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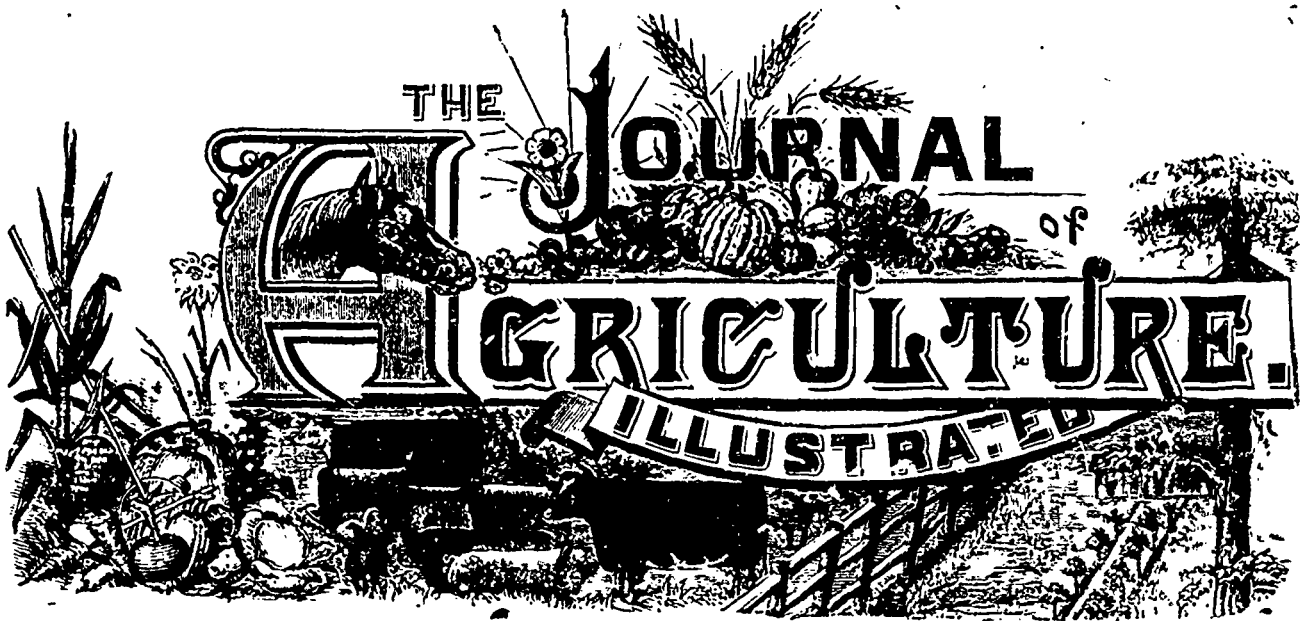
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Published for the Department of Agriculture for the Province of Quebec, (official part,) by  
EUSEBE SENECAI & FILS, 20, St. Vincent St. Montreal.

Vol. XII. No. 7.

MONTREAL, JULY 1890.

\$1.00 per annum, in advance.

**NOTICE.**—The subscription to the *Illustrated Journal of Agriculture*, for members of Agricultural and Horticultural Societies, as well as of Farmers Clubs, in the province of Quebec, is 30c annually, provided such subscription be forwarded through the secretaries of such societies.—**EDITORIAL MATTER.** All editorial matter should be addressed to A. R. Jenner Fust, Box 109, Lachine, Que.—or to Ed. A. Barnard, Director of the *Journals of Agriculture*, &c., Quebec.

## OFFICIAL PART.

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### Syndicate for the Manufacturing of Butter and Cheese.

In order to encourage the formation of syndicates of the makers of butter and cheese uniting together and organizing a special service for inspection and superintendence, with the object of assuring a uniform manufacture from, and good management of the products of dairies, also that a methodical rule should control the factories, under a syndicate:

To butter and cheese factories associating together, to the number of not less than ten and not more than thirty, and subscribing a total sum of not less than \$150.00 in order to cover the cost of their inspection service, the Department of Agriculture and Colonisation at Quebec will grant for the same ends, a sum equal to that which the syndicate of manufacturers subscribe between themselves, providing that the syndicate conforms to the following regulations, and that the

amount paid shall not be more than \$250.00 by each syndicate.

As the sum to be expended this year for syndicates is limited, syndicates are requested to organise and send in their application as soon as possible, through the *Secretary of the Council of Agriculture, Quebec.*

### PROGRAMME TO BE FOLLOWED.

1. A syndicate will organise itself by the duplicate signature of the representatives of manufactures, who wish to associate themselves in a uniform declaration. The Department of Agriculture and Colonization will furnish printed formulas on demand and a duplicate of this declaration will be forwarded to the Department which will send an acknowledgement of the same.
2. The syndicate will engage without delay an inspector of its own choice, but one duly qualified and skilled in knowledge of the manufacturing and able to superintend and direct such manufactures, and if the inspectors of the Government or if a dairy society, after a strict examination, find that the inspector chosen, is not qualified to fill the position, the syndicate will be required to have him replaced by another, after due notice has been given by the Department within a reasonable time.
3. The inspector will have sole charge of the management of factories comprising the syndicate, and will not if possible be attached this year to any particular factory.
4. The inspector will regularly visit the factories of the syndicate and in such way as there will be no interval of more than one month between two visits; each factory will be visited at least six times during the course of the manufacturing season.
5. The inspector will keep regularly a duplicate register of observation which may be furnished him by the Department,

he will keep a record of the required information, and will record any remarkable cases which he may notice, during the course of the season.

