a wet early summer, produced an enormous growth of everything, but the only really fine samples of clovers grown were after the first crop was fed off by sheep and the sheep were removed early. So red-clover and cow-grass (t. pratense perenne) must be very dear.

Alsike suffered from the wet season, and the only seeds that seem to have turned out well are the sainfoin, both common and giant. On land that has a notable proportion of lime in it, the common sainfoin should be more extensively tried here. It lasts from 6 to 10 years, and is a great favorite with all kinds of stock. As the first year's crop is always shy, a few pounds of common trefoil, or hop-clover, should be sown with the sainfoin.

Rape seed, we hear, was a large crop, and as the dripping season of '94 brought as a consequence an enormous bulk of grass, but little demand existed for rape-seed, so the present prices for it are lower than they have been for years.

Vetches or tares are very cheap, as cheap now as they were dear a twelve month ago. The large spring-tares are the kind we find answer best in the country. The small black "lentil," yields but little herbage.

Manures.—The following are the prices of fertilisers in Liverpool. We have reduced the terms to Canadian weights and currency;

Table with 2 columns: Fertiliser name and Price. Includes Nitrate of soda per 2,000 lbs. at \$40.00, East India bone-meal at 21.75, Superphosphate (26 o/o soluble) in bags at 10.00, and Superphosphate (35 o/o soluble) in bags at 13.00.

The English quotations given here are liable to misapprehension. The value of superphosphate mainly depends on the percentage of "soluble phosphate" present. By this term, analysts do not mean "monocalcic phosphate," but the quantity of tricalcic phosphate rendered soluble. All kinds of superphosphates sold in England are, un-

less otherwise described, mineral phosphates prepared with sulphuric acid and contain nothing else but lime, phosphoric and sulphuric acids. The sulphuric acid and the lime form land plaster, as we call it here. Superphosphate, 26 o/o soluble, contains a trifle less than 13 o/o of soluble phosphoric acid. Of course, considering freight and other expenses, any one importing superphosphates from England would do well to invest his money in that kind containing the highest percentage of "soluble phosphate."

Table with 2 columns: Fertiliser name and Price. Includes Kainit, 23 o/o potash at \$10.50, and Basic-slag, 28 to 35 o/o total phosphates at 8.00.

Autumn is the season at which both Basic-slag and Kainit should be sown, as they are slow actors. Basic-slag, from all accounts, seems to suit sour, wet land, newly drained bogs, and sandy soils. From 5 to 7 cwt. an acre is the proper dose, and its action will last over several seasons.

Singling root crops has always been a terror to those who have not seen the work done in countries where it has been the custom for many years. If a Scotchwoman can single an acre of roots in two days, and if our Sorel friends can do an acre for \$2.50, there is no great expense incurred in the operation. For allowing 18 tons an acre to be a fair crop of swedes, and a ton to contain 47 bushels, we have a total of about 940 bushels, the singling of which will have cost rather more than 2 1/2 cents a bushel. Mangels cost no more and carrots may cost 3 cents, and they are well worth it. M. Seraphin Guévremont's crop of swedes at Sorel certainly ran to 1400 bushels an acre, and cost at the above rate 1 1/2 cents a bushel to single. The horse hoe being kept at work, and the drills having been well levelled, any man can get over an acre of the second hoeing in a day if he will keep the row of plants between his feet, and make one cut of the hoe on each side and one in the interval between each two plants. The provoking thing here is that on farms where the hand-hoeing is otherwise well done, the men will persist in hoeing all the ground, whereas the space between the rows of plants should be left entirely to the care of the horse-hoe. Men do not like the singling at first, as it seems to them "niggling", or as my French-Canadian man at St-Hugues called it, "s-é petite cochonnerie," but they soon get used to it, when once they have seen what comes from it. If Dr Hoskins would do us the honor to read attentively the articles we published last year in this periodical on root-growing, we cannot help thinking that a good deal of the difficulty he has hitherto encountered in this—to us at least—the most fascinating branch of farming, would vanish.

A correspondent asks us whether it would not be much better if dairy farmers should make more of root-growing. His note was probably written before reading our remarks on the subject in a recent issue. We were for a long time a good deal interested in root-growing for dairy purposes, and we still recognize the great and manifest desirability of roots on the farm for many uses in the way of feed. Nevertheless, we have to consider more and more the drawbacks attending the culture, storing and feeding of roots in so cold a region as northern New England. And besides that, Americans have not the knack of the long experienced British farm hand in growing and cultivating roots

cheaply, even if we had as cheap labor, as they have, and so good and handy a market for the ultimate products. Englishman or Scotchmen, in Vermont, (and prominently our friend Aitken of the Billing's farm in Woodstock, have managed to make root-growing for dairy cows a success, but we think Mr. Aitken must have found it pretty hard to drill a Yankee farm hand into "singling" the young turnips and mangels with a hoe. And then, when this trained man leaves, all that instruction has to be gone over again! When root have to be thinned on the knees, as most Yankees do it, we hardly think they pay.

Bad Farm-water.—When we first went to live at Sorel, the well on the Fosbroke farm was being used for the cattle; the smell of the water drawn from it was something awful. Of course we had it closed at once, and supplied other drink to the stock. Without going quite so far as Prof. Shutt in the annexed extract, we feel perfectly certain that many heads of cattle, aye, and many human beings, fall victims to the use of well-water contaminated with oozeings from cattle-sheds and cess-pools.

BAD FARM WATER.

ITS AVERAGE DEGREE OF VILENESS DEALT WITH BY PROF. SHUTT.

Gananoque, January 5.—At Thursday's meeting of the Eastern Ontario Dairymen's Association there was a very much greater attendance than the previous day. The town was so filled with dairymen that the hotels could not accommodate more than half the crowd. Prof. Shutt's address, dealing with science in dairying, was confined chiefly to an analysis of the constituents of milk and their application in the produce of milk. Referring to recent tests of water used on farms, he made the astonishing statement that on the average it was very bad, and in many cases in all truth he told farmers to use their well water as a liquid manure instead of drinking it. Mr. Gould's address on "How to Grow and Save Silo Corn," at the afternoon meeting was well received.

Prof. Dean's (of the Guelph Agricultural College) recent experiments with milk made by the college, to endeavor to arrive at fairest way of paying patrons for their milk at the factory, were very interesting.

Hops.—We thought our Kentish farmers knew all about hop-growing, and they themselves, doubtless, held the same opinion. But, of late, it seems that science has been at work on this plant, and experiments have been carried out in the Mid-Kent district to see if there is any means of improving the quality of the hop by the use of artificial manures. The hop-crop this year yielded prodigious results, but foreign competition has lowered the prices to such an extent that there is a talk of grubbing many of the gardens, and considering the enormous cost of cultivating an acre of hop-land, unless some way can be found to lessen this, the growing of this plant will have to be abandoned.

The manures used in the past were: dung, rape-dust and shoddy or wool-waste; all highly nitrogenous, but, on the whole, wanting in phosphoric acid. Now nitrogen will most likely produce bulk, but quality depends in a great measure on the phos-

phates. Many of the experimental crops yielded from 2240 lbs. to 2464 lbs. an acre, but the quality lay with the hops that had received heavy dressings of superphosphates.

Early lambs.—No doubt some ewes, here and there in the province, are on the point of lambing. Generally speaking, the lambs one sees hanging up in the Montreal butchers' shops in early March are too young and too soft. No lamb less than ten weeks old is fit for the best tables, and unless they get poase for the last 3 weeks or so, in a trough huddled off from the ewe-shed, their flesh is sure to be "pappy," like the flesh of the young fawn and the Canada hare. The prices paid for early lambs here are so liberal that the growers could afford to take a little trouble to bring them to perfection.

Mangels are good food for suckling ewes, but care should be taken not to give too many to rams and wethers, as they are apt to produce inflammation of the urinary passage. Our Farm-tutor, Wm. Rigden, lost three or four of his best Southdown show rams while he was with him. A curious crystal like substance formed in the passage, and the poor things died from obstruction of the urine. Rigden always attributed this to his shepherd having given the rams too many mangels, a food of which he had a very high opinion of for summer-feeding, and for which he used to pay high prices when his own stock of this root was exhausted, though, at the same time, his farm was overflowing with clover, tares, crimson-clover, &c.

Mangels, too, we have heard from a large farmer in England, are apt to cause sows to abort. The farmer in question, John Cottingham, of Chesterford, Essex, was a man possessed of no small scientific acquirements, in addition to being a thoroughly practical man.

Sheep in New-England.—Mr. Scarriff, of Vermont, stated lately at a meeting of farmers in that State, that he was keeping a flock of 200 sheep in connection with his dairy. "He thought that keeping sheep on the run down or abandoned farms in Vermont would be profitable." Yes, we should think so, too. In some places, there are really good farms to be bought for from \$500 to \$1000, with decent buildings, and we cannot conceive an easier way of making money than by buying half a dozen of these, laying them together, and stocking them with sheep.

Sales of Suffolk-downs.—Lord Ellesmere has been for some time engaged in improving his flock of Suffolk-down sheep, and with very great success, as will be apparent by the prices his stock sold for this Christmas-tide.

The Suffolks, like the Shropshire, are not of pure origin, but spring from a hardy breed, originally found on the heaths between Suffolk and Norfolk, from which, after a cross with the true Downs, came the present Suffolks. They are rather long in the leg, with black faces, and their mutton is of excellent quality, so good, in fact, that Allen a butcher in Mount Street, Grosvenor Square, London, owed his reputation to his always having a lot of these sheep hanging—with their black heads and legs on—outside his shop, whence we have eaten many a saddle of their mutton.

Lord Ellesmere, who is President this year of the Smithfield Club, was expected to win the championship of

the short-wooled classes, as his pen of 3 wethers weighed 949 lbs. = 316 lbs. each; but unfortunately, the restrictions upon the removal of stock under the orders of the Board of Agriculture prevented their exhibition, at the show, and he was obliged to sell them at home by private sale.

Well, they sold at pretty fair prices: thirteen shearing wethers, averaged \$22.00 each. Eleven wether lambs, \$16.00, each. Eight ewes, \$20.00, each, and thirty wether lambs, from the grass, \$11.00 each.

Grass-land.—It seems to be now settled, in England, though not in the States, that it is best to cut meadows just before the grasses come into full bloom, as the hay produced thereby is much more nutritive, and, further, the pasture or hay in the following seasons will be much stronger. As to manures for grass, we have long known, from Lawes' experiments, that nitrate of soda greatly encourages the growth of the grasses but that the clovers do not benefit much by its application, the luxuriance of the grasses overpowering them. Superphosphates and potash, on ordinary soils, produce good results, as does basic-slag on lowlying pastures. Young stock and dairy-cows where the whole milk is sold or cheese made, injure grazing land, but fattening stock cause hardly any deterioration to it, especially if cake or grain, or both, be given to the cattle while grazing.

Drills and grubbers.—Being asked to enquire of the best informed English authorities as to the steerage drills and pair-horse grubbers most in favour in that country, we received the following from the Editor of *Agricultural Gazette*:

Questions and Answers.—GENERAL.—**Drill.**—Some forty years ago there used to be a very handy drill made called the "Woburn." It was light work for a pair of horses; the steerage was simple, and, the skates being removed, hoes could take their place; it served the double purpose of drill and horse-hoe beautifully. People cannot afford expensive implements here, this, if I recollect, cost £20. Can you tell me if any such implement is to be had now; and, if it is still made, where I can write for one? Another tool, much wanted here, is a really good pair-horse grubber. Coleman's drag was my favourite when farming in England. Is it still made? If you will kindly answer these questions, you will oblige.—A. R. J. F., (Montreal).—[Perhaps Dening and Co. s, Chard, Somerset, 13-row drill might suit, quoted £27, Adams and Co. s, Cattle Market Road, Northampton, two-horse drill, with steerage behind, quoted £29; Hornsby's, Grantham, "Hoosier" drill, light and strong, 13-coulter, quoted £23, Gower and Son's, Market Drayton, Salop, 17-rows "Anglo-Canadian," quoted £32. Wm. Elder's, Tweedside Implement Works, Berwick-on-Tweed, two-horse grubber, five tines, quoted £3 and £3 10s. We are under the impression that American and Canadian drills are lighter and cover more ground than English drills.]

We have a very high opinion of the Canadian drills, but we have never yet seen one with a steerage, either fore or aft. Is there such a thing made here? If sugar-beets are to continue to be grown, as we firmly believe they are, it is absolutely necessary that a steerage-drill be employed to sow the seed at narrower intervals than can

be secured by the old raised drills—28 inches apart—and a horse-hoe of the same width as the drill, to take three rows at a time, is also peremptorily demanded; for, no matter how carefully a man may drive, the horses will swerve from the straight line occasionally; whereas with a steerage drill and a horse-hoe of the same width, we ourselves have hoed acres upon acres of wheat, barley, and oats, without the slightest injury to the crop. The Woburn drill, mentioned above, was the implement used.

Judges and judging.—We often, when we see the cool acceptance of the office of Judge of a class of exhibits with which the acceptor has but a very shallow acquaintance, think of our dear old farm tutor, Wm. Rigden, who, at the Norwich Exhibition of 1852, refused to judge the long-wooled classes of sheep, because, as he said, "I know a Southdown from its ears to its hoofs; but I never bred Leicesters or Down-Leicester crosses." The following article from the "Nor' West Farmer" on this subject is worthy of attention. We remember some 15 years ago being one of a trio of Judges of cattle, Jerseys included, one of us had never seen a Jersey, and the other had seen one!

As there is to be an Exhibition at Mile-End this summer, (Sept. 13th to 21st) we do hope that there will be a real expert employed to judge the Guernseys and another for the Jerseys; for the type of the two breeds is quite distinct.

Judges and judging.—The Scottish Farmer has the following excellent article on this subject, which *The Nor' West Farmer* heartily endorses: "Among the many factors necessary to the successful carrying out of any agricultural show, the most important is the procuring of thoroughly competent men to act as judges. There are probably hundreds who consider themselves such in the different classes of stock which they favor; but, in reality, the number of really competent men is but small. Many a man is fairly good and reliable judge, provided he has plenty of time to arrive at his decision, and the number of animals before him is not too large; but such an one may become absolutely bewildered with a large class, and when a decision must be arrived at in the limited time at the disposal of the judges at any of our important shows. It is comparatively easy to award positions when animals of outstanding merit are paraded; but when the animals are of nearly equal merit, and yet each possessing different excellences, it requires great thought and judgment to arrive at a just decision; and but few are really trustworthy under such a crucial test. Many a man would be trustworthy if he could just have the animals quietly placed before him in his own yard; but having to act in the presence of hundreds, and sometimes thousands, of intelligent on lookers and keen partisans, he becomes nervous, and fails often from that cause alone.

"Our object in drawing attention to this subject is to bespeak a little more kindly and patient treatment on the part of exhibitors and their friends for the gentlemen who, without payment and at the cost of great anxiety, consent to act on such occasions. We venture to assert that there are no more anxious persons on the ground than the judges, and if occasionally they do seem to err a little in their awards, it is well to think as charitably as possible, and attribute

the decisions to their taste rather than a wilful perversion and abuse of power. It is well to bear in mind that there can never be a rigid standard of excellencies for any class of animals, as witness the great battle of the Bates and Booth types of Shorthorns, and still later of the Scottish type of the same breed. Further, exhibitors as a rule are not in a favourable position to allow them to judge calmly and justly. Bearing in mind the very great care now exercised in the selection of judges for all the principal shows, it is but rarely that an incompetent man is called to act, and more rarely still do such give a palpably dishonest decision from sinister motives. Honest, candid criticism is quite allowable—nay, desirable—but we have occasionally heard bitter remarks made which, we plead, might well have been spared. Our sympathies are wholly with the system of single judges, and we trust the time is not far distant when no other system will be allowed in any showyard."

Clover-seed.—It appears from a recent account in an English paper that among the seeds of clover sent to England the seeds of weeds are so largely present that the American Consul at Newcastle-on-Tyne has called the attention of the State Department at Washington to the fact.

The article referred to, which is headed "Seeds and Weeds," declares that as very large quantities of American clover seed find their way to Europe attention ought to be very forcibly directed to the results of a very exhaustive investigation made recently by the Ontario Agricultural station, which confirms those of several other experiments in the United States. To say nothing of Canadian exports, the United States exported in the first nine months of 1894 over thirteen million pounds of clover seed, at a value of about ten cents per pounds. This, and also much of what is sold generally in North America, is described as "one of the most impure seeds now on the market." The examination shows that in cleaned alsike there were more than nine per cent of weed seeds, chiefly sorrel, while in red clover there were six percent. In the case of alsike this means that in one ounce of seeds and in the six pounds used for an acre of land no less than 180 weed seeds and the six pounds used for an acre of land no less than 700,000 weed seeds. This is not the whole exposure, for it was found that some of the more unscrupulous seedmen make a practice of grinding up quartz, drying, sifting, and dyeing it, and then mixing it with clover seed. Nearly all examiners that have looked into the matter join in warning American and Canadian farmers to beware of low-priced seeds, to deal with none but responsible and respectable merchants and to have samples of their seeds tested and examined at an experiment station before sowing. With the exports from America, indicated above, the farmers of the United Kingdom are warned that they ought to be equally careful in their purchases of clover or any other seeds from America.

The yield of Cereals.—Last week we printed the preliminary Agricultural Produce Statistics of Great Britain for 1894, issued by the Board of Agriculture, somewhat earlier than usual. The yield of wheat is put at 30.69 bushels an acre, which is less than the estimates made in some quarters just after harvest, but very close to our own early reckoning. The yield

compares very favourably with the deficient one of 1893, and is nearly a bushel and a-half above the average of the past ten years. Similarly, the yield of 34½ bushels of barley is about as much above the ten years' average. The oat crop comes out best of all, with 41.64 bushels an acre, or 3.84 bushels above the ten years' average, and higher than the yield of any year since the official statistics were first collected, in 1884.

In the following table we compare the yield in Great Britain in 1894 with that of 1893 and with the ten years' average:—

Excess in 1894				
1894	1893	Average	Over 1893	Over ten yrs.
Bush.	Bush.	Bush.	Bush.	Bush.
WHEAT.				
30.69	25.95	29.25	4.74	1.44
BARLEY.				
34.50	28.69	32.98	5.81	1.52
OATS.				
41.64	35.59	37.80	6.05	3.84

During the ten years preceding 1894 wheat has four times been more productive than it was last harvest, the yield having been 31.31 bushels per acre in 1885, 32.07 in 1887, 30.74 in 1890, and 31.26 in 1891. Barley exceeded the latest yield in 1885, when it was 35.11 bushels an acre; in 1890, when it was 35.02; and in 1892, when it was 34.61. Oats, as already stated, have beaten the record of the period of official statistics, the nearest approach to the latest yield being 41.40 bushels an acre, produced in 1890. But, although the yield of 1894 comes out so well, we fear that, if only marketable produce were reckoned, wheat and barley would show much less respectable averages.

Household-Matters.

Now that the festive season is over, and only pleasant memories of it remain, it behoves us all to try our very best to make the year 1895 a successful one.

Seeing that it is undoubtedly the duty, as it ought to be the chief pleasure, of every woman to make the home, of which she is the sun and centre, as bright and happy as possible, any little worries and perplexities which may be looming in the future must be thought over and dealt with in secret, so that they may not in any way interfere with the cheerfulness and happiness of the home life. A housewife and mother who, in spite of the many demands upon her strength and patience, is still brave enough to carry about with her a cheerful smiling face is truly an unspeakable boon and comfort in a household, and never fails to spread an influence for good upon all those around her, from the tired, hard-working, and often disheartened husband and father to the youngest little prattler in the nursery. Let us all, therefore, aim at being such, and try our very utmost to make this year one of the brightest and best we have ever spent.

Practical.—Turning from the more sentimental phase of the past which is so full of its own especial charms, we must utilise the remainder of our space in considering some of the more mundane, practical features of this month. If snowy weather comes, as the majority of us are hoping it will, on account of its bracing, healthy effects, and mothers are troubled in conse-

quence with no end of drenched boots and shoes, soaking wet skates, leggings, &c., let me recommend the following remedies, which I have proved to be most effective. The boots and shoes, when thoroughly wet through, should never be placed near the fire, as is too often done, as then the leather dries so hard, and is very liable to crack; but first turn them up so as to rest on one edge of the sole, and set them in a corner of the kitchen until the wet has all dripped from them, then rub them thoroughly in every part with dubbin, which is one of the best things ever invented for keeping leather soft; then, when required for use, there will be no trouble about get-

point, as then the water naturally runs off at the tips instead of settling in the little circle where the wires are fastened; this latter being a most destructive business, invariably ending in the ribs of the umbrella becoming rotten and breaking loose from the top long before their time.

Prevention better than cure.—Prevention, to my mind, being decidedly better than cure, I want to give my readers two recipes, the real value of which I myself have tested many and many a time. One is a remedy for sore throat, or for a tiresome tickling kind of cough caused by a feeling of irri-

safety lies in a simple pad or shield made as follows:—Cut some soft fine flannel, arranged in a double layer, into the size and shape of an ordinary chest preserver, and between the folds spread a thin layer of dried and sifted mustard; then quilt the flannel together in small diamond shapes, after which we bind the pad round with soft silk binding, sew on strings to tie about the neck, and the little safeguard is all ready for use. It should be worn next the skin, and, if made of really good flannel, no feeling of soreness or irritation will ever be felt. In the case of one of my own boys, now grown up into quite a strong, stalwart fellow, this simple thing has proved of such marvellous good that I feel constrained, out of sheer gratitude, to tell it out to others in hopes that it may effect for them like happy results.—*Ag. Gazette*

MARIE.

A Lady's Skirt.—This skirt is of the very latest style brought out, and it takes quite a clever person to put on fashionable trimmings at the bottom of the it. Instead of being quite straight like the old skirt this one curves out a little starting a very little at first from the belt down, thus giving more fullness to the skirt, and looking much nicer, as it does not cling as closely to the figure as did. The Bell, And those who have had to do without a pocket for such a long time, can now once more avail themselves of that useful receptacle; there is no greater discomfort to my mind than a skirt without a pocket. The new trimming can be put on and varied in so many ways. In the illustration it is just a piece of striped goods cut on the cross, the other two patterns are more intricate and will prove quite a task for an amateur in dress making, but, with care, the result will be fashionable and pretty. An old dress that is worn out at the bottom might be lengthened out and look well if a band of some suitable colour is put on it; plaids are the best, but the pattern must not be too large or too bright in colour, the duller the better for an old dress. Cut out a paper pattern, it will save no end of trouble, and do not fail to baste the band well on the skirt before starting, then place your paper pattern on the skirt and run a thread to mark the lines of the top, cut away the goods and put on the braid being careful to turn in or cover the edge well.

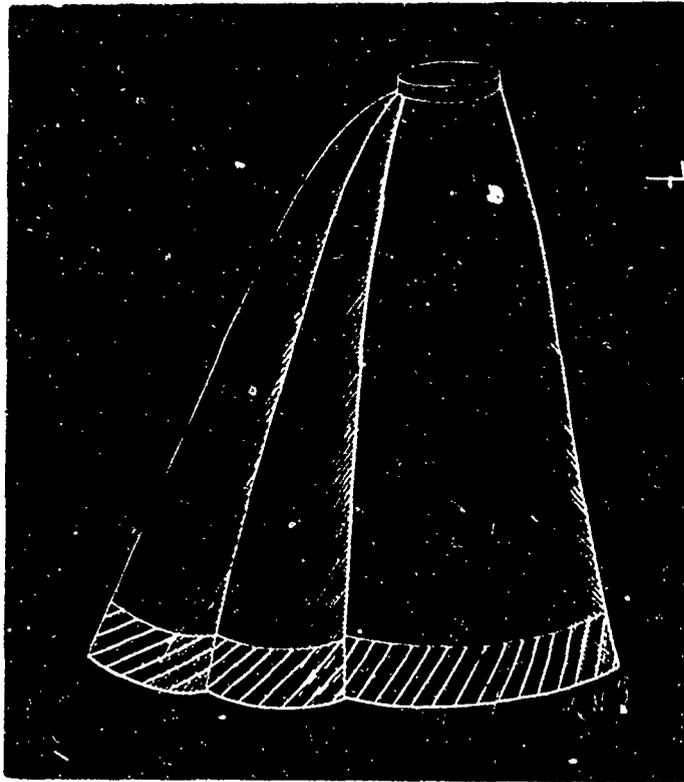
The front width of the skirt is cut just to reach the hip, then a gore, and one large or two smaller ones for the back so as to make a nice full skirt.

Stewed Tongue and Tomatoes.—Wash and prepare a large tongue, let it soak during the preparation of the gravy.

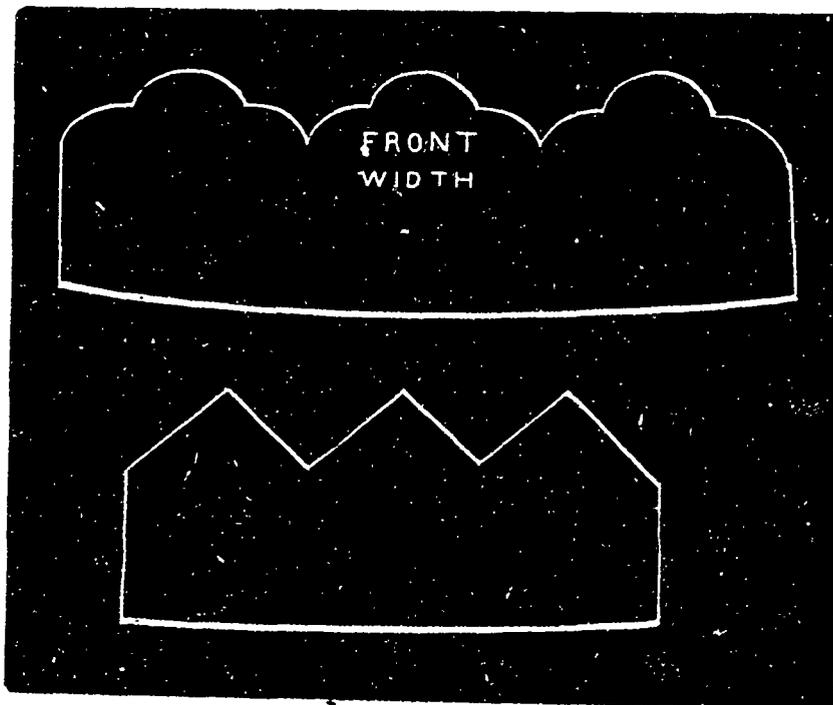
One large onion cut up and fried till quite brown without burning, now add enough water to this just covering the tongue, which has been put into a saucepan not too large, put the tongue in a curve, or you will have more gravy than you want, stew till quite tender, so much so that a fork will pass easily through it.

One can of tomatoes stewed down till quite thick, pepper and salt, and a very little spice if liked. Skin and keep the tongue hot while the gravy from it is added to the tomatoes, and well boiled down till quite thick, put the tongue on a very hot dish and pour the tomato sauce over it.

This dish can be varied by cutting up and stewing any vegetable liked with the onion and tongue.



A NEW WINTER SKIRT.



ting them on, and complaints about hurt corns will never be heard. Skates, and leggings too, should never be left lying in a wet condition, but should be rubbed dry at once with a soft clean cloth, and afterwards be well saturated with dubbin or pure saltless oil or fat of some sort, thus rendering equal to new.

Care of umbrellas.—Umbrellas, when they get thoroughly soaked, should be turned upside down and allowed to rest on the handle instead of on the

tation in the throat; and the other is a sort of shield or protection to a naturally weak, sensitive chest—a trouble which is only too common in this very variable climate of ours. For the former take equal quantities of pure glycerine and strained lemon juice, and, after mixing thoroughly, administer a teaspoonful at a time, when a very speedy sense of relief will be experienced.

For a week chest, subject to attacks of bronchitis or similar complaints, a splendid protection and means of

Jumbles.—Half pound of flour.
Six ounces of white sugar.
½ pound of butter.

As much carbonate of soda as will lie on a 10c. Rub the butter and half the sugar into the flour and soda, beat one egg with 20 drops of lemon essence and about a teaspoonful of milk, mix altogether and roll out the cakes with the remainder of the sugar. Cut into any shape you please and bake on a hot tin in a quick oven.

Little household helps.—A very good cement for sealing jars is made of one pound of resin, one ounce each lard, tallow and beeswax. Melt and stir together, and use hot.

To clean pots, kettles and tins: Boil a double handful of hay or grass in a new iron pot, before attempting to cook with it; scrub out with soap and sapollo or any good scouring material; then set on full of clear water, and let it boil half an hour. After this you may use it without fear. As soon as you empty a pot or frying-pan of that which has been cooked in it, fill with hot water and set back upon the fire to scald thoroughly. New tins should stand near the fire with boiling water in them, in which has been dissolved a spoonful of soda for an hour, then be scoured inside with soft soap, afterward rinsed with hot water. Never set a vessel away in the pot closet without cleaning and wiping it thoroughly. If grease be left in it, it will grow rancid. If set aside wet, it is apt to rust. To prevent metal from rusting, melt together three parts of lard and one of resin, and apply a very thin coating. It will preserve Russian iron stoves, pipes and grates from rusting during summer even in damp situations. The effect is equally good on brass, copper, and steel.—(*Farm and Home.*)

To grow a hyacinth in a sponge.—Put a large sponge in an earthen or china bowl shaped vessel, imbedding the bulb in the sponge. Keep the sponge saturated with water, and after the bud is started in the center sprinkle the rest of the surface with grass seed, which will soon make a green bed around the plant.—*Home Queen*

Substitute for putty.—A cheap and effective substitute for putty to stop crack in woodwork is made by soaking newspapers in a paste made by boiling a pound of flour in three quarts of water, and adding a teaspoonful of alum. The mixture should be of about the same consistency as putty, and should be forced into the cracks with a case knife. It will harden like papier maché and when dry may be painted or stained to match its surrounding, when it will be almost imperceptible.—*St. Nicholas.*

Cure for Corns.—Mix nine parts of salicylic acid with one part of extract of Cannabis Indica and forty-eight parts of collodion. After bathing the feet in warm water, apply this mixture to the affected parts with a camel's hair brush. Do not resume the stocking until the foot has become perfectly dry.

A Good Kalsomine.—To make good kalsomine, soak one pound of white glue over night, then dissolve in boiling water, and add twenty pounds of Paris white, diluted with water, until the mixture shall be of the consistency of thick milk; to this any tint may be given that is desired.

Cleaning Silks and Ribbons.—Silks and ribbons may be cleaned and made to look like new by sponging them with equal parts of strong tea and vinegar. Iron with a not too hot iron.—*Ladies' Home Journal.*

Silverware.—Is very often damaged by improper cleaning and rough usage. It is unsafe to use the many nostrums sold by peddlers, as most of them are too coarse and too cheaply prepared. Powdered whiting moistened with hartshorn makes an excellent polish. The moistened whiting should remain on the silver until dry; then it should be rubbed off with a piece of chamois, and if properly done, the silver will look beautiful. A bit of soft cloth slightly wet in water, and then dipped in baking soda, is also safe and very effective in brightening spoons and knives. Careful washing will, however, obviate the necessity of silverware being often polished. In washing silver a little castile soap may be added to the water; and properly dried with a soft towel, the ware will remain bright for several weeks. To keep silver bright which is not in daily use, each piece should be wrapped in tissue-paper, placed in a cotton flannel bag, and kept in a tight drawer, where neither dampness nor vapors can reach them.—*A. C. B. Meridian N. Y. Country Gentleman.*

NOTES FROM "THE VT. FARMERS' ADVOCATE."

(By Dr. Hoskins.)

One of the unforeseen troubles with the orchards of the agricultural colleges is said to be that the students steal the fruit; so that as regards new varieties on trial it is almost impossible to get even one fair specimen; and thus impossible to form a judgment on the merits of new or untried varieties. It seems probable with these institutions that their experimental orchards may have to be set in another county. One would suppose that a competent instructor might be able to excite sufficient interest in the study of pomology to enlist the students as protectors, rather than as destroyers of what are practically the text-books of the school. May it not be that most of the evil arises from giving these institutions the name of "college," and thus making it seem obligatory on the "students" to keep in line with the classes of the literary schools in rowdiness and ruffianism. This name of "college" was hardly less than a curse, at birth, upon our industrial schools. Their whole plan will have to be remodeled from the ground up. The fact is that they have hardly touched the ground at all, as yet. We can but long for some great common-sense mind to lead the way to a total reconstruction of these unfortunate institutions. It seems rather queer to see a western agricultural college sending to an eastern orchardist for specimens of fruit from trees received from that very college. There can be very little of what the French call *Esprit de Corps* in the students of such a college.

When we come right down to the hard facts, it would probably be found that very few of the pupils of such institutions are there to learn either agriculture or horticulture. They are taking a fish dinner because they cannot afford beef; and why should they not take a fruit dessert when it is handy?

In the cold north we have but one native nut tree that promises to be of commercial value—the butternut. The hazelnut also grows as far north as the St. Lawrence river, at least, and this can not doubt be in time improved so as to rival its close relative, the filbert of Europe. (1) In quality, the butternut is fully the equal of the "English walnut," but its rough outside is unattractive and unpleasant. Still we find that there is a ready sale for the nuts at from one to two dollars per bushel. There is a wide difference in the size and quality of the nuts, and to some extent also in the degree of roughness, and we think that by cultivation there is reason to suppose that much smoother varieties may be produced, and these may be propagated by grafting.

It does not take long to bring a seeding butternut to bearing. About sixteen years ago we planted a few butternuts in the rows with apple-seed planted to grow stocks for grafting, and these trees have been bearing very fine nuts for several years. There is a great deal of difference in the size of nuts on different trees; and the larger ones can readily be grafted upon trees bearing inferior ones. The whole business is very simple, and we believe that growing butternuts will pay, at least as well as growing apples. At any rate we do not find any difficulty in getting \$1.50 per bushel at the stores for what nuts we can spare. The whole subject is worthy of more attention than it has yet received. Can any one tell us how far north in Vermont the chesnut is found to grow and bear well?

On the subject of "Losses in Skimming" H. J. Waters, professor of agriculture in the Pennsylvania State college experiment station, is quoted as follows: "The Pennsylvania State College Experiment Station has just concluded an investigation of the loss of butter fat in the skim milk from separators in nine prominent creameries in the State. The skim milk from eight of these creameries was found to contain slightly more than three-tenths of one per cent, of butter fat. One creamery operated by a student in last winter's Creamery Course of the Dairy School, not included in the above average, showed a loss of one hundred and seventy-five thousandths of one per cent.

On the assumption that these creameries handle 10,000 pounds of milk per day, we have, in the case of the eight creameries, a daily loss of 30.8 pounds of butter fat, worth, at 25c. per pound, \$7.70.

If these operators had been skimming as closely as the one who had taken the Dairy School instruction there would have been a net saving of \$3.07 worth of butter fat per day.

One of these creameries was handling 7,000 pounds of milk per day and losing an average of three-tenths of one per cent. of butter fat in the skim milk—making a daily loss of 25 pounds of butter. The entire butter output of the creamery was bringing 40 cents per pound, which makes the daily loss in the skim milk \$10.

These are not believed to be exceptional cases, as these creameries are equipped with the latest patterns of separators and are managed by experienced men.

The average loss in the skim milk for the entire Creamerymen's Course—

(1) To grow filberts successfully, it is necessary to learn how to prune the tree; no description can teach it, and it is worth a voyage to England to see the work done in a Kent plantation.—Ed.

six weeks—last winter was eight hundredths of one per cent. The milk was purchased from the farmers in the immediate locality of State College and was, for the most part, from cows far advanced in milk. Upon this basis there would be a difference in the yearly loss to a creamery handling 10,000 pounds of milk per day, when doing work equal to that of the students in the Dairy School as compared with that of the average of the eight creameries examined, amounting to \$20.80, as follows:

	Butter fat in skimming	Value at 25 cents per lb.	per cent fat in skim milk
Dairy School	2,910	\$ 7.30	.08
Average of eight Creameries	11,242	2,810	.308
Difference	8,322	2,080	.228

It is not stating the case too strongly to say that enough money is unnecessarily wasted each year by the seven hundred creameries in Pennsylvania to defray the expenses of a representative from each of them to take the four years' Course in Agriculture at the Pennsylvania State College. There is no good reason for allowing this loss to continue when it may be largely remedied by a Course of six weeks and a total expenditure of forty or fifty dollars at the Dairy School."

C. H. Nelson, the well known breeder of Maine, speaking of the thoroughbred horse, remarks that "there are mighty few animals that carry the hot thorough bred blood close up that will do to race. With the most of them you have got to part your hair in the middle, balance yourself thoroughly in your sulky, being careful about spitting on both sides at once, or they go all to pieces." What good are such horses anyway, except as gambling instruments with which fools and their money are to be promptly and scientifically parted? And when you get beyond a good driving, saddle, or working horse, what is there to the whole business but fraud, and final misery, to every one who is fool enough to engage in it?

THE RIGHT BACON HOG.

A Canadian farmer, writing to the *Breeder's Gazette*, says that the Tamworth, (1) and not the large Yorkshire, is the ideal boar to breed from for nice lean bacon. He says that in his district only one man has managed to keep up the reputation of the Yorkshires. Every one at all familiar with the facts knows that for many years Berkshires, Chesters and Poland-Chinas, and crosses with these, have held the field and supplied the market. A few breeders have tried to introduce the Yorkshires, but the farmers as a class have rejected them. A prominent breeder not long since inspected one of the largest herds of Yorkshires in Canada and found from 40 breeding sows 120 cull pigs. In favor of the Tamworths he says that a few years ago, J. L. Grant & Co., Pork packers, Ingersoll, made their first importation of 40 boars and 20 sows of breeding age. Others have since imported this breed extensively and these imported pigs and their progeny are now all over this country. It is true that at first they did not

(1) Mr. Andrew Dawes, of Lachine, tells me that he finds I was right, two years ago, when I told him the Tamworths, except as a cross, would never pay.—A. R. J. F.

appear acceptable, but their crosses proved excellent and soon attracted the attention of the most progressive farmers. The Grant Packing Co., having accomplished their purpose of interesting the farmers in the breed, have discontinued breeding, but are offering prizes at a number of fairs to encourage the raising of that kind of pigs. One of the largest shippers in Western Ontario recently remarked:—"I would rather ship a car-load of half bred Tamworths than of any other breed."

FOOD FOR THOUGHT AND—PIGS.

Prof. A. A. Mills, in the Utah Bulletin, No. 28, summarizes his experiments in the production of pork as follows:

1. Pigs allowed to roam at will over eighteen acres of good pasture, and fed all the grain they would eat, made the most rapid growth, and apparently made the best use of food.

2. Pigs fed grass and grain in a small yard made a more rapid growth than those fed grain alone, and apparently made a slightly better use of the food eaten.

3. Green grass appears to be of great value as an appetizer.

4. Pigs kept on grass alone made a slow growth—so slow that it would require two seasons for maturity—making the profits very doubtful.

5. Pigs kept in a movable pen or pasture ate within seven pounds as much grain as did those in a yard with grass, but did not make as good use of it.

6. Exercise seems to be necessary to increase consumption and probably digestion, that growth may be rapid and economical.

REGULATIONS FOR STABLE COMFORTS.

I am thoroughly convinced that by far too large a number of winter milch cows have too much out-of-door exercise and exposure. They need very little of the former and none of the latter when comfortably housed for the winter. A few hours once in two or three days in the sun on the sheltered side of the barn or tight high yard fence are sufficient. I would not allow them to be out in a storm, especially rain, in cold weather. I think it better for them to go a longer time without exercise than to have it under such circumstances. Stable comforts almost do away with the need of exercise; if a cow has these she will give as large returns of milk in winter as in summer.

1. Provide a warm stable with no drafts of cold air. That the person in charge should be warm enough with his coat off is a good rule to go by. 2. There should be plenty of room for each cow in her stall, the size of which should vary according to that of the animal. 3. The bed should be made of clean litter, knee-deep, and then a little more might be added. The advantage of this cannot be emphasized too much. (1) 4. The stables should be clean. No stock can do their best in a filthy stable. No man is fit to care for them who allows such a condition. All dirty bedding and filth should be removed night and morning, and replaced with fresh, clean straw. 5. The stable should be well lighted. Cows need light. 6. The cows should have clean and moder-

(1) Good.—Ed.

ately warm water twice a day (1). 7. They should get a bushel of good ensilage night and morning with what nice mixed clover and timothy hay they will eat up clean. I always feed bran liberally at all times of the year for milk, but in winter some heartier kinds of mill feed are desirable in connection with it, such as corn meal, or linseed, or cotton seed meal. Regularity in care and feeding is a very important element of success. So are quietness and gentleness in and about the stable. I find when these rules are carefully observed in minute detail, that any cow will be willing to do her best. And if in ten months out of twelve (which is as long as a cow ought to be required to give milk) any one fails to produce 6,500 or 7,000 pounds of milk let the butcher have her.—Hoard.

A. D. MILLS.

BREEDING AND CARE OF SWINE.

FIRST PRIZE AT SHEBBROOKE, 1894.

One cannot be too careful when laying the foundation for a permanent herd of breeding swine. Equally good judgement should be exercised by the owner, whether it be his intentions to breed pure bred stock, or for butcher purposes; in either case the selection of the boar should be made from the sow which has thrown regularly large litters of pigs. He should be well boned, with plenty of hair, indication of strength and character, both of which are essential in making it possible to impress his likeness upon his get. Sows like the boar should be chosen from large litters and deep milking mothers, and only the best and select of each litter should be retained for breeding purposes, (where large numbers are raised, it is wise to mark the best sow pig of the litter while on the sow). (2) The sow should be straight on the back and long between shoulder and ham, in order that she may have plenty of udder room for the rearing and nursing of her young. It is well to see that she has a sufficient number of udders to nurse large litters, and it is always advisable to select from families of a quiet and mild disposition, although good care and kindness will do much to establish this good quality.

From my experience, I would recommend for butcher purposes the rearing of cross bred pigs; the results of a cross between the Berkshire and Yorkshire will be found to be very satisfactory, so far as the size and feeding qualities are concerned there is no difference, which way the cross is made; but for economical management, I prefer Berkshire sows, as they are better rustlers and will do much better during the summer months on grass than the Yorkshire. In every instance only pure bred sires and dams selected as above should be used.

In the care and health of animals I think we cannot do better than to follow the dictates of nature, and when the spring opens and the clover is about four inches high every pig old and young should be out upon it. Such a place can always be provided convenient for feeding: by changing on to new seeded pieces of clover

(1) It should be at their command throughout the 24 hours. Look at the Townships. Ed.

(2) A good pig-man, like a good shepherd, recognises each individual without marking. Ed.

each year, which can be fenced with a portable fence made either out of board pannelling with a pointed post at each end which is driven into the ground and panels fastened together at the top with a piece of fence-wire, or in some instances possibly more economical by the use of web fence-wire which can be rolled and used with less expense. By the use of this portable fence the plot of clover may be subdivided into such divisions as may be found necessary for the welfare of the pigs. In all instances pigs of each size should be kept in enclosures by themselves. It will always be necessary to re-sort once or twice a month putting the stronger and larger ones together each time.

When the young pigs are first taken from their mother, careful attention should be given not to put strange litters together, as they will found to do much better when kept by themselves for some little time. Aged breeding sows will find quite sufficient nourishment on clover and good water during the summer months between litters. While nursing pigs, they should be fed upon light bran and bone producing food given to them in slop; care should be taken to feed very lightly the first week to prevent milk fever, in fact if they are permitted to farrow out side, the proper place for them, the clover will be found to be sufficient. Weak young pigs from any cause are better put out of the way. When they are about three weeks old they are very often taken with the scours and will thus jeopardize the whole litter. Young sows coming on for their first litter should receive some extra feeding in addition to the clover.

Pigs should be weaned from six to eight weeks of age, (1) first having had an opportunity to be taught to feed by giving them food in a small trough which is so arranged that the mother cannot get at it and that the young ones can.

Shoats on grass when skim milk or whey is used, should have an additional ration of one to two lbs each per day, according to their size, of barley, corn, or wheat or a mixture of the three as may be found most economical to the purchaser. The herd of breeding sows during winter between litters can be well and economically kept in a covered yard or shed with a good liberal allowance of uncooked turnips with the water conveniently placed. Sods should be cut and housed to be fed to the young pigs and sows during the winter. A more expensive substitute would be charcoal or wood ashes and salt mixed half and half: every pig should have this at least once a week during the winter months.

It is absolutely essential for winter rearing and feeding that pigs should be warm, dry and furnished with plenty of litter. I would recommend a pen twenty-five feet wide, of sufficient length to accommodate the number of pigs required.

Passage through the center (5½) five and one half feet wide, with pens on either side of the walk six feet in width, divisions between each pen being made with two inch plank dropped in between standards without being nailed; making it possible to put two or more pens together if desired.

The bed at the rear of the pen coming out about half way should be raised six inches above the floor of the sty, with a board eight inches wide setting up edgewise three fourths (¾) of the way across the pen and on the floor of the bed to prevent the pigs from rooting the straw from off the nest.

(1) A lesson we have been trying to teach for some 18 years.—Ed.

The trough four feet six inches (4 ft. 6 in.) in length sits in the front of the pen parallel with the walk. The partition forming the front of the pen, the length of the trough, should be hung on hinges to swing inward covering the trough, keeping the pigs back while the food is being poured in. The other eighteen (18) inches of the front of the pen should be a door-way through which the pigs are driven in and the pens cleaned out, which should be done every day. It can very easily be performed by using a wheel-barrow running along the passage and the dung may be dumped under a covered shed out side at the end of the pen. The floor should slant from the outer wall of the building to the passage on either side. The floor of the walk itself should be crowning, making the centre three inches highest with a gutter on both sides of it running the entire length of the pen; by this means all the dampness and water will find its way out. The floor should be made out of three inch matched plank.

If the pen does not exceed sixty feet in length it will be found most convenient to place the meal boxes and heating apparatus at one end. If of greater length I should prefer an "ell" built from the centre with grain storage over head, walls to be eight feet high, double boarded, sheathed inside, this will leave straw storage over head in the pigs pen.

Ventilators should go up from the walks through the roof every fifteen (15) feet, by having a door on the side of the ventilator opening into the loft. Straw used for bedding can be put down into the passage; the ventilator should be two foot square when it leaves the pens but may pass through the roof at a smaller size. All pens should be heated during cold weather, either by steam or stove, it does not pay to feed the climate of this country from November until May.

In fattening pigs, punctuality in feeding, warm food, prepared at least four hours before feeding, of such meals as may be economically purchased, such as barley, corn, peas or wheat, fed on a basis of two lbs. meal to the one hundred (100) lbs. live weight which will maintain growth, adding to this such quantity as the pigs will eat clean, say, an average of four or five (4 or 5) lbs. per pig per day which does not exceed one hundred and fifty (150) lbs. live weight. Pigs should all be slaughtered as soon as possible when their live weight reaches one hundred and seventy-five (175) lbs. each.

Such character of treatment as will produce the greatest degree of contentment will make the cheapest possible pork, for it must not be forgotten that in the fattening of swine snoring is wealth.

As I make a practice of weighing the meal I feed my pigs each day, and having for some time weighed my pigs once a week, I take the liberty to attach some of the results to this paper. These pigs would weigh from eighty (80) lbs. to two hundred (200) lbs live weight. When the quantity of meal falls below three and one half (3½) lbs. for one lb. gain, skimmed milk was added to the ration. The rule being that the smaller pigs made the largest gains for the feed.

This attached sheet will give you an idea of the method I have adopted in order to keep an exact account of what my pigs are doing, and trust it may be of use to others.

I am yours truly,

R. H. POPE.

WEIGHTS OF PIGS IN PEN No. I. Aug. 21st. 1893.				CONTINUED WEIGHTS OF PIGS IN PEN No. I. Aug. 28th. 1893.				CONTINUED WEIGHTS OF PIGS IN PEN No. I. SEPT. 11th. 1893.				THIS SHEET SHOWS WEEKLY RESULTS AND TOTALS.																										
No. of Pens.	No. of pigs in Pens.	Weight of Pigs.	Gain on each pen of Pigs.	REMARKS.	No. of Pens.	No. of pigs in pens.	Weight of pigs.	Gain on each Pen of Pigs.	REMARKS.	No. of Pens.	No. of pigs in Pens.	Weight of pigs.	Gain on each pen of Pigs.	REMARKS.	Date of weight.	No Pig in Pens.	No. lbs Gained.	from	to	Lbs meal fed.	Lbs meal to make 1 lb Pork	fed Barley & Wheat.	fed Barley, Wheat & Oats	fed Barley, Wheat & milk	" " " " corn.	" " " " " "	" " " " " "	" " " " " "	" " " " " "	" " " " " "	" " " " " "	" " " " " "						
1	3	397	17		1	3	434	37		1	3	489	55		Sept 18th '93	116	1140	Sept. 18th.	3283	2.88	"	"	3283	"	"	"	"	"	"	"	"	"	"	"				
2	3	303	28		2	3	330	27		2	3	353	23		25th "	110	897	" 25th	3177	3.54	"	"	3177	"	"	"	"	"	"	"	"	"	"	"	"	"		
3	3	357	23		3	3	375	18		3	3	399	31		9th Oct.	113	1765	Oct. 9th	4670	2.65	"	"	4670	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
4	3	375	30		4	3	395	20		4	3	408	13		24th Oct.	111	1522	Oct. 24th	5850	3.81	"	"	5850	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
5	3	373	18		5	3	395	23		5	3	425	30		31st "	111	869	Jan. 31st	2940	3.38	"	"	2940	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
6	1	306	28		6	1	311	5		6	3	336	25		2nd Jan.	114	596	Jan. 2nd	2885	4.87	"	"	2885	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
7	3	284	17		7	3	307	23		7	3	352	45		9th "	87	711	" 9th	2345	3.57	"	"	2345	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
8	3	292	2		8	3	320	28		8	3	371	56		16th "	88	650	" 16th	2298	3.53	"	"	2298	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
9	3	400	21		9	3	435	35		9	3	501	61		30th "	83	662	" 30th	2392	3.61	"	"	2392	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
10	3	385	20		10	3	423	38		10	3	475	42		27th Feb.	88	826	Feb. 27th	2682	3.24	"	"	2682	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
11	3	395	24		11	3	450	45		11	3	514	61		Mar. 6th	87	641	Mar. 6th	2576	4.	"	"	2576	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
12	3	410	25		12	3	477	37		12	3	514	67																									
13	3	385	22		13	3	427	32		13	3	491	64																									
14	3	445	23		14	3	492	47		14	3	554	62																									
15	3	455	25		15	3	500	45		15	3	555	55																									
16	3	315	15		16	3	350	35		16	3	390	40																									
17	3	347	10		17	3	385	38		17	3	419	33																									
18	3	320	26		18	3	340	20		18	3	380	40																									
19	3	335	10		19	3	360	20	One poor pig n this lot	19	3	396	36																									
20	3	297	45		20	3	304	17		20	3	335	31																									
21	3	387	11		21	3	438	41		21	3	487	49																									
22	3	421	21		22	3	485	54		22	3	523	38																									
23	3	270	16		23	3	292	22		23	3	333	41																									
24	3	205	15		24	3	233	28		24	3	275	42																									
25	3	230	25		25	3	252	22		25	3	282	30																									
26	3	260	23		26	3	292	32		26	3	325	33																									
27	3	311	31		27	3	379	35		27	3	353	61	moved to 38.																								
28	3	220	13		28	3	250	30		28	3	303	53																									
29	3	288	31		29	3	308	29	Two moved to p n 39	29	3	363	55																									
30	3	280	22		30	3	307	29		30	3	360	53																									
31	3	285	30		31	3	308	23		31	3	377	69																									
32	1			One sick pig.	32	3	245	40		32	3	320	72																									
33	3	220	20		33	3	244	21		33	3	300	56																									
34	3	215	15		34	3	255	10		34	3	314	59																									
35	1	305	25		35	4	430	25		35	3	314	66	moved to 38.																								
36	3	370	35	Should be thinned out.	36	3	205	18		36	3	242	37																									
37	1	287	26		37	4	310	23		37	3	295	63	moved to 38																								
38	3	490	20		38	3	528	38		38	3	250	from pens 27, 35, 37.																									
39	1	190	15	Kill.	39	2	195	12	From 36.																													
To al.	115		819		116		1116			116		1797																										

2720 lbs. meal fed during week Taking 3.44 lbs meal to make 1 lb. Pork.

3151 lbs. meal fed during week. Taking 2.72 lbs. meal to make, lb. pork.

6469 lbs meal fed during two weeks. Taking 3.59 lb. meal to make 1 lb pork.

Garden and Orchard.

MONTREAL HORTICULTURAL SOCIETY

AND

Fruit Growers Association of the Province of Quebec.

Montreal, 12th January 1895.

In continuance of the somewhat rough outline partly shadowed in the article commenced p. 18, volume 17 of the *Journal*, the principal desire of the writer is to foster a more intense love amongst our rural inhabitants of beautifying their surroundings horticulturally. This can be accomplished by giving the matter first due consideration; and afterwards putting the plans decided upon into practice. If the few hints thrown out in these lines on the subject will help in any way to encourage a few to make a start, the effort will not have been lost. As mentioned before, many of our farm houses and rural cottages are destitute of the smallest attempt of decoration which are within the reach of every one having a house in the country. For instance what is prettier than a vine clad verandah round the

south, east and west of such a house or cottage. It is the exception with cottages which are blessed with a verandah to have any ornamental vines planted on them. The bare wood work is in nine cases out of ten left unadorned. With the wealth of native plants suitable for this purpose together with numbers that can be added at comparatively small cost, the wonder is that they are not found in profusion round every cottage. A list of hardy climbing plants and climbing annuals suitable will be appended. A great many varieties of fruit trees and small fruits could with both pleasure and profit be cultivated on the sides and ends of our buildings. None of these being climbers they would require to be trained to such positions where they would have a very pretty effect. It is also probable that in such positions we could succeed with some sorts of fruits which are not hardy as ordinary standards. The finest apples, pears, plums, &c., are produced by this manner of cultivation in the gardens in Scotland, where not a few would fail to produce fruit at all if grown on ordinary standard form. With a verandah properly planted with beautiful climbing plants there is less need of shade trees in the immediate vicinity of the house or cottage. Trees, when they become large and are in too close proximity to the house or cottage, are always a source of dread during violent wind storms and are positively dangerous during such. Consequently, a tree in a better position

if planted further away from the building than its own height when full grown. It is easy to seek the shade and avoid the danger from trees planted too near to buildings. To commence beautifying the surroundings of house or cottage by planting vines, trees, shrubs and flowers, will open up and quicken the sense of all that is elevating and will awaken the desire to obtain a higher form of grace and elegance than has yet been obtained. What a grand effect would be produced if each and all of our rural residents would at once appreciate the joy and pleasure to be derived from a tastefully planted and neatly kept Garden and grounds. These may be of the most simple as to form, and of the most inexpensive as to variety, but they may be none the less beautiful through their simplicity or cheapness. The choice is almost endless in variety. How much happiness and pleasure is experienced in trying to give to our homes something of that grace and loveliness, something that will intensify our heart feeling to the darrest of all places, home? How can we better do our share in obtaining that happiness than by surrounding our homes with as many as we can accommodate of nature's beautiful flowers and fruits. To this end I know of no way where an effective beginning can be made to better purpose than our rural cottage verandahs, and for the purpose of encouraging those who may not know the vines

and other plants available for the purpose the following list is subjoined.

Hardy perennial climbing plants, or those suitable if trained on a verandah:

- Ampelopsis or American Ivy.
- Ampelopsis Voitchii, or Japanese Ampelopsis.
- Aristolochia siphon or Dutchman's pipe.
- This plant deserves a place everywhere for its beautiful clean insect proof foliage.
- Clematis—Virgins Bower.
- Clematis—Many garden varieties, all colors these are beautiful climbers and deserve a place in every collection.
- Lonicera sempervirens or Trumpet Honey suckle.
- Roses in Variety.
- Tender Climbers mostly annual sorts and require to be raised from seed. These may be sown in a box or flower pot in the window or in a hot bed in April.
- Cobea Scandens.
- Maurandya Barclayanat.
- Hardy Climbers seed to be sown in the open ground.
- Morning glory.
- Sweet peas.
- Tropaeolums or Nasturtiums.
- Japanese Hops.
- Cypress Vine.
- Hyacinth Beans.

With a selection from the above list a very pretty effect may be obtained.

(To be continued.)

ANNUAL REPORT OF THE SECRETARY TREASURER

OF THE

Montreal Horticultural Society and Fruit Growers Association, P. Q.
Year ending 30 Nov., 1894.

RECEIPTS.

Cash in Bank 1st December, 1893...	\$ 212 97
Government Grant	1,000 00
Subscriptions from members.....	744 00
Special subscriptions, viz:—	
Mrs. J. McDougall.....	\$25 00
Sir Donald A. Smith.....	50 00
W. W. Ogilvie, Hon. Pres.	25 00
Robt Mackay, Vice-Pres.	25 00
D. Williamson, President.	50 00
W. M. Ramsay, Vice-Pres	25 00
F. Roy.....	25 00
Wm. Ewing.....	25 00
Wm. Evans.....	25 00
Warden King.....	2 00
Hon. John S. Hall.....	10 00
H. Montagu Allan.....	10 00
D. Morrice.....	10 00
W. C. McDonald.....	10 00
A. A. Ayer.....	10 00
James Morgan.....	10 00
G. Cheney.....	10 00
J. Moore.....	10 00
A. Joyce.....	10 00
Montreal Witness.....	10 00
Stone & Wellington...	10 00
J. Currie.....	5 00
W. Woodhall.....	5 00
R. Reid.....	5 00
W. Paul.....	5 00
R. Mitchell.....	5 00
Geo. Hague.....	5 00
W. Mann.....	3 00
Directors and Secretary...	40 00
	\$478 00

Life Membership Fees.....	\$ 10 00
Receipts at September Exhibition..	371 25
Entries at Exhibition.....	4 50
Balance due Treasurer.....	51 36
	\$2,872 08

PAYMENTS:

Rent.....	\$67 50
Salaries	300 00
Expenses of Conservatory openings	63 10
Expenses of Report.....	91 94
Expenses of Exhibition.....	203 30
Prizes at Exhibition.....	1,457 75
Periodicals.....	1 00
Commissions collecting subscrip-	
tions.....	74 20
Insurance	4 70
Printing, Advertising & Stationery.	56 54
General Office Expenses.....	52 15
	\$2,872 08

Audited by A. F. RIDDELL,
Chartered Act.
The present financial position of the Society is as follows:

ASSETS:

22 Members' Subscriptions, considered good	\$44 00
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LIABILITIES:

Balance due Treasurer.....	51 36
Due to General and Notre-Dame Hospitals, being proceeds of last day of Exhibition.....	37 50
	88 86
Deficit	\$44 86

MEMBERSHIP.—The receipts from this source were \$744. If we had the amount of \$44 for subscriptions yet to come in we have \$788, an increase of \$32 over last year. In a city like Montreal we can hardly feel satisfied with this result; and a vigorous effort should be made by the incoming board to improve upon it.

SPECIAL SUBSCRIPTIONS.—It will be seen from the accounts that the Board again realized a large amount of revenue from this source. The amount contributed was \$478—a slight increase over last year, and the thanks of the Society are due to the lady and gentlemen who so generously assisted us.

CONSERVATORY OPENINGS.—Through the courtesy of the owners the follow-

ing conservatories were opened to members of the society and friends during the winter, viz:

- Sir Donald A. Smith, February 17, 24, March 17.
- Lord Mount Stephen, February 24, March 10.
- Lato Sir John C. Abbott, February 24, March 10 24.
- Mrs. Redpath, February 24, March 3.
- W. W. Ogilvie, February 10, 17, 25, March 3.
- Mrs. Robertson, February 17, 24, March 17.
- Andrew Allan, February 10, 17, March 10.
- H. Montagu Allan, March 10, 31.
- Lato Jas. Burnett, February 17, March 3, 17.
- R. B. Angus, February 10, 24, March 10.
- Wm. McGibbon, March 10, 24, 31.
- Mount Royal Cemetery, March, 3, 10, 17, 24, 31.

Registers were provided for the use of visitors, and the names recorded show that the privilege was largely taken advantage of.

EXHIBITION.—The annual Exhibition was held September 11th to 15th, in the Victoria Skating Rink. The value of prizes offered for competition was \$1,800 and the amount actually paid \$1,457.25—the largest sum in the history of the Society. The number of exhibitors was 59 and entries 1174. Of these 114 were in the amateur department. Compared with last year this shows an increase of nearly 50% in the department, which is an especially gratifying feature. The special feature of the exhibition was again the magnificent display of decorative and flowering plants. The exhibit of fruit was smaller than usual, but of a high class. Vegetables were about the same as usual; cut bloom was well represented, but the exhibits of Baskets, Bouquets, etc., left much to be desired. The judges, especially in the plants department, exercised much judgment in excluding from awards specimens of inferior quality. This course is to be commended, as only in this way can the society arrive at a higher standard of excellence in its exhibitions. The receipts at the door amounted to \$371.25, which was certainly disappointing, and much below our expectations. However there is a crumb of comfort in the fact that even this small amount is greater by 28 per cent than the average for the last 5 years in the rink. The following diplomas were awarded by order of the Judges and the Board of Directors:—To T. Holder Gardner to Jas. A. Cantlie, for group of Fuschias; To John Eddy Gardner to Mrs. Redpath, for specimen of Musa Ensete (Abyssinian Banana); To Frank Roy, Mount Royal Cemetery, for general excellence of exhibit; To T. McHugh, Gardener Forest and Stream Club, Dorval, for Table Seeding Tuberous Begonias; To George McWilliam, Gardner to Mrs. Josiah Lasell, Whittinsville, Mass., for a magnificent collection of Indoor grapes, and to James S. Cowle, Newport, R. I., for new seedling French Canna.

REPORT.—Early in the year was issued the sixteenth report of the Society containing many valuable papers in all departments of fruit growing and horticulture. The thanks of the Society are due to the gentlemen who so kindly furnished the articles and especially to the Gardener's and Florists' Club of this city who gave us many valuable papers.

JOURNAL OF AGRICULTURE.—At the beginning of the year permission was obtained from the Department of Agriculture to edit a portion of the

Journal as a Horticulture department; and arrangements were made to have it sent regularly to every member of the society. It is to be hoped that the incoming Board will carry on the good work that has been commenced in the JOURNAL OF AGRICULTURE.

FRUIT ADVISORY BOARD.—Through the assistance of the members of the Provincial Parliament we have established a Fruit Advisory Board comprising 28 members in all parts of the Province. This Board is established for the purpose of collecting information and for the interchange of ideas and experiments in all departments of fruit growing—but more especially apple culture. We were enabled to send them through the Experimental Farm in Ottawa various specimens of fruit trees, and have now sent each of them a circular letter containing questions as to the results of their experiments with these and as to their experience of, and information collected during the fruit season just ended. The replies to these questions will be tabulated and published in the next report.

HONORARY LIFE MEMBERS.—At a recent meeting it was resolved subject, to the approval of this meeting, that the Directors may by a unanimous vote elect as honorary life member any person who has rendered exceptional service to or conferred exceptional benefit upon the society—such to have all the privileges of ordinary members. In accordance with this resolution (always subject to the approval of the annual meeting), the Directors appointed as honorary life members the following, viz:—Sir Donald A. Smith, W. W. Ogilvie, Robert Mackay, James Morgan, Wm. Ewing, Warden King, John Dougall, of *Witness*, Hugh Graham, of *Star*, G. Cheney, Mrs. John McDougall and Richard White, of *Gazette*.

JUVENILE DEPARTMENT.—At the last meeting of the Directors it was resolved on the motion of Mr. Roy to recommend to the incoming Board the advisability of establishing a Juvenile Department with a reduced membership fee; and in order to promote the success of the scheme to supply each of the Juveniles with a plant—say a tuberous begonia with printed instructions how to grow it, and to offer prizes at the annual exhibition for the best results. The mover, Mr. Roy kindly offered, should the recommendation be adopted, to furnish one half of the plants at his own cost.

The above is in brief the result of one year's work. Financially we have lost a little ground, but in other directions we have gained. It seems to be a most difficult matter to arouse any enthusiasm in our city in horticultural matters; but much has been done in the past and I think that by untiring effort much more will be accomplished in the future.

Respectfully submitted,
THOS. WILLIAMSON,
Secretary.

LILLAS OR LILIES. NAT: ORD: LILIACEÆ.

This genus, type of an extensive order, contains upwards of sixty species. Nearly every country in the northern hemisphere produces some species, but it is only during the last fifteen years that some large collections have been grown on this continent for commercial purposes. The greatest need now for Lily culture is a thorough knowledge of their requirements, as they are susceptible to great improvement under right treatment and to quick decay under bad treatment.

CULTIVATION.

Lilios, with few exceptions, are of easy culture, especially so after they are established. In the open ground, they are not attacked by insects, they are in fact shunned by all destructive garden pests and they stand drought and excessive rains without injury. Although not always necessary to obtain success, a few points here will advise the planter.

1st. Plant the bulbs five to six inches deep in deep, mellow well pulverised soil

2nd. Keep the soil well worked and free of weeds.

3rd. Good drainage is a necessity as nothing will injure the bulbs more than water standing round them.

4th. In planting, fertilizers and fresh manure should never be used. Old manure, well mixed with the soil is desirable with a handful of sand under and round the bulb; mulching in after years.

5th. Bulbs should not be disturbed oftener than once in four or five years.

6th. All flowers cut off as soon as faded to give strength to the others and mulching is good in hot weather and cover the beds with coarse litter for the winter.

Situation.—Partial shade is the best also in open ground, but should be in a well drained spot.

Grown in frames.—Frames should be placed to reach two feet below and one foot above the surface of the ground to keep mice and moles from disturbing the bulbs. Dig out two feet and refill with rich sandy loam mixed with a small quantity of old rotten manure and protect for winter. This treatment is for choice varieties.

Time for planting.—Last part of March, April and October is recommended: other seasons are more injurious, this is in regard to our northern latitude.

Keeping bulbs.—If bulbs have to be kept, they should be placed in soil slightly moist, or still better, in pulverized leaf mould but not wet, as it would induce them to grow. A cool dry cellar or pit is the best place; in this way they can be kept all winter in good condition.

Blight.—Some Californian and foreign sorts blight. This I attribute to the full rays of the sun when they are exposed to it. If they are planted at a proper depth, and partially shaded, they are not likely to be attacked.

Forcing Lilies.—The only species which can be recommended for forcing are candidum and longiflorum and its varieties. The work to be commenced in September by placing strong, healthy bulbs in six-inch pots of rich soil. Plunge them and cover with soil or ashes a few inches, to prevent them from drying and freezing. In November or later place them in a sunny situation of the greenhouse and they will grow at once. Water should be given freely, but do not overdose them, syringing every day is very beneficial. Treated in this manner in a well-kept greenhouse, they are sure to succeed. If grown in a dry or dusty atmosphere little success can be expected. Liquid manure I reject as being not only unnecessary but injurious if used too freely.

I here give the names of the varieties of those which are considered the best.

Auratum, native of Japan has eight varieties known.
 " Rubro Vitalum.
 " Cruntum.
 " Pictum.
 " Rubro Pictum.
 " Emperor.
 " Virginalo.
 " Wittei.
 " Maceranthum.

I will here mention what was reported in the Gardeners Chronicle of London, Feb. 10th 1873.

"A single bulb was obtained early in 1865. It was potted in a seven-inch pot and placed in a cool greenhouse where it produced three flowers on one stem. In 1866 it was re-potted in a 9-inch pot and received similar treatment when the plant threw up two stems with seventeen flowers. In 1867 it was re-potted in an 11-inch pot and produced three stems with fifty three flowers. In 1868, shifted into a 16-inch pot, it threw up twelve stems with altogether 100 flowers. In 1869 re-potted in a 17-inch pot, the result was 39 flowering stems and 193 flowers. The next year, the bulbs were left undisturbed and throw up 43 stems producing 208 flowers."

Another record says: "A plant grown by Mr. Cross, at Melchet Court, was nine feet high and bore 151 flowers all fully expanded."

After auratum in alphabetical list come the species.

Avenaceum from Kamtschatka.
 Belladonna.
 Batemannia.
 Brownii from China.
 Bulbiferum from Central Europe.
 Callosum from Japan.
 Canadense. The most distinct varieties of *Lilium Canadense* are:

Flavum. Grave
 Rubrum. Walkeri.

Candidum or Easter Lily from Southern Europe; a good one for forcing. Its varieties are:

Maculatum Striatum.
 Peregrinum.
 Lico Marginiatum.
 Flore Pleno and Speciosum.
 Carneolicum.
 Catesboe.

Chalcedonicum a good one from Greece.

Columbianum from Oregon. Of this, great quantities are exported.

Concolor. This one has small bulbs and should not be planted so deep. Both Concolor and its varieties are fine lilia.

Cordifolium from Japan
 Croceum from Switzerland.
 Davidi.

Davuricum from Siberia.
 Elegans known as Thunbergianum from Japan. There are 39 varieties known and they are all beautiful lilies
 Excelsum.

Giganteum from China, stem 6 to 10 feet high, flowers white shaded violet outside 10 to 10 in number, a grand Lily but scarce.

Hansonii from Japan.
 Hoveyi, flowers the size of Auratum.
 Humboldtii from California.

Japonicum Colchesterii, very fragrant, from Japan.
 Kramori, very fragrant and closely allied to Auratum.
 Leichtlinii.

Longiflorum from China and Japan, well known here, of the best for forcing. Its varieties are—Eximia or Wilsonii with large and longer flowers.
 Tekeima with a purplish tint.

Albo marginate, leaves bordered white.

Madame Von Siebold.

Harrisii or Easter Lily is the best for forcing.

It is said of Harrisii that established bulbs will produce 50 flowers on a stem; kept in pots, they bloom twice in the same year.

Lucidum.
 Macrophyllum.
 Maritimum.

Martagon from Europe, Siberia and Japan, one of the best for out-doors. It has two varieties, Dalmaticum Cutini rich purple, almost black while Glabrum is pure white.

Maximowiesi (Japan)
 Medeolodes (Japan)
 Nepalense (Himalayas)
 Pardidum (California) has four varieties—Packmanii, raised in Boston U. S. A. from Auratum and Speciosum.

Parryi.
 Parrum.
 Philadelphicum.
 Phlipponse.
 Polyphyllum.
 Ponticum.
 Pomponium
 Pyreneicum—a grand species for bedding. 13 varieties of Speciosum are known.

Superbum—a grand species from eastern States.

Szovitzianum from Persia
 Tenuifolium from Siberia grown there for food.

Tigrinum from Japan, the double variety is a grand Lily.

Umbellatum closely allied to the Edoense. About 25 varieties are known.

Wallichianum.

Washingtonianum—Convallaria—Lily of the Valley and the Hemerocallis or day lily which thrive best in a moist shady situation and are perfectly hardy here.

JULES BÉTRIX.

NEW CELERY-CULTURE.

For persons with less land, and who desire to make the most of every foot, what is termed "the new celery culture" has commendable features. By it the soil is prepared by adding plenty of manure and working well. When the season comes for setting out the plants the ground is marked off in rows seven inches apart, and with a dibble or trowel the plants are set out—from three to six inches high—seven inches apart, straight in the rows. If they are half an inch from a straight line, either to the right or left, they are in danger of being cut off by the knives of the wheel-hoe. Press the ground firmly about the roots. If the weather is warm and dry, water well after the plants have been set out, giving the ground a good soaking to keep the plants from wilting.

When the weeds begin to appear run the wheel-hoe through the rows. The knives of an ordinary wheel-hoe are too long, and should be cut off about five inches from the centre of the hoe. After going through one way let the crop stand a day or two before going through the other way. Four or six days afterwards go through again. If this is done frequently very little hand-weeding will be necessary.

When the plants are about half grown scatter broadcast about 1,200 pounds fertilizer to the acre (1) Do not do this when the foliage is wet.

Cultivation will now have to cease, on account of the size of the plant. All that is necessary now is to keep the ground well watered and manured with artificial fertilizer. The plants

(1) What a vague term!—Ed.

will cover the ground sufficiently to blanch themselves white, and will be tender, crisp and nutty.

Farmers' Ad.

THE IMPROVEMENT OF CIDER.

Now that so much attention is being directed to the planting of the better sorts of apple and pear trees, and to improved methods of making cider and perry, the following abridgement of a letter "On the Revival of Famous Fruit Trees," which appeared in the *National Review*, from Mr. H. Y. J. Taylor, of this city, will be read with interest:

A retired farmer I met said: "Nearly all our prime sorts are almost extinct. They have been neglected and abandoned since the introduction of cheap Continental wines. Diabetes and mysterious bladder diseases have been the result of preferring the doctored wines of France to those pure and wholesome beverages of Old England which were made from our choice apples and pears. We have not only despised our home vintage, which is infinitely superior to the clarets and champagnes of our post-prandial tables, but we have neglected an ancient and a lucrative agricultural industry. 'I,' continued the old farmer, 'confine my comments and my observations to my own county, the Pomona, of Gloucestershire.'"

John Philips, who wrote a poem on cider, had said, "No vale in the Kingdom can surpass Gloucestershire in the strength, the quality, and the flavour of its cider and its perry. There are many varieties, but they are divisible into three important or principal classes: the stout-bodied, the rough, and the masculine cider. These classes, with their delicate varieties, are produced from the Longney russet, Hagley crab, winter pippin, &c.; and the full-bodied, rich, pleasant cider of the Harvey russet, Woodcock, golden pippin, Quinning; and a sort made of Bodnam apple, Fox Whelp, and various species of kernel fruit, which, as an old book states, 'though placed last in order, might perhaps have stood with more propriety in the second class, being of a nature between the two, as partaking of the properties of both.' He spoke of the Styro, which was made in the vale of Gloucester, and alluded in language of extravagant admiration of the Styro, which attained its climax of perfection in the Forest of Dean. This he asserted, with epicurean experience, excelled in piquancy and exquisiteness of flavour the major part of the vintages of France. Perry, being the liquor of a distinct species, must not be omitted. The best of the produce in this county was that of the *Taynton*, or *Taynton* squash pear, the *Barland* pear, and the *Madcap* pear. When in perfection the liquors these varieties produce were sprightly, exhilarating, wholesome, and delicious." Robert Raikes, the promoter of Sunday schools, was commissioned to purchase a hogshead of the celebrated liquor and delectable rival of champagne (the *Taynton* squash) for the private use of Farmer George, i. e. King George III.

The real Styro cider grows on a ferruginous soil. It was considered to be almost indigenous, or peculiar to the Forest of Dean. In addition to its dietetic qualities, it possessed medicinal virtues. The fruit is reputed to have assimilated in its development the ferrous qualities of the soil. This gentle blend, or mild impregnation of iron in solution, gave it the reputation of being a renal or a "kidney

tonic," and it realized a most fabulous and extraordinary price. I have an article on the cider and perry of Gloucestershire, which was published in 1836, and I furnish you with an interesting extract.

"In 1763, though the crop of apples was so great that vast quantities were suffered to rot for want of casks to put the cider in, yet even then the best old Styro sold at £15 15s. per hogshead, and it has since considerably advanced. Nor can the price be fixed, it being chiefly purchased by persons of fortune; and it is asserted that Gloucestershire cider is worth more in the maker's cellar than the finest wines in the world in the respective countries of their own growth, owing to the Styro apple-tree not being a plentiful bearer, and its cider, from accidents altogether unaccountable, particularly liable to injuries in keeping, so that its proving good is very precarious."

I have heard of *Taynton* squash perry being sold at a guinea a bottle. It is a genuine, unsophisticated, and unadulterated sparkling beverage, which exhilarates, and neither inflames nor poisons the blood. I am an abstainer, but I do not presume to interfere with, or to control the tastes or the habits of those who love and use our original national beverages. Those who love and use the produce of our "Pomona Vineyards" may enthusiastically and ardently exclaim with John Philips:

What should you wish for more? Or why in quest
 Of foreign vintage, insincere, and mixt,
 Traverse the extremest world? Why tempt
 The rage
 Of the rough ocean? When our native globe
 Imparts, from bounteous womb annual recruits
 Of wine delectable, that far surmounts
 Gallie of Latin grapes, or those that see
 The setting sun near Calpe's towering height.
 Nor let the Rhodian nor the Lesbian vines
 Vaunt their rich must, not let Tokay contend
 For sovereignty: Phœbus' self must bow
 To the Ariconian vales; and shall we doubt
 To improve our vegetable wealth, or let
 The soil be idle, which, with fit manure
 With largest usury repay, alone
 Empowered to supply what nature asks
 Frugal, or what nice appetite requires?

I have inquired, and I am told that the *Styro* apple, and *Taynton* squash and the *Barland* pear trees are almost extinct.

Is there any patriot living in these degenerate days (when men are taught by political precept and example to love every country but their own) who would initiate steps to resuscitate these trees? Their value has been indicated. Cannot grafts be obtained? Could not many effete and languishing estates be revived, and be converted from Sloughs of Despond and Deserts of Despair into mines of inexhaustible wealth? The suggestion is not unworthy of the experiment. Landed proprietors, country squires, and tenant-farmers who prefer a foreign and a spurious vintage to the unadulterated and natural production of the orchards of Britain, may be accessory to the national suicide.

I should advise every landed proprietor who takes an interest in the prosperity of his estate to condescend to give John Philip's poem "Cider" an attentive perusal. He does not advocate the production of that acrid and gripping beverage which is made from inferior fruit by unprincipled and parsimonious farmers for the use of their labourers, to their moral and physical injury and debasement, but he eulogises the apple and the pear from a refined and classical aspect. He alludes to the judicious blending of various fruits with the cultivated taste of an epicurean connoisseur.

There are that a compounded fluid draws
From different mixtures, Woodcock, Pippin,
Rough Elliot, and sweet permain; the
[blended streams
(Each mutually correcting each) create
A pleasurable medley, of what taste
Hardly distinguished; as the showery arch
With listed colours gay, or, azure, gules,
Delights and puzzles the beholder's eye.

We may well inquire why the enormous brewing interest of this country should be stimulated to flourish with all its seductive invitations and plausible blandishments, while the agricultural interest of the kingdom should be allowed to decay and to be neglected and discouraged?

The day is not remote when the sound products of our orchards will, even upon hygean grounds, be considered superior and preferable to the light wines or the questionable compounds of our Gallic neighbours.

It is a remarkable coincidence that what I now advocate for England was advocated for Ireland in 1794. I have a splendid old book, magnificently illustrated, entitled *A Practical Treatise on Planting &c.*, by S. H., Esq., M. R. I. A., and a member of the Committee of Agriculture of the Dublin Society, &c., &c., 1794. It was dedicated "to the Right Hon. and the Hon. the Dublin Society for the Improvement of Husbandry and other useful arts." He recommends the growth of apples trees, "particularly that called Styre, from an apple of that name which grows better in the Forest of Dean and its vicinity than in many other parts of England. This apple is said to have been originally brought from Styria in The Tyrol, and is supposed to produce the highest flavoured cider when planted on a soil which contains a mixture of iron-ore, as it generally does in the Forest of Dean..." He then alludes to 'Taynton Squash and Besbury as the most approved pears for making perry, which I have known to be sold in the neighbourhood of Ross, in Herefordshire, for ten guineas the hoghead by the maker, and that to the amount of fifty hogheads, all the property of one person." He continues, "It was with this sparkling beverage that the amiable Mr. Kyrle, of Ross, in Herefordshire, better known and immortalised by Mr. Pope under the name of 'The Man of Ross,' used to treat his twelve neighbours at dinner every Tuesday, selected indiscriminately from the gentlemen and farmers who attended the market of that town. The general communication on subjects of agriculture, &c, which naturally resulted from such a meeting, was of advantage to both parties, whilst he afforded in himself an example of every social virtue. Though liberal to magnificence in the execution of several public works for the advantage and ornament of the town, many of which still remain, he was so plain in his manners and frugal in his expenses on himself that he was enabled to extend his charity to a degree which has since become proverbial, and to give this constant weekly intalment to all his neighbours in their turn; at which time his table was covered with all the best productions of Herefordshire and the neighbouring counties, but no foreign wine or spirits were ever allowed to appear, their place being amply supplied by fine beers, Red-streak and Styre cider, and particularly by Perry (Taynton squash) of a quality little inferior to the best champagne. Some of this kind I tasted in his own parlour at Ross, when on a tour I made a few years since through the cyder counties on purpose to gain information on the subject of orchards."

Questions were then invited, and in reply to these Mr. Harper said by the use of the filters a great mass of impurity would be kept out of a cider. The filter presses cost about £65, and their utility was practically indisputable, while they would last for years. The filtering material would cost about 12s. every three months after once renewing them. Cider ground in the old-fashioned way took on a great many things that were prejudicial to the cider. The filter was kept clean by washing it after use. It stood upon wheels and could easily be taken from farm to farm. At to whether filtering would have to be performed the same day on which the cider was made, he said its advantages were so manifest that if a decadence set in it could be used on the day it was made. In regard to cider being kept in a cellar Mr. Harper said that question was a very moot point. When it was made it did not ferment so soon as if the temperature were high. If they had a warm cellar they should make it cool, and they should get as low a temperature as possible. Damp cellars were a very bad thing as they produced mildew, which affected the cider, and they also took in some of those deleterious things which they often found in it. It was sometimes not possible to get satisfactory results unless sugar was added. The year's make of cider should be of a uniform character; there was a wide difference between vintages from one year to another. Fruit grown on gravel soil produced a different cider to that grown on a clay soil. If a farmer found that his cider was going off a certain kind of land he should plant trees to suit it, as it was a question of planting. They should avoid barking the trees. As to the effect of lime on trees, he said chalk was one kind of lime, and lime would be a very good manure. He confessed that he was no authority upon manuring, but he thought it would be a very good thing if the County Council would endeavour to give information upon the question. If they wanted to blend that could be done by mixing different kinds of fruit when grinding. He did not believe in mixing apples and pears. He believed cider contained a certain amount of other.

The Chairman proposed a hearty vote of thanks to Mr. Harper for his interesting and instructive lecture, and spoke of the classes which were intended to be held at Ebley, commencing in November, and advising those who intended attending them to send in their names to Mr. Howman, who would give the necessary information and make arrangements. The lecture was both clear and interesting, and he hoped that the outcome of it would be that practical results would follow. He hoped in another year they would be able to see an improvement in cider making in that parish (applause).

Mr. Harper said he was very much obliged to them for the vote of thanks, which was the greatest compliment they could pay him. He hoped that if he came into that parish in twelve months' time he should hear that they had sold their cider at greater prices and that they would have a great deal in their cellars, and that it would be of a pecuniary benefit to them. He hoped they would make cider of more marketable value (applause).

The proceeding then terminated.

At the close Mr. Harper invited those present to taste some cider which was made at Frankfort, and which was certainly of a delicious flavour, resembling both in taste and colour champagne.

The lecture was illustrated by lantern slides, which were ably put upon the screen by Mr. Pitcher, of Southgate street, Gloucester, and showed orchard trees that had been properly pruned and dressed with the dressing recommended by Mr. Harper, also the gathering blanket fixed round the tree to catch the fruit, as well as the hurdle method of storing the fruit, and other slides showing the machinery used.

(Gloucester Chronicle.)

FARMERS' CLUBS.

Many people being anxious to know what are the objects which the Department of Agriculture is desirous of encouraging by the prizes which, at its instigation, the Farmers' Clubs are about to offer, we think it our duty to lay before our readers the following considerations:

1. The views with which the Clubs were inaugurated were: to encourage in every way the onward march of agriculture.

2. To give all the members a frequently recurring chance of discussing among themselves every subject connected with their crops and with the general management of their farms; and to afford them opportunities of listening to the lectures of men who know what they are talking about, as well as to gain a thorough knowledge of the results of such experiments as shall have been tried during the year, and have been considered worthy of being adopted by the members.

3. Annual competitions, too, are expected to be opened, in which the following objects will be promoted by the offer of prizes:

(a) The best managed piggeries and cowsheds.

(b) The proper means of preserving the manure of the stock, especially of the urine, which latter is of the very greatest importance.

(c) The making of composts from the waste matters of the farm, the house, &c.

(d) Making trials in the use of lime; many farms are void of lime; lime, then, should be tried at different points in each district.

(e) Growing green fodder-crops, such as silage corn, tares, oats, pease, clover, rape, &c., which favour the yield of milk, and supply the failure of pasture during the droughts of summer, or when the grass does not take.

(f) Trying the efficacy of "Bouillie Bordelaise," to prevent potatoes from rotting.

(g) Growing hoed crops, such as maize, cattle cabbage, mangels, carrots, turnips, &c., which system of cultivation tends to the destruction of weeds, compels the farmer to work his land properly, and furnishes good food for the stock.

(h) The most trustworthy essays on the feeding and management of hogs, as given by the competitions. The production of pig-meat, especially for conversion into bacon, is of very great importance.

(i) Increasing the fertility of the soil by every possible means. In districts where apple-trees are likely to do well, it would be wise to encourage the cultivation of orchards, and particularly of such kinds of apples as are likely to be fit for exportation, i. e., apples that are firm enough to stand the transit without getting bruised.

Another point that demands great attention is the proper management of pastures. As English graziers have often had occasion to remark, fifty

acres in five enclosures are equal, in effects on cattle, to sixty acres, all in one piece: therefore, divide your pastures, so that your stock may have a fresh bite every fortnight at least. This will not only benefit the cattle themselves, but will benefit the herbage, as the grass will be fed down regularly and none allowed to run up to seed, which is the destruction of all permanency in the grasses.

Again, keep your sheep off your cow pastures, if possible. Sheep nibble off the young shoots of the clovers and finer grasses as soon as they begin to sprout and this is death to the plants: feed grass level, but neither too bare nor too lightly.

If people imagine that feeding pastures enriches the land, you can ask them how it happens that the bones of the stock and the albuminoids of the cheese, both being sold off the farm, enrich the land whence they are derived. They do not come from the air, but from the soil. Why did the great province of Cheshire, in England, refuse to produce its normal yield of cheese, though the pastures of that county were some of the richest in the United-Kingdom? The answer is simple: because the abstraction of the phosphates and albuminoids in the stock reared, and in the cheese made, continued for so many centuries, had left the soil poor in nitrogen and phosphoric acid. No theory was needed to invoke a cure; manures were scarce in the county; bone dust had grown, or helped to grow, great crops of turnips in the Northern counties; they were tried on the Cheshire pastures, and the yield of cheese is now as large as it ever was. Therefore, do not let your pastures, poor enough at best, languish for want of food, but give them a fair dose of dung, or bone-dust, and ashes every now and then.

Lastly, if you have been in the habit of sowing no other grasses but timothy and clover, you know that, by the time the old meadow comes in turn to feed, the clover will have vanished and only the timothy will remain. Sow, then, some other grasses with the time-honoured two: try a couple of bushels of *orchard-grass*, two or three pounds of lucerne, two pounds of white-clover, three pounds of perennial red-clover, two pounds of alsike clover, with three or four pounds of timothy; and see if you do not get a more useful lot of grass for the double purpose of mowing and grazing than with the old recipe of only two kinds.

And if you really intend to make a lasting pasture, beware of mowing it the first or second year. Feed it closely and regularly with not too heavy stock, keeping, at first, sheep and horses out of it; give the cattle while grazing two or three pounds of cotton-cake, &c., a day, a head, and do not let them tramp it to death in hot weather. Bush- or chain-harrow and roll both meadow and pasture in spring.

Lime.—In Scotland, where farms are almost invariably let on 19 years leases, the in-coming tenant sets to work at once to lime his farm. The dose then applied is supposed to last till the expiration of the lease. But it would probably be difficult to find here a farmer with capital enough to spend the price of 200 or 250 bushels of lime on every acre of his farm. Still, a great deal of good may be done with much smaller dressings than the above. Forty bushels to the arpent on light, and 80 or 100 bushels on heavy land will have great effect. The lime should be air-slaked, turned up and carefully mixed with ditch-scrappings, rubbish of any kind, in fact, and

equally spread before harrowing for grain, &c. It should not be forgotten that lime has the two-fold power of consolidating light land and disintegrating heavy land. It also cooks, if we may so express it, all the inert vegetable matter in the land, and aids the formation of nitrates in the soil, besides supplying lime, and in many cases, phosphoric acid to the plants.

Heavy clays, or soils rich in vegetable matter, are those most benefited by burnt lime. In the reclamation of peat-bogs it is of the highest value.

Liquid Manure.—It is hardly necessary to insist on the absolute necessity of preserving every drop of the urine of our stock. The evidence collected by Monsieur Gigault in his tour in North-Europe, and published in the Report of the Commissioner of Agriculture (1894), will convince the most incredulous of the importance of this liquid. How it is to be preserved from waste, whether by tank on dairy-farms, or by the use of straw, peat, or other absorbents, must be left to the judgment of individuals.

Green-fodder crops are now, comparatively speaking, commonly grown on all well farmed occupations. Of these, a considerable experience in this country induces us to uphold our old and favorite mixture, first tried by the MM. Guévremont, at Sorel, twelve years ago; it consists of 2 bushels of oats, 1 bushel of pease, and 1 bushel of Scotch tares (vetches) to the imperial acre, sown in succession at intervals of a fortnight or so from the earliest date in spring till the first week in September. If a couple of pounds of rape-seed be broadcasted after the last harrowing and rolled in, not only will the bottom of the fodder be thickened, but, after the crop is mown, a nice bite will be soon ready for the sheep.

The cultivation of *rape* in this province would, as we have remarked times without number in this periodical, if the crop were fed off by sheep, soon change the whole face of the country. Rape may be mown for the cows, but it is more especially intended for the use of the flock. An acre of good rape or cole-seed, will fat—ripe fat—ten shearlings, or twelve to fifteen lambs of the year; besides, the good treading of the sheep, with their little pointed hoof, to say nothing of the manure they leave behind them, will do to the succeeding crop of grain must be seen to be believed. This is the way to improve the ends of the long farms of some districts, that lie so far from the homestead that they never see the dung-cart.

Bouillie Bordelaise has thoroughly answered as a cure for the potato-disease, in some cases, and deserves to be tried everywhere. It seems to have the effect of continuing the growth of the tops long after they would naturally perish. If farmers would take the same pains to destroy the last brood of the Colorado beetle that they take to destroy the earlier broods this plague, too, would soon be eradicated; but, as an old *habitant* told us, and very right he was, there is no use in one farmer doing it unless all the rest follow his example.

Hoed or root-crops, we so fully treated last summer (v. numbers of the Journal for 1894), that it can hardly be necessary to go over the subject again. Suffice it to say that the profits on such crops are not to be looked for from the yield of roots, &c., alone, but from the additional yield of the succeeding crops of grain, hay, &c., brought about by the perfect cultivation of the soil receives, or ought to receive, during the growth of the, so-called, *fallow-crops*.

Bacon, as will be seen in another part of this No., is greatly in demand in England, but, unfortunately, both the bacon and hams that have reached that market, hitherto, have not suited the taste of the English so well as the hams and bacon sent thither by the Scandinavians and the Irish. As we are all well fitted for the production of the food required to make good hogs, barley, pease, and the by-products of the dairy being plentiful here, so all we need is to secure a good stamp of hog, and that can be easily bred by a cross of the Yorkshire and the Tamworth, or the latter and the Berkshire

Fruit growing pays well in suitable localities, but as we have never been lucky enough to have an orchard in Canada, we must leave the treatment of this subject to others.

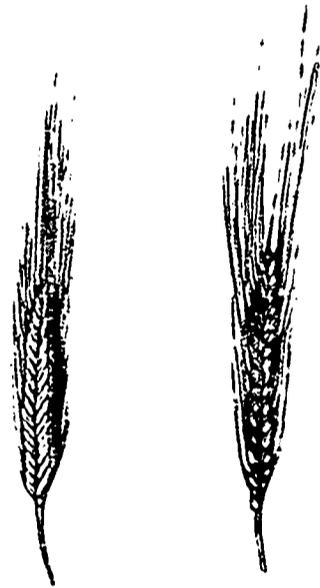
BARLEY.

A LECTURE

(By Arthur R. Tennant, M.A.)

The fruit of Sir John Barleycorn, as the old English term has it, is too well known to need a general description, but a short delineation of the different varieties of this grain may not be superfluous.

Barley may be divided into two chief kinds: two-rowed and six-rowed; again, into malting and grinding barley; once more, into spring and winter-barley; and, lastly, into common and naked barley. In the annexed engraving *a* is the 4-rowed, called in Scotland *bere* or *bigg*; *b* is the ordinary two-rowed barley, the only sort grown in England—at least, I never but once saw the former, and then it was only grown one season (1853), as the malsters did not like it at all. There is a six-rowed barley, but I never saw it and I fancy it has almost entirely vanished out of cultivation in Britain.



Two rowed Barley.

Four rowed barley.

It is of course very easy to distinguish between these two sorts of barley when in the ear; but after threshing, it is not so simple a task. In classing barley by the grain, the following difference may be observed: In the 4-rowed and 6-rowed the middle line of the bosom is so traced as to give the grain a twisted form, by which one of its sides is larger than the other; but in the 2-rowed the middle line passes straight, and divides the grain into two equal parts. It is also shorter and plumper than the other. In the two groups of grain, the natural size has been pre-

served; but in the engraving of the barley in ear, the natural size has been diminished by one-half.



Bere or Bigg

Two rowed Barley.

The signs of barley being fit for malting, a very important point as far as value is concerned, in the shrivelled skin across the middle line. The difference of price in England used to be very great between malting and grinding barley; but now the duty, there, is levied on the beer instead of on the malt, it is not so great. (1) The *swell*, as it was technically termed, amounted sometimes to as much as 15 0/0, i. e. the bulk of the malt exceeded the bulk of the barley by that amount. Barley was never sold by weight, as malting barley weighing 52 lbs. a bushel was often worth \$2.50 a quarter more than grinding barley weighing 54 lbs. Here, unfortunately for the careful growers, there is very little difference in price between the two kinds, and it is not invariably the maltster fault, for I remember well that, when I had a brewery, if I gave one farmer an extra price for a fine sample, the next that came with a lot to sell insisted upon getting as much as his predecessor in spite of a possible inferiority in his grain. Of course he did not get it; but it created a dissatisfied feeling, which frequently led the disappointed man to refuse to deal any more.

A good crop of barley is a splendid sight. I once saw, in Cambridgeshire, England, 72 bushels an acre, standing bolt upright, and the waving ears, with their golden beards, were a glorious spectacle. The ordinary crop used to be about 48 bushels, but in the Eastern counties, 64 were not uncommonly seen. Somewhere about 1835, Dr. Chevalier, a Suffolk physician, found a *stool* of barley, the beauty of which induced him to preserve the ears and propagate the seed with great care; hence, the celebrated Chevalier barley; the finest malting barley ever seen. This was not its only peculiarity, for whereas, before its discovery, no barley fit for the brewer would grow on the clay soils above the chalk, the Chevalier was found to answer famously there; and the consequence was, that instead of growing six or seven quarters of oats to the acre, the farmers of heavy land in the Eastern district succeeded in producing seven to eight quarters of the finest malting samples. In the long run, the landlords of course raised the rent, but it was a profitable discovery to the tenants all the same; the Chevalier barley entirely changed the whole system of farming in that part of the country, and a slovenly district was converted into one of the best farmed parts of England. In this case, barley at first was sown on a summer fallow, whereby the land lay without a crop from August, when the wheat was cut, till the following February twelvemonth, when the barley and grass-seeds were sown. A long time, to be sure, but as the average yield per acre was 60 bushels, and the price 5 s. sterling, the gross return equalled £15, or £7.10 a year, the time between crop and crop being of course two years. Later, rape was sown on the fallows in June or July with bone-dust, guano, or dissolved bones, fed off with sheep, to each being given a pound of linseed cake, or ½ a pound of cake and ½ a pint

(1) It is still 4%.

of beans or lentils. With this, or with heavy dressings of dung ploughed in during the autumn, and the barley sown on the stale-furrow—the strong point of heavy land farming in the Eastern counties—the crop was enormous; a farm I rented for a few years having averaged 64 bushels an acre for 14 years. The course of cropping was as follows: fallow or rape, barley, seeds (red clover), wheat; and the acre-yield: 64 bushels of barley, 3½ tons of clover, cut twice, and 40 bushels of wheat. In process of time, it was found that red clover, would not bear the frequent repetition, and it was replaced in the second round by beans, and in the third round by hop-clover, commonly called *trofoil* (*trifolium procumbens*). In the two last rounds of the twelve years, the wheat was found to fall off in yield, but it was no use going on sowing red clover, and the lost had to be borne. I mention this because I must keep on dining it into people's ears that our most valuable friend red clover cannot be played tricks with. It has its fascias, and if those fascias are not indulged, evil will come of it. The writers in the American papers talk of sowing red clover for manuring purposes as if it was a plant which, like wheat, would, if the land was kept in good heart, come every year. It is not so, as our East Anglian brothers found out long ago, and if we persist in neglecting to profit by their experience, we shall inevitably find that red clover will refuse to grow altogether.

Good Chevalier barley weighs from 52 lbs. to 56 lbs. a bushel. In Worcestershire, on the New Red Sandstone formation, it has been known to go as high as 60 lbs. I have found some samples in Chambly, on the Longueuil road, weighing 57 lbs., but the ordinary barley of the province does not exceed 52 lbs.

Malting.—The conversion of barley into malt is conducted as follows: The grain is steeped in water for from 48 to 72 hours, according to its quality—(1) in mild weather, the water is changed the second day—it is then, after draining, turned out of the steep into a frame, called the couch, where it lies for about 24 hours—depth of couch, about 20 inches—The grain now begins to heat, becoming about 10° hotter than the surrounding air, and it is turned over, and gradually thinned down to 5 or 6 inches. The roots begin to show; the stem or *acrospire* springs from the same end, and turning back, runs along the grain under the husk. To bring this *acrospire* far enough up and not too far, is the great point in malting. In England, the quality of the barley is so superior that three fourths is found sufficient, but, here, it is better to let the germ almost protrude. In proportion to the progress of the *acrospire*, the starch of the barley undergoes a change: barley usually contains 8 0/0 or 9 0/0 of sugar and gum; after malting, it contains about 30 0/0 of these substances. In the process, some of the nitrogenous matter originally contained in the seed is lost: barley contains 3 0/0 of gluten, malt only 1 0/0. In the brewer's mash tun, a further portion of the starch is changed into gum and sugar.

When the *acrospire* has proceeded far enough up, the malt is dried to prevent further growth, which, if allowed, would exhaust the whole contents of the husk. The process is a most interesting one, and in our Ea-

(1) Heavy 2-rowed barley requires 72 hours, and must be sprinkled on the floors while growing, 6-rowed does not need this, and is therefore more popular in the States.

glish malt houses is carried to perfection. Great pains are taken by the Burton people in the selection of grain; they have buyers all over the best barley districts, and price is no object, if the quality is of the best. I, myself, saw at Saffron Walden, on the borders of Cambridgeshire and Essex, 40,000 bushels of barley belonging to Messrs. Bass & Co. Burton, which had cost that firm 30c. a bushel over the ordinary market-price. The duty on malt used to be, up to about 1880, 2s. 9d. a bushel!

The rootlets or *cummins*, as they are called, when detached from the malt are very valuable cattle food, containing as they do about 25.9 0/10 of albuminoids. The grains from the mashtun contains only 5.9 0/10 of albuminoids, and yet at Chambly I could never get more for the one than for the other, both fetching 10c. a bushel. In reality, if the grains were worth 10c. the cummins were cheap at 30c. as may be easily seen by the subjoined analysis:

	Water.	Ash.	Albuminoids.	Fibro.	Other carbohy- drates.	Fat.	Value per 100 lbs.
Cummins...	11 6	6.7	25.9	9.3	45 5	1.1	£1 33
Grains.....	75 2	0.3	5.9	3.9	13 2	1.5	36

The value of the grains, however, depends a great deal on the quality of barley, the skill of the maltster, and the knowledge of the brewer. I have the vanity to think that, at my brewery, the grains were not worth much. Very little foreign barley, except some very fine samples from Moravia and from the banks of the river Saale in Germany, used to be employed by the English brewer. Heavy as it often was, it would not melt in the mashtun, and the reason is plain: bite a grain of English grown Chevalier barley in two, and you will see that the interior is like flour all through; treat a grain of Canadian 2-rowed barley in the same way, and you will see that the middle is like rice. But of late, the season have been so queer in Britain, that foreign barleys are more used. It is this that shortens the yield of extract, and when the yield is short, the flavor is invariably poor.

Barley is cultivated farther north than any of the other grains: fields of it are seen in the Orkney Isles and in Shetland (lat. 61° N.), and even at the Faroe Isles (lat. 62° 15' N.). In Western Lapland, the limit of barley is lat. 70°, near Cape North, the northern extremity of Europe. Between the tropics this cereal does not succeed in the plains, because it endures heat worse than any of the cultivated grains.

Sowing barley.—Barley, to grow to perfection, requires a deep, well pulverised soil. It may follow any crop except grass, but does best after a well worked root-crop. The land should be ploughed a fair depth in the fall—say, six inches,—carefully water-furrowed, and in the spring the grain should be committed to the earth as soon as the dust begins to blow after the harrows. You may play tricks with wheat, but if you try it on with barley you will repent it. Mr. Stephens, Book of the Farm, says: "I have seen the experiment tried of sowing barley on one furrow, on land ranging from clay to gravel, and the result was a manifest deficiency of crop compared from after two ploughings; and the result was not surprising, as barley requires deep, well-worked land... Strong land, with a single furrow, turns over with a tough, waxy clod, ungenial to the

growth of barley." Perfectly true. Mr. Stephens, but the fact remains that nine-tenth of the heavy land barley in East Anglia, in Essex, Hertfordshire, and Cambridgeshire, is grown on a single furrow, and this is the very district whence the Scotch brewers get their malt, and prize it highly for the manufacture of the highest class of Edinburgh and Alloa ales! The fact is, that, in the E. and S. E. parts of England, the plough is kept going so close up to the sheepfold, that almost the last acre of the turnip land gets a little frost on it; and the cultivation of the root-crop, as well as the manuring, is so thorough, that the ground works like an ash-heap: it would be the height of folly to turn under this finely fitted soil to replace it with a lot of raw clods. I repeat my previous statement: Spring-sowing on a stale furrow is the strong point of our barley district.

There are three ways of sowing barley: 1. broadcast on the untouched furrow; 2. broadcast on the harrowed

surface, to be dragged in with the grubber; 3. and last, drilled in on the well-harrowed surface; and the simplest consideration will show us which is the best method of the three.

Now, barley is of all grains the one most susceptible of gratitude. You may muddle in your wheat in a roughish tilth, but the ground for barley should be, say, to be profitable, must be, as fine as a garden. To produce a good sample for the maltster, the grain must be thoroughly and equally ripened or else it will not grow equally in the *pieces* on the malt floors; consequently, the seed must be all put in at the same depth, or else it will not come up together, or, as the Scotch term it, will not *braird* equally. Now, there is no way of doing this, viz, putting all the seed in at the same depth, except with the drill: ergo, to drill it, is the best way of sowing barley. The land should receive five-sixths of its harrowing before the drill is set to work, including cross-harrowing of course. I have spoken so fully that about this operation, so I need say no more on the subject, except to explain the reason why the harrowing should be done almost entirely before sowing; if, as I said before, the great object is to put all the seed in at the same depth, it must be clear, that to hook some of it up nearer the surface by the harrow-teeth after sowing must defeat the object. One tine or stroke along obliterates the marks of the drill and leaves the grain quiet in its place. Supposing that, in all, six tines are required—this ought to suffice, but there is no fear of overdoing it—I should give a double tine up and down the ridges; then, a double tine across, to be followed by the fifth along. As, in this province, cross harrowing is but too rarely seen, I may as well say that, in my opinion, any one who neglects it sacrifices not only an appreciable proportion of his barley-crop, but also an important means of insuring a good stand or take of the grass-seeds usually sown with this cereal.

The grubber should be used only when there is no drill at hand. I wish there was one in every parish! With us, in England, there are men who keep a dozen, and let them out to hire, as they do threshing machines here,

charging so much an acre for the hire. If any beneficent Seigneur would take the hint, particularly in the heavy land districts, he would do untold good; but there seems to be no public spirit about it!

You will easily perceive that, in sowing barley or any other grain with the grubber, it is necessary to harrow the land until all parts are equally penetrable by the teeth of the implement. It is not possible, however well we may prepare the ground, to deposit the seed with the grubber at an equal and regular depth; but how much less possible would it be, were we to sow the seed on the furrow, and then grub it in. On heavy land, I should proceed thus: pass the grubber across the ridges once, harrow up and down sufficiently to make the land tread equally under foot; sow the proper quantity of seed; grub it in along the ridges, and then finish with the stroke of the harrows, along them, of course. There is no need to describe the ordinary or broadcast way of seeding, as every one knows how to do that. Only, for goodness sake, see that your harrow tines are sharp, don't neglect cross-harrowing, and never leave the piece until the foot can be drawn across the furrows without finding one place more difficult to move than the other.

When the sowing is finished and grass-seeds are not intended to be sown, roll the barley-ground at once, water-furrow, if needed, as it always will be on all but the lightest land, having previously passed the double-mouldboard plough between the ridges. If the land is strong, the water-furrowing had better be done after the rolling; but on light soils, water-furrowing before the rolling make a better finish. All these operations will take time, I allow, but as long as they are only partially employed, or negligently executed, so long will the amount of barley per acre grown in the province, as well as its quality, be inferior to what it might be.

Quantity of seed.—If you propose to get a good price for your barley from any of the Montreal brewers, you must look after the purity of your seed. I have skimmed off eleven bushels of oats from a steep of only sixty bushels of what professed to be barley! Of course, the grower was surprised, and, until I showed him the oats on the floor by the side of the steep, he did not believe it to be possible. The American maltsters prefer the four-rowed barley; but it is simply because they do not understand how to treat the two rowed. Montreal men wisely choose the two rowed; and in the hands of such a man as *Sandy*, at Messrs. Dow & Co, it is wonderful to see what tender, well-flavoured malt it becomes.

As to the quantity of seed, that must greatly depend on the condition of the land. In well prepared loam, 2½ bushels of 2 rowed should be enough with drill, and a peck less of 4-rowed. Broadcast, with the grubber, or on the furrow, 2½ of two-rowed, and 2½ of four-rowed. If the land is rough and the season advanced, half a bushel more will be advisable. In Scotland, I see, they still sow a sack—4 bushels—to the acre! In my part of England, where all seed, except grass, is invariably drilled, 3 bushels of barley are usually sown.

Early sown barley always produces *ceteris paribus*—the best quality.

Never sow barley in badly prepared land—oats instead.

Barley may follow wheat, if the piece is very rich and grass-seeds are wanted. From some unknown cause, seeds take better with barley than with any

other crop. This, to my mind, is almost the only exception to the rule, that two white-straw crops should never follow each other.

If you roll or harrow barley after it is up, be careful to avoid doing it if there is the slightest frost.

The roots of barley have been traced to the depth of 9 inches below the surface; and this shows that land should be ploughed deep for this grain.

Winter barley is sown in the south of England for early sheep-keep. It does well for that purpose, sprouting again freely and rapidly after feeding off. Far superior to rye for sheep, as that cereal soon gets hard and sticky. Winter barley is never grown for malting purposes, as if the weather causes it to tiller in the spring it produces an unequal sample, containing a large proportion of light grains.

Harvesting.—If you grow it for maltster's use, let your barley stand till it is ripe—*dead-ripe*.—The reason why, I have already explained. You cannot bind it in this state, as in making the bands, the heads would break off; you must be content to turn it, get it into heaps, with the barley-fork preferably, as it is very easily damaged and a horse-rake would do infinite harm. If there are no grass-seeds or weeds in it, you can carry almost immediately after the reaping-machines.

In threshing, see that the machine is not set too tightly, as that would peel the point of the barley and injure it for malting. Take care not to break the grain, as each broken grain turns mouldy on the malt-floor, and this mould plays the very mischief with the subsequent fermentation of the brewer's wort or extract.

THE OBJECT OF AGRICULTURAL ASSOCIATIONS.

(By Geo. Moore.)

The chief end and aim of a well ordered association will be: To exercise a motive power on the energy leading to improvement, suggesting and conducting it:

First, by encouraging the testing of such practices as will be likely to be conducive to that end.

Second, by spreading news of successful experiments.

Third, by giving sanction to all that is proved to be of value to its members.

Fourth, by competitive displays of produce and skill.

Any associations which do not keep the main object steadily in view, and do not adopt rules in accordance therewith, lose the grand opportunity they possess of assisting to ameliorate the condition of all classes of the community.

Agricultural shows are useful to excite competition in live stock, poultry, the products of the dairy, the field, the orchard, and the garden, farm implements and machinery, together with such articles of manufacture as will be likely to be used, more particularly, by the rural population.

It is to be deplored that such displays are not, alone, sufficient to attract the masses or even some careless and indifferent farmers, and that other amusements have to be resorted to.

This being the case, it is important that the directors should provide such, as, at least, will not have a vitiating tendency upon the tastes and morals of the visitors, but will be calculated to improve them.

Matters are better in this respect than they were in the past, when every Fair was attended by a motley

congress of mountebanks, gamblers, prize fighters, bull baiters, and all the elements to pander to the vicious propensities of the low and vulgar; not the slightest effort being made to instruct and amuse, in such a way, as to lead them to better practices and conduct.

Competition might also be extended to the operations on the farm with great advantage, because upon these depend the success of its tillage, premiums being offered for, ploughing, fencing, clean cultivation, care and application of manure, dairy and live stock management, domestic economy, morality of conduct, all of which are objects of approbation and reward.

It is true that the public could not personally judge of the merits of the competitors, but the medals or diplomas awarded by the directors, or others appointed by them to visit and report, might be shown during the exhibition and presented publicly to the successful. This would give eclat to the proceedings and be a means of emulation to more careful and therefore more remunerative agriculture.

The Hon. Commissioner and Council of Agriculture are doing a good work in this connexion. Why should not the Provincial and County Associations supplement their efforts, and strengthen their hands?

It may be interesting to glance at what has been done during the present and the latter part of the past century for the advancement of improved agriculture.

The first great institution with this purpose in view, the "Highland and Agricultural Association of Scotland" was founded in 1784, and its operations and influence placed that country, at the head of all others for knowledge and progress in advanced methods of agriculture.

Notwithstanding the natural sterility of a good portion of the land, and the unpropitious character of their climate, Scotchmen are proverbial for being good farmers.

Many of our professors connected with experimental farms and dairy commission (all honor to them for they are just such men as Canada needs to day) are from the "Land of the leal."

The indirect influence for good of the "Highland Society" soon extended to England and Ireland, indeed to all the civilized world. Its periodical shows, its valuable museum, its rich array of wealth and talent, brighter the history of modern agriculture, and its published literature presents the richest mass of useful, interesting, and practical information on all rural affairs.

Ten years after the establishment of this society, so great and apparent was the good that it was achieving, that, a sister association, the "English Board of Agriculture and Internal Improvement Society" was inaugurated, under the most distinguished auspices, all the great officers of State, many of the nobility and most prominent literary and scientific men, and the Archbishops of Canterbury and York (a noble example to our clergy which it is highly gratifying to note they are so nobly following), being patrons and members, while two of the most learned and enthusiastic agriculturalists of the day were at the head of the executive. Sir John Sinclair as president and Mr. Arthur Young as secretary. No wonder then, that, in a few years, it had united men of all political parties, and social distinction, in a series of efforts for agricultural, and general improvement, the result being to arouse farmers to a

sense of their deficiency in their practice, and a conviction of the desirability, nay, necessity of prompt action to mend their ways.

The Royal Dublin Society "for the advancement of husbandry" and the "arts and manufactures," was not so successful in some respects, as for some time, it took no part in agricultural affairs, but confined its operation to the arts and manufactures.

The Royal Agricultural Society, however, filled the place, and soon had a large number of working members, who also contributed liberally to its funds.

It had correspondence with all the leading similar association of the world, for by this time such societies had become popular in nearly every country of Continental Europe and America.

Its main feature was the inducement it gave to small farmers of which there are a great number in Ireland, to improve their breeds of animals, to attend more skilfully and systematically to their management, and to observe more method and neatness in the culture of their fields and the arrangements of their homesteads; by these means promoting their education, comfort, and prosperity.

In these latter days agricultural associations of various degrees of usefulness are to be found in every civilized part of the world, and when conducted in the proper spirit, the good they do is incalculable. The Royal Agricultural Society of England exerts a profound influence upon the farming of the English, by fostering similar institutions in almost every county, by stimulating talent, by the publication of the most authentic and valuable literature, and by constantly calling attention to all the details of action, necessary to raise the British farmer in the social scale, and put him on the high road to prosperity.

The Council of this noble institution is the great authority of the present day in all matters pertaining to agriculture, and to be a F. R. A. S. is no small honor. (1)

These facts should teach us that the managing directors of all such associations should bear well in mind that their principal object should be to stimulate agricultural genius and enterprise. To diffuse information, not only by published reports of the proceedings, but, as much as possible, through the public press.

Thus, the subject would be made popular amongst all classes of the community, and agriculture would be lifted into its proper sphere, far above the blighting influence of faction, partizanship, or political intrigue, and the fact would be better understood and appreciated that it is the one industry which sounds the key note of prosperity for all the others.

Supposing then, that the aims of the promoters and managers are, as it is to be presumed they are in most cases, to accomplish the good as above stated by strictly unselfish and public spirited motives and measures, what is the farmer's position with regard to the agricultural societies? Seeing they are for his benefit and aggrandisement, unhesitatingly to support them, by subscribing his site financially, by contributing to their exhibitions as a competitor, by his presence at their meetings as often as possible, by carefully perusing their reports, by inducing his friends to attend their exhibitions, by taking an active interest in their proceedings and putting into practice all the good operations or methods they teach him.

(1) There are *Governors*, but no *Fellows* of the R. A. S. E.—Ed.

Farmers clubs or institutes are somewhat different in their effects to these larger associations, but should be their most valuable adjuncts and contemporaries.

The doings of the associations are grouped round their time of exhibition chiefly, and have reference in a great measure to it. After its annual recurrence is over, the interest is apt to fall off, but a properly conducted club with its regular meetings keep it unflagging the year round, and the discussions and interchange of ideas will lead to better methods, and therefore render the exhibitions of annually increasing interest and importance. Those who favour the associations to the disparagement of the clubs must have overlooked this fact.

Not many years since, there was no thought of educating a farmer for his profession. Apprentices had to serve seven years to learn a trade, often not very difficult to understand, but no one ever thought of teaching a man how to farm well, and yet no man exists who requires to possess a larger amount of technical knowledge, or requires more special training, nor are there any class of workers who have so good an opportunity to turn a liberal education to excellent practical account.

Happily, there is a change in this respect for the better; we have our schools and colleges of agriculture, our model and experimental farms and commissions (sic) for our young men, and our agricultural associations and farmer's clubs, where not only they but those of their fathers whose education had been neglected, can lay in a stock of knowledge of the utmost consequence, to enable them to keep pace with the times.

It would weary to allude further to the great things that have been achieved and which are now being carried on with increasing vigour and success,—as this magnificent showfully illustrates—alike honorable to the gentlemen who have so ably brought it to a successful issue and to the most humble competitor, and to such I would say, if unsuccessful this time, try, try, try again.

We are, as farmers, to be congratulated upon all these improvements in the public sentiment as regards our occupation as evinced by the great interest taken by the teeming multitudes who have visited it, let us see to it that we lose not the opportunity to profit by what we have seen and heard, and the observations we have made.

Then, we shall be gainers, personally; our families and dependants (no man should live for himself alone), will be gainers. We shall be true philanthropists, true patriots, be for we shall, helping to make this Canada of ours, with all its advantages viewed from a pastoral and agricultural stand point, one of the brightest jewels in the Crown of our glorious Queen whose benign reign has rendered possible the advantages we enjoy.

PROVINCIAL FRUIT GROWERS.

ANNUAL MEETING OF THE ASSOCIATION. (From the "Witness.")

Quebec, Dec. 11.—The annual meeting of the Pomological and Fruit Growers' Association of the Province of Quebec was opened here yesterday and will be continued to-day. A preliminary meeting was held at three in the afternoon in the chamber of the Private Bills Committee, in the Parliament Building for organization and preparatory work, those present

being the Honorable president, the Honorable H. G. Joly de Lotbinière, the president, Mr. J. M. Fisk; the secretary Mr. Hamilton, and Messrs. R. W. Shepherd, jr., J. C. Chapuis, Sydney Fisher, W. W. Dunlop, C. Newman, A. Dupuis, D. Pyke, E. Castel, Edwards, Dr. Grignon, the Rév. M. Dauth, Nicolet, Professor Craig, and Messrs. Gigault and Barnard, of the Department of Agriculture. The president, Mr. Fisk, acted as chairman and the secretary, at his request, read the minutes of the last annual meeting and the financial report; both of which were unanimously approved. The financial report showed a balance of \$280 on hand out of which some small expenses are still to be paid. As a member of the executive committee, Mr. R. W. Shepherd explained the delay in getting out the annual report. He said that it had been decided to embrace both the summer and winter reports in the one volume, and the work was still in the hands of the printer, but will appear shortly. A nominating committee was then struck to prepare a list of the officers for next year and will submit their report to-day. In order to make the society more widely and advantageously known throughout all parts of the province, it was, on the suggestion of Messrs. Dupuis and Barnard, decided to take steps, through the Council of Agriculture, to affiliate the farmers' clubs, of which there are some seven hundred in the province, and to get them to subscribe a dollar each out of their average annual grant of fifty dollars from the government, towards the society, which would give them the privilege of sending delegates to its meetings and of receiving the benefit of its discussion and reports. In support of this suggestion, it was pointed out that a dollar out of the grant of each of these clubs would not weigh heavily upon them, while the aggregate of these amounts would greatly benefit the society and advance the cause of fruit growing. Lastly, committees on resolutions and on fruits, the latter to look after the exhibit of fruits to be made at the Parliament Buildings during the meeting of the association, and an adjournment then took place until eight p. m., when the convention is to be officially opened in the Legislative Council chamber by His Honor the Lieutenant-Governor of the province.

THE OFFICIAL OPENING.

At 8.30 last evening, the official opening of the Province of Quebec Pomological and Fruit Growers' Association, second winter meeting took place in the Legislative Council chamber, which presented a very striking and beautiful "coup d'œil." The seats usually occupied by the councillors were moved to the centre of the chamber and were filled with members of the association and others interested in its good work, while on the clerks' table and another table alongside were set out the association's splendid exhibit of apples, the whole making a display which, in point of color, appearance, size and quality, as well as variety, could hardly be beaten by any country in the world. Every one admired it and was loud in its praise. The exhibit also included a large number of new varieties especially adapted to culture in the eastern portion of the province. The principal exhibitors were Mr. Craig, of the Dominion experimental farm, and M. J. N. Fisk, of the Abbottsford (1), Fruit Growers' As-

(1) We should like to know if this name is derived from Sir Walter's place, or from some one of the name of *Abbott*. In other words, should it be spelt "Abbottsford" or "Abbotsford?"

sociation, while among the individual exhibitors were Messrs G. B. Edwards, of Covey Hill; R. W. Shopherd, jr., Como; C. P. Newman, Lachine; M. Piko, Hudson; J. C. Chupais, Kamouraska, and Aug. Dupuis, L'Islet. The Lieutenant Governor and his A. D. C., Capt. Shepherd, the Hon. H. G. Joly and several others were present in evening dress and a number of ladies were accommodated with seats on either sides of the chamber. The Speakers and many members of both Houses, as well as three of the Cabinet Ministers, Messrs Beaubien, Nantel and Pelletier, were also present to lend importance to the gathering. The Hon. H. G. Joly opened the proceedings by expressing the pleasure which the association and all interested in its excellent objects felt at the honor conferred upon them by the presence of the representative of the Crown and the sympathy shown by him in its work in consenting to deliver the opening address.

THE OPENING ADDRESS.

Lieut. Governor Chapleau, who was received with applause, then addressed the meeting. He began by congratulating the association upon its success, which he said proved that its work was a popular one, or, in other words, that it combined the agreeable and the useful. He then dwelt in glowing terms on the beauties and advantages of horticulture, which he characterized as one of the noblest of human pursuits and the most satisfactory and absorbing of recreations. He referred, in humorous language, to his own lack of botanical knowledge, when he took possession of Spencerwood, but expressed the fear that he would never be an expert in horticulture or floriculture, especially as a lieutenant-governor's tenure of office was never long enough there to permit of attaining perfection in those lines. But, he added, that it was not to tell them these things that he had come here, but rather to encourage them by his presence and his words, to thank them for having invited him to their brilliant reception and to congratulate them upon their good work and their success since their organization. He had noticed, he said, with the greatest pleasure the remarkable phenomenon that was taking place at present in this province, the wonderful evolution which was going on in the direction of the development of our agricultural resources, that were after all the main stay of the province. This welcome re-awakening was due in a great measure to societies like theirs and he trusted that they would persevere and prosper in their admirable work.

THE HON. M. BEAUBIEN FOLLOWED.

saying that we were in the way of progress in arboriculture, just as in the dairy industry. The people were beginning to learn the value of grafting and similar arts. The dairy industry had spread all over the province, so likewise, the fruit garden of Montreal would spread all over it if the art of pomology were only made more common. The Minister then went on to speak of the value of apples grown. The art of drying apples, to ensure their preservation, was also noticed, and was declared to be rapidly coming to the front. We must either advance or retire, and, in order to advance, must take the best out of all we see. A very interesting report by Mr. Shopherd, on this subject was being printed. The distribution of fruit trees and reports, and the good fruit that both were bearing, were mentioned,

and a mode of protecting fruit trees commonly adopted in France, was discussed and its adoption here was advocated. The Hon. gentleman mentioned the intention of securing steamships with cold storage a-board, for the exportation of cheese, poultry, butter, etc., to Europe, and stated that the fruit growers would benefit by it as much as any one. In this connection he hoped soon to see the old reliable famous apple restored to its former beauty and perfection. En passant, the cultivation of cranberries was advocated, and that of small fruits was also referred to, including strawberries, etc.

The Hon. Mr. Beaubien concluded his speech with some valuable hints to fruit growers, and with advice to the members of the association to actively prosecute their good work.

WORK AND OBJECT OF THE ASSOCIATION

The Hon. Mr. Joly then explained in English the work and object of the association. They do not so much seek after creating new varieties as taking care of present one, and seeking to get rid of their enemies. No part of a farm for its area gives such profits as the orchard, even with the amount of neglect usually shown there. The first object of the association, then, should be to show people the value of orchards and how to look after them. His reference to Mr. Charles Gibb, the founder of the work, and his devotion to his cause, were of a warm and affectionate nature, and evoked applause.

His Honor, the Lieut. Governor, made a few remarks in English, congratulating the society upon its mission and success and upon having in its ranks such a man as Mr. Gibb. He was not a judge of the beautiful products before him, but he congratulated the members upon the excellence of their work, and the devotion they showed. He concluded by apologizing for his ignorance in the past of the society and its work, but wished it continued success in the future.

Mr. Fisher of Knowlton, moved a vote of thanks to His Honor the Lieutenant-Governor and to the Hon. Commissioner of Agriculture for their kindness in being present and speaking at the opening meeting of the society's session. He said that hitherto efforts in the direction of the society's object had been little of the nature of united work. It was now proposed to have these disconnected and disjointed efforts united and harmonized and with this object representatives of all parts of the province were called together. Some individual efforts had been attended to have all these cases and experiments compared for the common good. "Mr. Fisher dwelt upon the interesting and inviting character of the work.

Professor Craig seconded the motion and added his tribute to the memory of the late Mr. Gibb, to whom he owed most of his knowledge of matters pomological. After referring to some varieties of the apples which the gentleman in question had introduced here he sat down.

The Hon. Mr. Joly then put the motion of thanks and the meeting adjourned.

A pleasing feature of the evening was the presentation to His Honor of the handsome specimens of apples present, in acknowledging which the first magistrate laughly pleaded guilty to a weakness for the fruit in the morning before breakfast.

MILK-AND-BEEF BREEDS.

A discussion on the relative merits of special-purpose and general-purpose breeds of cattle has been going on in the columns of the London Live Stock Journal for some time, and in a recent number Mr. Wm. Housman had an interesting paper containing further thoughts upon one or two of the points presented:

Upon the form of the dairy cow we have certainly a great preponderance of opinion in favor of comparative lightness of the forequarters, or, to use the common term the wedge-shape. I say "comparative," because that word covers both the moderate and the extreme opinion; the moderate, which recognizes the necessity of sufficient room for the wind instruments of the living machine to work in, healthily and profitably, and the extreme opinion, which permits, and recognizes as correct, absolute deficiency of space for the principal vital organs, in the criterion of a superior dairy cow.

The tendency of deep-milking, generation after generation, continuously, appears to be associated with a tendency to a larger proportionate development of the hindquarters than of the forequarters, in width and depth. In certain particulars, nevertheless, the hindquarters of the cow of the purely milking type are poor, the thighs are light, and the flanks more skin. Now, if we find not only comparative but absolute weakening of the chest as the type develops, and I think that is not seldom the case, the question is, are we right in hurrying on the process by selecting wedgy and shallow-chested cows, or should we not rather seek to counteract the tendency by selection with the object of strengthening the forequarters of our dairy-breeds? I believe the lessening of the chest to be mischievous degeneracy, a price often paid for the gain in quantity of milk. See how cows of that type fall first victims to any prevailing disease, and how rapidly they die off when attacked! I hold that this degeneracy may be kept in check by vigilant and wise selection, and may be so kept in check without sacrifice of milk. If the breeder of dairy cattle, mistaking between the tendency of deep milking towards degeneracy of those parts where the power of the machine is generated and necessary condition, consents to the degeneracy, and assists it by selection, he reaps only the harvest he has sown, when disease sweeps away his herd, or the best part of it, fixing first, as a rule, upon the most ideal specimens of the dairy type. The light forequarter I regard as the weakness, not the strength, of the dairy type, and as an evil which the breeder should do all in his power to prevent or remove.

But it may be said that my own ideal is the beef type, and that I am prejudiced. Not at all so. I have assisted in breeding quite as many excellent dairy cattle of pure breeds, and of various crosses, as Short-Horns of the more heavy-fleshed sort, although my pen, from the accident of a greater demand, may have been more employed about the beef types of Short-Horns Herefords and other varieties of heavy grazing cattle. I do not for one moment content that any preëminently deep-milking breed will ever reverse the wedge and have a heavy front, with a body tucked up at the flanks, and hindquarters small compared with the fore-end; but I do say that hereditary deep-milking is not necessarily associated with cramped and inadequate chest-room,

for I have seen, and helped to produce and rear, many cows which proved the truth of this assertion in successive generations.

Robert Colling, who bred some extraordinary milking tribes of well-fleshed Short-Horns, was less disposed than some of his contemporaries to favor a very deep and protuberant breast-end; yet the chests of his cattle had ample space. He took care to have within their ribs plenty of room for the healthy action of the vital organs.

The merits of a cow for dairy purposes, however, are put to the test not only in the quantity but also in the quality of her milk. The wedge-shape, as it is called, is associated rather with a large yield of milk than with a less yield of milk of a richer quality. We seldom, if ever, get great quantity with the better quality; and here, I think, is a mistake sometimes made in judging dairy cattle (I do not here refer to ring-judging, but rather to the general way of estimating the fitness of cows for dairy purposes) in looking for and demanding the wedge shape, whether quantity or quality be chiefly required of the cow, and, if the latter, for whatsoever purpose the higher quality be required.

Granted that the breeding of special-purpose cattle creates a demand for bulls carefully bred to become the sires of stock best adapted to each special purpose, yet we shall no doubt always have a demand also for sires which can give the farmer the sort of sort which is thoroughly useful, "good all round;" grazing stock, the cows of which can do well in the dairy, and dairy cows which can make a handsome profit when fed off. Surely there is room to breed both "special-purpose" and "general-purpose" cattle, and a demand likely to be a continued demand, for milking breeds, beef breeds, and milk-and-beef breeds.

I may just observe that while form, in different directions, is taken as indicative of grazing properties or of quantity of milk; color, mainly, and not form, appears to be the recognized index to richness of milk, especially color of skin, most noticed within the ears and in some other parts of the dairy cow. Take the Jersey cow for example.

NOTES AND COMMENT.

ED. HOARD'S DAIRYMAN:—"Yours truly" has just made a rapid trip across western New Brunswick, and would whisper in the ear of Gov. Hoard, that he make another trip to the eastern Provinces—in the winter—and preach the everlasting gospel of advance stable management of cows. To-day as we rode along, a cold, raw wind was blowing, the air was thick with sifting snow, the fields were white with its winter mantle, and yet all day long we saw cows by singles, dairies, and droves wandering about the fields nosing about in the snow, hunting for "succulence." A passenger got off the old chesnut that "the owners of those cows were going into the ice cream business" but was promptly "shook down" by another who remarked that he thought "that the owners were prospecting for the Dry Mumm (1) trade, the cows went dry, and the owners would soon furnish the Mumm." An old uncle once said that "one never knew a woman until they had summered and wintered with her," and the average dairyman can be sized up the

(1) i. Champagne

same way. By the way, Governor, do you remember riding over the mountains in southern York state on our way to Walton and saw the hundreds of cows that cold, stormy day, with snow deep on the mountain sides, getting their rations of fresh air and exercise?

SUBSTITUTING CHEESE.

To the Editor of the

MONTREAL STAR:

Sir.—While this question is being publicly discussed, will you be kind enough to record the experience of one who believes that the trick is mostly practised by producers, and not by shippers. A certain Ontario man, operating about twenty factories, sold his August, October and September cheese at prices by which he was to receive 1½ cent more for his September make than his August, and ½ of a cent more for his October than his September make. When this man delivered his cheese, what do you suppose were the quantities for each month? I will tell you. August, 2509; September, 3018 and October, 2843 boxes. Now, it is a well-known fact that cheese factories during the month of October shrink to nearly one-half the quantity which they make during the summer months. How then did this man deliver 340 more cheese for the month of August? Simply by holding back August cheese and sending them on as September, and then holding back September cheese and shipping them as October's. Now the purchaser or shipper of these goods may or may not have detected that trickery was practised, but at all events the shipper did not profit by it, but the manufacturer could not help knowing that substitution was taking place, and that he was profiting largely by it. The above is one instance capable of proof.

Let me suggest a perfect remedy. Pass a law that every cheesemaker be obliged to brand his cheese immediately on taking it out of the hoop and before placing it on the range, and that any cheesemaker having cheese upon his range unbranded be fined \$50, and make the owner of the factory responsible for all fines, and have inspectors who will have authority to enter any factory, at any time during certain hours, to see that the law is obeyed.

EXPERIENCE.

TWICE FEEDING.

Q.—How many times a day should a cow be fed? Mr. Henry, a noted breeder, says feed but twice. Is he correct?

Mr. Smith.—It is reported that Mr. Rogers, of Binghamton, who keeps a large herd of cows, about 100, says he would not have his cows fed at noon, if any one would give him the food. Rest, with him at noon, he says, is preferable to a feed for his cows; but Mr. Rogers' cows are kept nearly all the time in the stables. It is also reported that Prof. Henry, of Wisconsin, is on record as opposing a noon feeding.

Mr. Woodward—I talked with Prof. Henry about that, and asked him how he did feed. As answered by him there were but two seasons of feeding the cows—morning and night—but they got each time, three or more rations, so that, practically, they must have been eating pretty nearly all day.

A Farmer—I believe my cow knows better what she wants than I do,

therefore if she seems hungry and will eat at noon I am going to feed her. (1) But I want to know how long a cow is going to last if fed and pushed as some of these men recommend?

Q.—Do you recommend the turning out of the cows during the day in winter.

Mr. Woodward.—I, for one, don't. My cows and sheep are all in the barns and have been there since early in November. I am not rich enough to furnish feed to warm up my cows out of doors, so I prefer to keep them in the barns where they will be warm and contented. But there are thousands of farmers in this state who still cling to the "exercise" doctrine, and one may look out from the car windows every day, no matter what the weather, and see their poor, half-starved cows, foraging around old straw stacks, picking up stray mouthfuls of frozen grass on the bare spots of the pastures or meadows, or standing on their knees and drinking water through holes in the ice, sometimes nearly half a mile from the barns. Doubtless the prayer of those cows was, if they could pray, like that of the Savior on the cross, "Lord forgive them for they know not what they do."

C. W. JENNINGS.

Bolleville, N. Y.

REPORT OF

MESSRS. G. A. GIGAULT,

Assistant-Commissioner of Agriculture,

AND

J. D. LECLAIR

Superintendent of the Dairy School of St. Hyacinthe,

ON THEIR TRIP TO DENMARK, ENGLAND, IRELAND, BELGIUM AND FRANCE.

TO THE HON. LOUIS BEAUBIEN, Commissioner of Agriculture and Colonisation.

Sir,

On the 27th June last, you instructed me to prepare for a trip to Europe, where my mission was to collect information regarding the dairy industry in Denmark, the agricultural methods generally in vogue in the different European countries, and the best means to be adopted for the furtherance of the exportation of our products to the English market.

You associated with me Mr. J. D. Leclair, professor of dairying at the St. Hyacinthe School, in whose company I left Quebec on the 8th July, returning thither on the 15th September last.

Besides Denmark, we visited Belgium, France, Ireland and England; but we remained longer in the first mentioned of these countries, where we were enabled to secure ample information regarding the dairy industry and its products, the breeding and feeding of pigs, and the general agriculture (so flourishing) of that country. In our different excursions through Denmark we were obliged to secure the services of an interpreter.

I send with this letter a joint account of our mission, which you will find below.

I have the honor to be,

Sir,

Your obedient servant,

G. A. GIGAULT,

Assistant-Commissioner.

Quebec, 13th October, 1894.

() Hear, hear!—Ed.

Note.—The first 97 pp. of M. Gigault's report were translated by one who was quite unacquainted with the technical terms used in agriculture. We have done our best to make the work intelligible to our readers.

Ed.

GENERAL SKETCH.

Sir,

The mission confided to us had principally for its object the study of Denmark from the standpoint of agricultural production, on account of the great similarity of climate between that country and the Province of Quebec.

We have the honor of presenting you with the report of our trip, which we deem well to preface by a few geographical and statistical notes and some indispensable general remarks.

Denmark is one of the smallest countries of Europe, its area being only 14784 English miles. It is situated between 53° 10' and 57° 40' north latitude, and 5° and 30° and 13° east longitude. It is in form, a peninsula, touching Prussia at its base and extending in a northerly direction between Sweden and Norway. Numerous islands along its coasts form part of the kingdom.

Its population in 1881 was 1,988,500 souls, and in 1890 2,085,335.

Copenhagen, the capital, is a magnificent city of 400,000 population, situated on the Island of Zealand.

Although further north than our Province, Denmark enjoys a less rigorous climate, on account of its proximity to the sea. On the other hand, the snow falls as abundantly there as here, at times reaching a depth of from six to seven feet.

The surface of the country is slightly undulating, with here and there hillocks of various heights. There are no lofty mountains or large rivers, and water-power is very scarce. To grind the grain, the farmers have recourse to windmills, which are very numerous, and some of which are supplied with steam engines, which are used when the wind goes down.

The soil consists of sand and a pebbly clay. These two substances predominate alternately according to the locality. Sand, mixed with a reddish-yellow clay, is also to be found.

The farm-buildings seem to be almost all of a uniform plan of construction. They are of stone or brick, with tile, slate, and sometimes thatched roofs. In most cases, the farmyard is surrounded by the different buildings, which form, with the family residence, a square or quadrangle open only in one or two places for the admission of vehicles. This mode of construction, with its sombre hues and its shedless roofs, would impart to the country a gloomy aspect, were it not that the eye is recreated by the plantations of trees that crown the summits of many a hillock and by the lines of verdure formed by the trees that border both sides of the roads and intersect the level fields in all directions.

In the month of August, in going over that grain-covered country, we could not at first believe that dairying formed the principal business; but soon large and numerous herds of cattle, tethered while grazing, made us realize the truth. The fact is that in Denmark the agricultural and dairy industries grew up and became developed together. When, in 1864, after a disastrous war, the country found itself burdened with great expenses and with a curtailed revenue, due to the loss of the two provinces, Schleswig and Holstein, it was rightly believed that the joint development of the two industries might save them from ruin.

Enlightened and patriotic men went all over the country spreading agricultural information and assisting in the making of dairy products. The Danes accepted and put into practice the wise advice given, and everything

moved along the highway of progress. The cultivation was done according to intelligent and rational methods; by means of rotations—that is, by alternating the exhausting and ameliorating crops—the land received back in manure what it had given up in crops. The dairy industry, which progressed at the same time, brought considerable revenues from the fabrication of butter, and the cattle increased year after year. Thus it is that, after Ireland, Denmark is the country that feeds the greatest number of cattle per square mile. The law of restitution is so well understood that we can safely say that the Danes have solved, thanks to the transformation of the greater part of their crops into butter and pork, the difficult problem of retaining the fertility of the soil. They hold in hand the three links that constitute the chain of good cultivation—numerous herds, abundant manuring, and profitable crops.

Another thing struck us, which we think it right to mention. Even the most complete theoretical knowledge is not considered alone sufficient. Before taking in hand a large farm, the agricultural students spend at least a year with well known farmers to learn how to manage and direct a farm.

Thirty years ago Denmark produced no butter, or scarcely any, and cattle were raised merely for the purpose of beef; but the high price of butter, and, later on, the immense production in western America of grain and meat, caused the importance of dairying to be felt. By dint of energy, perseverance and above all, of intelligent labor, the Danes succeeded in turning dairying into the most remunerative branch of their agricultural industries. In it, they discovered a lucrative and ever-ready market for their farm produce: grain, roots and fodder. From exporters of beef they became exporters of pork and butter; as much possible they converted their crops into concentrated products, and only exported the surplus; and thus was it that they succeeded in placing their country, in proportion to its size and population, at the head of agricultural countries, in the quantity and quality of its dairy products.

Let us cite a few facts, a few examples, taken from the smaller and middling classes of farms, to illustrate this concise account of agriculture in Denmark.

Mr. O. H. Peterson, of Fredericksund, whose farm consists of only fifty-four acres, has this year seven cows, seven calves and heifers, two horses, four sheep and six pigs, and his pastures and meadows only cover fourteen acres.

Mr. Peter Jenson, of Kallondborg, who has, in all, but six and two-thirds acres, keeps four cows and one horse. Last year he had only three cows, the milk of which brought him in \$159.80. The grain and roots that he raised allowed him, moreover, to fatten pigs, from the sale of which he realized \$81.11.

On a farm of one hundred and seventy-five acres under cultivation, and eleven acres of low-lying meadows, Mr. N. Peterson, of Taastrop, is able to keep forty-three cows, thirteen heifers, one bull, eleven horses, four foals, three pigs and four sheep.

The keeping of so many cattle, considering the extent of land, may be thus explained: 1st, the animals are tethered when grazing, they graze closer, more evenly, destroy no portion of the land by tramping, and find on the cropped parts a second and sometimes a third bite; 2nd, often, in the spring time, as soon as the ground

has become firm, the pastures are watered with liquid manure, the effect of which is immediate and wonderful; 3rd, the land, perfectly dried by means of drainage and water-furrows, is kept more fertile by fallows and by frequent ploughings and heavy manurings with both farm and artificial manure; 4th, in laying down to grass, they sow a variety of seeds, the growth of which, varying in forwardness as they do, produce a thick and abundant sward; 5th, the clover that takes good root the first year is rarely injured by the spring frosts; 6th, a first or second year meadow is always used as pasture; 7th, the hay is cut a little after the middle of June, and, while the cattle are grazing on the second crop or aftermath, the meadows throw up eight and ten inches of fresh grass, thus furnishing abundant food; 8th, for the wintering, they have always an ample provision of roots, such as mangels, carrots, &c., &c.

AGRICULTURAL STATISTICS OF DENMARK.

If we take into account all the exports to England from Denmark in butter, cattle, meat, margarine, cheese, lard, eggs, cereals, poultry, hides, wool, we find that they brought to Denmark, in 1861, \$21,277,115.33, and in 1893, \$40,900,347.53, whilst the exportation of the same products from Canada to England brought in 1881, \$30,106,430.67, and in 1893, \$41,863,465.73. The increase in Danish exports was thus about 95 per cent., whilst ours showed an increase of scarcely 40 per cent. This augmentation in agricultural exports, and consequently in the public wealth, shows that dairying is more remunerative than the cultivation of cereals for exportation.

The exports of bacon and ham from Denmark kept pace with the increase in the production of milk. In 1881 the return was only \$295,635.40, and in 1893 it was \$10,566,988.47.

Nearly all the Danish butter is exported to England. This exportation, which in 1881 was to the amount of \$8,233,884.46, rose in 1893 to \$25,690,525.

The wonderful development of the production of butter in Denmark is due in great part to the initiative taken by Mr. Thomas R. Segelcke, dairy professor in the Agricultural School at Copenhagen. During the past thirty years this zealous man carried on a most active propaganda in favor of this industry, and his numerous lectures on the care of milk, on raising and feeding cattle, produced marvellous results.

According to Mr. Emilo Holm, the average yield per tonde = 1 1/2 acre is as follows: Potatoes, 300 to 380 bushels; carrots, 500 bushels; oats, 50 to 70 bushels; barley, 45 to 55 bushels; rye, 58 to 70 bushels; wheat, 56 to 70 bushels. According to Mr. La Cour, President of the Royal Society of Agriculture of Denmark, and of the Agricultural School of Lyngby (1), the yield is still greater.

Mr. La Cour attributes this high return to the existence of marl in the soil of Denmark, and to the large number of animals that the farmers keep on their farms. (2)

(1) By originally meant a single farmstead. The old *Danlagh* in England, between "Walling Street" and the Tees, is full of *bys*: e. g., Grimsby, Spiltsby, &c. In Lincolnshire, alone, there are 100 names of villages ending in *by*.—R. J. F.
(2) We have enormous quantities of marl in Canada.

To give an idea of the winter as well as summer production of milk in Denmark, we give here a table of the milk received monthly at the cooperative factory in Ebborup.

1894.	Milk received.	Butter.	Pounds of milk p. lb. of butter.
January.....	204,048	7,643	26 7—
February.....	189,184	6,908	27 4—
March.....	193,272	7,187	27 6—
April.....	178,591	6,319	27 9—
May.....	208,530	7,867	26 5—
June.....	208,391	7,600	27 4—
July.....	178,165	6,727	26 5—
1. August....	5,383	205	26 3—
8. August...	5,559	221	25 2—

We also give the table of the milk of three cows, sent monthly to a factory, during the whole year, by Mr. Peter Jonson, a farmer, who has only 6 2/3 acres of land.

MILK SENT.	MONY RECEIVED
lbs.	
August 1893. 675	August, 1893... \$ 6 51
Sept..... 406	Sept..... 4 05
October..... 733	October..... 8 47
November... 1,403	November.... 17 40
December... 1,970	December..... 22 78
January 1894 1,986	January 1894... 19 63
February.... 1,768	February..... 17 41
March..... 1,586	March..... 15 92
April..... 1,819	April..... 17 86
May..... 1,629	May..... 13 75
June..... 1,145	June..... 9 86
July..... 696	July..... 6 08
15,807	\$159 80

At the cooperative factory of Hjortobjery. (1) kept by Larsen the maker, there are 126 customers. Mr. Larsen receives daily about 16,000 pounds of milk.

In a competition he secured a gold medal for his butter. During the year 1893-94 he receives the following quantities of milk:

1893.	Milk received	Butter.	Quantity of milk to each lb. of butter
July.....	477,055	17,659	
August.....	454,564	17,227	
Sept.....	388,440	15,580	
October.....	360,202	14,219	25 3/10
November...	370,528	14,113	26 2/10
December...	411,973	15,486	26 5/10
1894			
January....	439,688	16,310	26 9/10
February....	426,718	15,829	27
March.....	493,445	18,036	27 3/10
April.....	504,321	18,166	27 7/10
May.....	579,270	20,979	27 6/10
June.....	529,240	18,036	

FIRST PART.

I AGRICULTURE.

In Denmark, the law permits farmers to form as many agricultural societies as they desire; they may even organize two societies in one parish. Many of these associations have frequent meetings for the purpose of hearing lectures or to consult on matters calculated to advance their farming operations.

Moreover, in many places there exist associations for the purchase of cattle and horse-breeding stock.

The majority of the agriculturists keep accurate accounts of their farm operations.

The crop rotation practised in Denmark covers eight years of operations:

- 1st Year.—Whole or bastard fallow (2).
- 2nd year.—Wheat in clay soil; rye in light soil.
- 3rd. " Barley.
- 4th. " Leguminous crops, such as peas, vetches beans, etc., or roots, turnips, mangel and carrots.

(1) J. in Danish is pronounced like the Italian *i*. i. e. like *ea* in English.
(2) The naked or whole fallow, we, in England call a summer-fallow. A. R. J. F.

- 5th year.—Barley or barley and green meat if the cattle are housed in summer.
- 6th. " Oats with grass-seeds.
- 7th. " Hay for meadow or pasturage.
- 8th. " Pasture or hay.

The First Year: Fallow.—We might say that the tenth part of the cultivated land in Denmark remains in fallow, which is considered indispensable for cleaning and improving purposes. In many places we saw, in the beginning of August, farmers ploughing their fields, whilst in the neighboring fields others were working at their harvest.

In many cases they also have recourse to bastard fallowing, which consists of a plough after the mid-summer crop is taken in; in this case there are three ploughings at different times up to the autumn.

A whole fallow is invariably made after land has been in meadow or pasture, and the first ploughing takes place in the fall. In spring the land is harrowed, pulverised, levelled and rolled; it gets a second ploughing in May, and a third in June, to turn in the manure if it is clay land; also a fourth in July and a fifth in August to prepare for the seed. All these ploughings are followed by harrowing and rolling. If the soil is light the manure is only turned in with the last ploughing. We witnessed these operations and noted the care taken in their execution. These repeated operations destroy the weeds, rest and renovate the soil; they are one of the means deemed necessary to preserve fertility. The manuring does the rest.

Second Year.—The land is back in its former state and ready to produce in abundance the crops confided to it. The most exhausting of the grain-crop is chosen, precisely because the reserve power is greater and there is every reason to expect an abundant harvest.

Third Year.—Six-rowed barley comes next. This variety is chosen, because it is less exhausting and requires a soil less rich.

Fourth Year.—Leguminous crops, and roots: turnips, mangels, carrots. How careful the Danes are not to exhaust their farms! In the fourth year of this rotation it is deemed well to sow roots, because the weeds may have grown up since the first ploughing, and the hosing prevents them from taking deeper root. A fresh coat of manure, repeated ploughings and harrowings, serve to prepare the soil most admirably for an abundant root-crop.

In Denmark, the farmers have not a sufficient number of spacious root-houses or cellars to hold their root-crops. When pulled, the mangels are piled in the field and covered with straw, over which a layer of earth is placed; for awhile the top of the heap is left uncovered, so that the beets may be allowed to sweat. Each heap is about nine feet across at the bottom and four feet high. They are careful to earth up the heap to a good height, and a trench is dug round the base to prevent the water from getting in.

Fifth Year.—The fifth year the land is sown with two-rowed barley, because it has still in reserve a large amount of nutritive matter for that class of crop.

Sixth Year.—The land is sown with oats, which is the last grain-crop of the rotation. A great variety of grass-seeds is mixed together, in order to have a variety of nourishment in the hay that is to be made and on which the cattle will feed. So that the grass may not all fail at once, they select seeds of varyingly rapid growth; if, unfortunately, some of them should

miss, enough always remain to prevent the pasture from failing. Here, we may remark, that after each grain harvest they grab up the stubble; this is necessary in order to destroy the weeds.

We scarcely know what would become of the splendid Danish fields if all these united operations were neglected, for, despite so much ploughing, harrowing and hoeing, weeds still, here and there, show their heads. (1)

If the rotations, practised in Denmark, so regularly and constantly were only isolated cases, we should not refer to them; for, without going out of our own country, we can find cases of equally perfect cultivation. But it is the generality, the uniformity of this that struck us, and it is on that account we call attention to it.

Seventh and Eighth Years.—The seventh break of the rotation will bear hay if the year previous the seeds took well, or will be turned into pasture in the opposite case. They generally sow on each acre and a third 28 pounds of the following seeds: ten pounds of red clover, two pounds of white clover, one pound of alsike clover, six pounds of timothy, three pounds *dactylis glomerata*, (orchard grass) two pounds of English ryegrass, one pound of Italian ryegrass, and three pounds of tall oat grass.

II.

THE FEEDING OF ANIMALS.

THE FEEDING OF COWS.

The winter food of milch-cows is composed of meal, of roots and of different kinds of dry fodder, in varying proportions, according as they are giving milk or not. A large cow, of about eleven hundred pounds, gets a daily ration of six to eight pounds of hay, sixty pounds of mangel, four pounds of oil cake, two pounds of bran and ground grain, and as much straw as she will eat.

Some farmers give less oil cake and more bran and grain.

Good milch cows receive more than others. The Danish farmers find that with the fall in the price of butter they are obliged to proportionately lower the price of food. Taught so by their lecturers, they make greater use of their farm products, by substituting them for the oil cake in the proportions indicated by the teachers of farming.

Great cleanliness is practised in caring for the cows during the winter; currying is considered very necessary, and according to the heads of creameries, the herds are thoroughly well managed.

As the success of dairying greatly depends upon the manner in which the cows are fed, the price and kind of food given them, on account of their effect on the milk, we thought well to publish in the appendix to this report some extracts from the interesting works of Mr. Barnhard Boggild, State dairy-expert, (*Agronome*) and of Mr. Svendsen, director of the Thune Agricultural school, both of Denmark. These works sum up our views better than we could express them, and give very important details that are the fruit of their serious investigations.

We draw special attention to the results from the use of different kinds of oil cake as winter food; some of them have a marked effect upon the quality of the milk and the butter.

(1) And always will, if the and is heavily manured; as it is in Denmark.—Ed.

THE FEEDING OF PIGS.

In Denmark, pigs are principally fed on milk, barley and roots. Some times they give corn-meal, but this is not much approved of. In any case, maize should not be given during the month that precedes the killing. Long experience teaches that the use of maize produces a soft meat which, in the abattoirs, is ranked as fourth class.

On the contrary, barley or rye, mangels or potatoes with milk, produce a first class quality of meat. Potatoes are given boiled. It is admitted that four pounds of potatoes, as food, are equal to one pound of grain, or to six pounds of skimmed milk, or twelve pounds of whey. Oil cake alone forms a soft meat. Skimmed milk, or whey, without barley or rye, forms fourth class meat.

Here is the method of feeding followed by Mr. Holm. In summer, besides the milk and grain, he gives the cows and young pigs, clover, peas, vetches and oats, as green meat; in winter, he gives mangels. The styes in which the sows are kept are so arranged as to enable them to take all the exercise possible, and according to Mr. Holm's experience, this is essential in the raising of pigs. Otherwise, the young ones remain weak and die in great numbers. This farm expert raises pigs in winter as well as in summer, and the sows generally have five litters in two years.

According to a bulletin published by the "Experimental Farm" at Ottawa, the feeding of pigs, in order to be successful, demands the following conditions: 1st, suitable dry, warm housing, free from winds and from draughts; 2nd, three times daily as much healthy feed as they can eat without leaving any: if it is grain, it is preferable to have it ground fine; 3rd, full access to a mixture of salt and ashes, to sods of turf, or to earth.

THE FEEDING OF HORSES.

Everywhere, we found that they chaffed the fodder for horses, and that they are made to eat more straw than hay, even during the heavy work; in the latter case the allowance of hay is greater, and that of grain is also increased.

In summer, no horse, any more than the cows, is allowed to go free; it is tethered in a pasture, and tied with a head-stall. In winter its food consists of ten to fifteen pounds of oats, barley or rye, (the oats are not ground, but the other kinds of grain are always crushed), a little hay and straw (two parts of straw to one of hay) (1) and eight or ten pounds of carrots.

This variety of food suits the animal and helps to keep it in a good state of health.

III.

MANURING AND 'MENDMENTS. (2)

MANURE.

The Danish farmers take particular care of the manure, and especially of the urine. The stable floors and those of the farmyard are made impermeable, either by cement or by a mixture of stone and cement, or else of clay. The cement is only used inside the stables. The manure is always

(1) Hay-chaff with less than twice its bulk of straw is apt to ball in the stomach.—Ed.

(2) The word, 'm'endments, is used by English farmers to express dressings of lime, marl, pond-mud, composts, &c., exactly what the French word, *amendments*, means.—Ed.

piled beyond the eaves, in well made heaps in the middle of the barn yard; the liquid manure tank, which is always at hand, connects with the midden by means of a trench that carries off the liquid portion; the stable urine is also brought to the tank by means of a duct sunk in the pavement.

In France, in Belgium, as in Denmark and all over Europe, great importance is attached to the tanks. When we visited the school at Trois-Croix, in France, the director, M. E. Hérisant, kindly gave us a pamphlet containing a lecture that he delivered in 1888 to the farmers of Ille-et-Vilaine, on the subject of manure and commercial fertilizers.

After alluding to the agricultural crisis that the French farmers were experiencing and to the large falling off in the prices for farm products, he asks himself what remedy was to be applied, and replies thus:

"Since we cannot raise the selling prices of our products, the only remedy we have is to lower the cost of production.

"Is it possible to reduce expenses? Scarcely, without injuring production.

"Production must then be increased, if it can be done advantageously.

"How, then? By the use of sufficient manuring.

Farther on Mr. Hérisant speaks of the making of manure, on which subject he makes the following remarks:—

"In the cowshouses there must be an impermeable floor, slightly sloped from the front to the rear of the animals, a trench behind them with a sufficient fall to carry the urine out, with a urine tank quite stanch and free from the access of rain water, so that the latter may not uselessly increase the mass of material to be moved. Then, one or several stances with impermeable floors, and surrounded by trenches to carry off the liquid tank that runs from the manure pile, and to bring it to the pit just mentioned. These stances and their trenches should be sheltered from the rain water in the yard, so that the latter may not uselessly, or nearly so, augment the amount of liquid to be removed.

"Such are the means to be taken. I would add that the best stable or stance soil is composed of concrete, which is not very costly, and if hard to come by, can be replaced by an intimate mixture of clay and broken stones, well rammed.

"This system once adopted, the care to be given the manure is of small account;

"Take out the manure daily, spread it evenly on the stance, giving it a regular form, tramp it as much as possible, and then soak it with urine from the tank.

"A good way, when it is completed and is meant to remain for some time, is to cover it with a coat of four inches of clay.

"The manure must be taken out daily in order to economize the bedding, and more easily keep the animals clean.

"It is spread evenly on the stance, so that it may undergo a uniform fermentation.

It is tramped and soaked to moderate the fermentation and to prevent it from heating too much; for then it becomes fire-fanged, and this is the index, the proof, that it has lost a large part of its nitrogen.

"The soaking with urine has also for its object the increased value of the solid manure in all that the former possesses, and finally the earth placed on the surface weighs on the heap, presses it together, moderates conso-

quently the fermentation, and, moreover, absorbs the fertilizing gases that, under the effect of the engendered heat are evaporated from the manure pile. This fact is so true that if you take off the earth and spread it on meadow land, it will produce results often equal to those from the manure itself."

Here is what M. Hérisant says elsewhere about the value of cattle urine:

"Wanting to find out, moreover, how much urine a cow produces in a year, it has been found that it may be gauged on the average of 10 litres (about 9 quarts) per day, say 3,650 kilos per year (9,000 lbs.); or applying the above prices, to the value of 70 francs, about \$14.00. If, on account of badly arranged stables, the want of a urine tank, etc., you lose the half of it, it is at least thirty-five francs yearly, per cow, that is lost and doubly lost, for it would certainly have produced a double amount of crop."

This advice, given by M. Hérisant as we saw, carried into practice in Denmark.

We should note that nowhere, not even on the agricultural school farms, is the manure covered, except at Glasnevin, near Dublin, where it is under a simple roof. At the Grignon school, there is no covering for the manure; it is piled up, as in Denmark, at a distance from the eaves, and connected by a trench with the tank. These sheds are generally considered too costly.

The tanks are generally made of brick, of cemented stone and, sometimes, of a mixture of stones and clay.

The Danes use a cask on wheels drawn by a horse, to spread the urine; this cask has large taps, or else a simple wooden bung that can be taken out by hand. Opposite this opening is a board so fixed that the liquid may spatter on all sides before reaching the ground, and thus water a larger surface.

The foreman at Grignon showed us a meadow that had been mown in the spring, and on a part of which liquid manure was spread immediately. At the time of our visit, the hay had reached a height of 15 to 20 inches in the watered part, whilst on the remainder of the meadow it was scarcely six inches. The effect of this fertilizer is immediate, and it cannot be denied that the farmer who lets the urine run to waste, for want of a tank to receive it, incurs a considerable loss.

Mr. Holm, of Kallundborg, who had built a large and most costly tank on his farm, told us that the cost of it was repaid in two years by the increase in crops.

The Danish farmer perfectly understands the necessity of producing as much fertilizing material on his farm as possible, and if he pays so much attention to dairying and the raising of pigs, it is not only on account of the direct revenue from these sources, but also because they afford him the means of securing large quantities of manure. The more animals there are, the more manure, and, consequently, the more abundant harvest.

In our Province there are some liquid manure tanks, round St. Hyacinthe, amongst other places. Mr. Isidore Benoit, a farmer of La Présentation, has one that we think it well to describe: Set in the middle of a covered shed, this pit measures ten feet in all directions; it is in mason work, like a well, growing smaller towards the surface and only leaving a space for a pump by means of which the manure pile is soaked, or else the cask—for the watering of the field—is filled. Thanks to this peculiar form,

the liquid is filtered, which allows of its being distributed through small holes in the troughs. The earth cast out in the digging is used to bank up the shed, so as to prevent the water from the roof or elsewhere getting in.

Monsieur Lorquet, of St. Hyacinthe, has made a pit lined with planks and coated with rammed-down clay on the outside.

COMPOSTS.

A great number of Danish farmers make composts; the same thing is done in France and Belgium.

To make these composts they principally use the cleanings of ditches, waste vegetable matter, &c. When it is necessary to improve land that is wanting in limy salts, a mixture of lime is added. Many farm-experts recommend the use of lime in all cases.

At the Grignon school the composts are not used till two years old. The first year, the urine is thrown over the mass, the second year it is turned three times. The mould into which these composts are finally converted is especially useful for meadows.

THE USE OF LIME.

If the Danes pay great attention to the fabrication of manure, they also attach much importance to the presence of lime in the soil.

On nearly every land agriculturally worked there are large excavations whence marl has been taken to use for 'm'endments.

Mr. Le Cour attributes the large crops of Denmark to the great amount of manure produced by the cattle and also to the lime contained in the soil, which gives activity to and assimilates the fertilizing principles contained in the earth.

In order the better to demonstrate the advantage of the use of lime in our Province, we think it well to publish the important information given by Mr. Nagant, asst-editor of the *Journal d'agriculture*.

LIME.

Quebec, 11th October, 1894.

Messrs. G. A. Gigault and
J. D. Leclair, Quebec.

GENTLEMEN,

You were good enough to ask my opinion upon the important part that lime plays in our agriculture, from the standpoint of crop production and of proper forage for the dairy business.

The subject is so important that it would require considerable elaboration in order to be properly treated; but, for brevity sake, I will content myself with the following remarks:

In every country where agriculture is in a flourishing state, the soil is rich in lime, whether it is naturally abundant, or, at regular intervals and in sufficient quantities, dressings of lime, chalk, or marl are given.

Now, it is generally admitted that the soil of the Province of Quebec is far from containing a large proportion of lime, and I dare say that nearly half the farm lands in the Province only hold a quantity that is altogether insufficient for the crop requirements.

On this subject of the function of lime in the soil, here is what Messrs. Muntz and Girard, the great French farm-experts, say in their treatise on "Fertilizers."

"Lime plays a twofold part in the soil, first, it imparts a fertilizing element that is necessary to vegetation, and, moreover, it has a preponderating influence upon the physical and

chemical properties of the land. It is the presence of lime that permits the nitrogenous organic matter to become nitrified and thus become assimilable. It is lime, likewise, that in vegetable earth, unites with the humus; a soil in which there is absolutely no lime must be considered unfit for cultivation; but the addition of calcareous matter, i. e., lime in any form, soon makes it fit for use."

When the land contains only silicious elements (non-calcareous), as is the case in a great many farms in Quebec, the humic substance produced remains in a free state, with an acid reaction. Then, the part taken by the organic matter in the soil is relatively unimportant, for the nitrogen that it contains, not being in contact with lime, which is indispensable to nitrification, cannot be used by the plants, and it collects in large quantities without increasing fertility."

"Soils devoid of lime are not in general, benefited by manure, as this has only the effect of increasing the humic acid that already exists. It is only in cases in which liming has exhausted or diminished the organic matter that manure can produce useful results. (1)

Since lime is such an important fertilizer, and since it enters, in a relatively great proportion, into the constitution of plants, it is easy to understand why soil that is poor in lime gives poor crops. In truth, wherever lime is wanting, the grain has a backward tendency, the heads are not well filled; fodder-crops, the leguminous plants, roots, cabbages, and, in a word, the greater number of cultivated plants, are wanting in vigor, and, what is more serious, the cattle fed upon such fodder, not finding in it the lime which is indispensable to the formation of the animal frame, remain small, weak, and show all the defects of a debilitated constitution, illustrating the truth of the saying: "As is the food, so are the cattle."

But it is especially in the feeding of milch-cows that the question of lime becomes all important. Indeed, we must not lose sight of the fact that milk contains, or should contain, a certain quantity of mineral salts, the greater part of which is formed from phosphate of lime. It has been estimated that two ounces of phosphate of lime a day is the necessary quantity for the maintenance of a cow in her full milking period.

Without specially taking up the question of phosphate of lime (which would require more extended space), we desire to draw your attention to the fact that with a diet of fodder that is poor in lime, the production of the milk will go on rapidly decreasing on account of the absence of the lime necessary to its formation. "The dairy cow," says Jules Crevat, in the last edition of his "Rational Feeding of Cattle"—*Alimentation rationnelle du bétail*, "may, during a little while, furnish phosphate of lime, at the expense of her skeleton, which will be reduced in size and weight; but there is a limit beyond which she cannot go without injury to her health, and then, in consequence of the natural tendency to conserve life, the formative particles go into fat instead of producing milk. This is what is often noticed in silicious and poor lands, where farming has not advanced; the milk quickly lessens, while the cows, apparently well fed, seem to fatten; but it is then

noticed that they try to gnaw bones, and lick the walls that are built of masonry, for instinct tells them where they can find the calcareous constituents that are lacking to them."

I think that with this quotation I will close this already too lengthy letter.

Yours truly,

H. NAGANT,

Asst. Editor of the Journal of Agriculture.

IV.

THE MAKING OF BUTTER.

As the principal object of our trip was to study the making of butter in Denmark; we visited butter factories in all parts of the country in order to glean general information.

The Danes understand the advantage of the co-operative system; this they show in the establishment of creameries. With them nearly all the butter factories belong to an association of farmers of the same parish. Each milk dealer being interested in the working of these factories, a portion of the profits from which comes to him, brings thereto all the raw material possible; that is to say, having placed money in an important construction, in fitting it up with costly apparatus, and paying for the working or manipulation generally 2,800 kroner (1) per year, he secures profits in proportion to the length of time the creamery is in operation. Doubtless, this system may have its drawbacks; but it possesses a marked advantage: that of assuring a constant supply, without which the creamery can be profitable neither to its managers nor to the farmers. Moreover, it allows of a more perfect and complete equipment.

The factory manager has full power to refuse whatever milk he does not consider of proper quality no matter on what grounds. He certainly makes use of this right, for everywhere we found the milk of good quality.

In all the establishments the milk is heated to 85° Fahrenheit. The cream is gathered in cans, that are at once taken to a water tank, the temperature of which is 10° centigrade. (2) In some factories the milk is passed over a "Lawrence" refrigerator that brings it to this temperature, and thence it is discharged into a number of barrels that may be called "ripening tubs." The skimmed milk is heated to 70° C., in a special apparatus, before being returned to the farmers. The milk thus treated has the property of remaining long without souring, when it is cooled at once; it is more valuable as feed and is better suited to the raising of calves.

Everywhere they make acid butter—that is, butter made from a slightly soured cream. This result is obtained by means of ferments differently prepared. The principal object in view is the securing of a product uniform in flavour all the year round. The feeding of different animals and the changes of taste in the fodder according to the seasons, we can well understand, produce differently tasting milk, and as it is necessary that the consumer's table should be furnished with butter of the same flavor and quality, the Danes try to control the matter by the intermixing of predominating ferments. These ferments are either fresh cream naturally soured, or skimmed milk heated and

kept at 30° (86° F. to 89° 6 F.) to 32° C. for twenty-four hours and mixed in equal part with fresh milk, or, lastly with good quality buttermilk or "pure culture." In the course of the evening the cream is replaced in cans that are plunged in a cold water-tank, so that it may arrive at the proper temperature for churning.

The churn used is the "Danoise," that has a movable spindle. The churning is stopped when the butter is collected in pieces as large as grains of wheat. It is then taken from the churn with a sieve. Sometimes it is emptied into cold water, at other times into a cistern, after a slight draining, and from the cistern into a trough with a hole therein for the letting out of the butter-milk. The butter-maker takes a lump in his bare hands, or with two palettes (as they do in some factories), and passes it under the roller eight or ten times, unrolling it before each passage; he then weighs the butter and puts it back into the trough, adds 4 per cent of salt and mixes it, first by kneading, then by a few turns on the roller, working it as in the first instance. The butter is gathered into small lumps and carried on a tray of lattice-work (1) to the ice-box, or, in certain factories, it is left for a couple of hours, and again passed under the roller. It is then taken to the ice-box, where it remains till next day, before receiving it the finishing touch. In some factories, it is finished the same day by giving it some extra working on the roller, always allowing an interval of a couple of hours between each rolling.

The butter is exported in barrels, or skins, of 56 or 112 pounds. The bottom and sides of the skins are papered with a species of parchment paper, which is then drawn in regular folds over the surface of the butter; it is covered with another sheet of parchment paper and the butter, thus protected from the air and from contact with the wood, is ready for market.

By consulting the appendix more ample information on this subject will be found.

BUTTER EXHIBITIONS.

In Denmark, they have come to the conclusion that competitions in the production of butter, as they are generally organized, are of little or no use. In fact, the prepared exhibits fall far short of invariably giving an exact idea of the current value of the exhibitor's products, and more often are exceptions to the general class of goods he produces.

In order to secure useful information as to the value of the butters exported to England, the Government organized competitions according to a new system: despatches are sent to a certain number of butter-makers to forward, by next train, samples of the last butter made by them for market. This butter must not be retouched after receipt of the despatch, but should be sent exactly as it was got ready for exportation. This butter after being kept a few days at the government laboratory, is examined by very experienced judges, who are appointed by the Chamber of Commerce, and it is then analyzed by a chemist. After comparing the two examinations the names of the exhibitors whose butter is considered of 1st and 2nd quality are published. As to the other exhibitors, they are informed by private letter of the faults in their goods.

These competitions, it seems, produce the very best results, and have in a great measure helped to secure a uniformity in the making and in the quality of the Danish butter. Experience has shown that all samples containing more than 14½ per cent. of water are of inferior grade. The butter thus sent for competition is paid for according to market price, and the government also pays for freight by train or by steamboat.

V.

BACON—(SMOKED PORK), HAM.

The production of pig-meat has taken considerable development in Denmark, and this may be attributed to the progress made in dairying. The best way to use the skimmed milk was to raise pigs, and as the production of milk is greater in winter than in summer, the raising goes on at all seasons. They principally work to raise pigs suitable for bacon and ham: 1st, because, for the bacon the pigs should be killed when young and do not weigh more than 200 pounds, and that the fattening of young pigs is less costly than that of old ones; 2nd, because the price of bacon is higher than that of salt pork.

The experiments made in pig-feeding on the "Experimental Farm," at Ottawa, show that in general after the second month of the feeding period, and when the animal's weight is over 169 pounds, it is necessary, in order to cause each pound of gain to be produced in the live weight, to give a gradually increasing amount of feed. Thus, to raise the live weight of five pigs of 430 pounds to 580 pounds, there would be 3.81 pounds of feed consumed per pound of increase. To carry the pigs from 741 to 865 pounds, there would be 2.64 pounds of feed consumed per pound of increase.

For bacon, lean meat is required, and the pigs should receive a varied nourishment, that allows the using up of kitchen-stops, grass, roots and other elements less expensive than the grain used in the production of the pork that we commonly consume.

All the reasons ought to lead us to try to produce, in our Province, meat suitable for bacon.

(To be continued.)

Markets.

London, Jan. 7th 1895.

Cattle.

Per stone of 8 lbs.

Scotch 720 lbs. to 760 lbs. \$1.08
Fat cows 720 lbs. to 760 lbs. .89

Sheep.

Downs, 64 lbs. \$1.48
Americans, 64 lbs. 1.04

Butter and Cheese.

LONDON, FRIDAY.—Danish is firm at 112s. for choice dairy, and with a 4-kroner rise reported from Copenhagen and firm Northern markets, extra fancy is making 116s. Australian has been in good demand since the advent of colder weather, at 98s. to 104s. for finest, and 86s to 96s. for good to

(1) Our own family tenants, in South-Wales, nearly ruined their farms by the too frequent use of lime to the exclusion of dung. The land became so loose that the crops could not stand up. Turnips, fed off by sheep cured it.—Ed.

(1) The *kroner* is a silver coin, worth 26.8 cts. 2,800ks. = about \$750.—Ed.

(2) 10° C. = 50° F. 70° C. = 158° F.—Ed.

(1) *Planchette de claire-voie* means a tray made of laths with spaces between each two to admit air under the butter.