6. The inspector, by his advice and superintendence will do his utmost to obtain from the factories of his syndicate, (a) a uniform and good quality of produce; (b) scrupulous attention to cleanliness; (c) a constant attention to the testing of the milk furnished by his patrons; (d) a sufficiently good method of keeping records in order to prove the exactitude and truthfulness of the yearly report of operations that each factory will furnish to the Department.
7. The inspector will act in accordance with the directions which he may receive from Government inspectors or those of the "Provincial Dairy Association."
8. The factories of syndicates, shall each pay a subscription to the "Provincial Association Dairy" so that the makers or directors may be able to obtain an adequate knowledge of their work.
9. The syndicate will render account through its treasurer for the salary paid to its inspector and for travelling expenses, and other items, for the necessary requirements of the syndicate; and as the grant of the Department of Agriculture and Colonization is specially donated for an inspection service of factories, such grant will under no circumstances exceed one half of the current expenses directly incurred for such inspection.
10. The grant of the Department of Agriculture and Colonization, will be determined on the receipt of the declaration of the syndicate, but payment under the application of the preceding clause, will not be made before the end of the season, and after the report to the Department has been received regarding the operations of each factory. These reports must be made on forms to be furnished, with the receipt of acknowledgement, or on demand.
11. The representative of the manufacturing syndicates will appoint a president, a vice-president and a secretary treasurer, and will give the exact address of each of the officers above named, to the Department. All the official communications with the Department will be forwarded through the secretary treasurer.

DECLARATION.

We the undersigned representing the factory of..... hereafter mentioned declare that we organise as a syndicate according to the programme furnished us by the Department of Agriculture and Colonisation, and declare that we promise to pay and will subscribe toward the requirements of our inspection service a total sum of..... to be divided as agreed upon by the manufacturers.

Date.	No.	Signature of		
		Name of Manufacturing.	Name of Proprietor.	Post office address.
.....	1	.....	.....	.....
.....	2	.....	.....	.....
.....	3	.....	.....	.....

By order,

ED. A. BARNARD,  
Secretary Council of agriculture, Quebec.

Practical Sheep-keeping.

EDS. COUNTRY GENTLEMAN—I have a farm of 125 acres, three miles from railway station, 18 from a large city, and 150 from New York. The farm is upland, hilly, rocky. About 35 acres is woodland, 15 acres timothy and clover, remainder is grazing land. Plenty of excellent water. Geological formation is fossiliferous limestone, and the water is impregnated with lime. Fencing very poor. Aside from the dwelling, there is but one building of any account, a barn with accommodations for seven cows, five horses, eleven tons of loose hay, and carriage floor. I hire a farmer and wife by the year to care for the place. I sometimes spend the summer months on this farm. I should like to have it pay reasonable interest on its value. Can this be done by raising sheep? If so, what breed or breeds? How many to begin with? What increase per annum for stock? How many years before the maximum number may be kept? What should be the maximum number? What provisions for shelter? What kinds of fencing? How much do sheep eat while housed from season to season? How much hay, ground feed, oats, &c.? In other words, I should like detailed statement of probable cost for maintenance; also probable profit in detail for—not the raising of fancy breeds for fancy prices, but for wool, lambs, mutton.

C. READ.

No doubt, under the circumstances mentioned, sheep would be the most profitable stock, either a permanent flock for the rearing of early lambs for market or to purchase ewes in market, either Albany, Buffalo or New-York as most convenient, breed them to a pure Shropshire ram early in the fall, rear the lambs for sale in May or June, and fatten the ewes on pasture and some grain food and turn them off as they are ready for sale. The latter usually gives the most profit, and results in a rapid improvement of the land.

The outline of a plan which is commonly pursued would be as follows: Erect a shed open to the south in a roomy plat or yard for the winter feeding. The shed for 100 sheep should be not less than 80 feet long and 30 wide, with a feeding rack all around it, and several through the centre. The loft above will serve to store hay or straw. The shed should be 7 feet high to the upper floor and 5 feet above that, giving a large storage. Pure water should be supplied from a spring if possible in troughs in the yard. Slide doors would be desirable for the front of the shed, so that half of it might be left open in fine weather. Forty acres of pasture should carry 100 ewes to begin with, as a part of the summer the flock would be greatly reduced by sales. Forty acres might then be broken up for crops, corn, oats and clover being the rotation, the second crop of clover being pastured. This 40 acres should be divided by portable fencing so as to enclose the pasture. The permanent pasture should also be divided into ten acre lots, as the sheep do much better when the pasture is changed and the herbage is also improved by the rest. The crops thus raised should yield, to begin with, 400 bushels of corn; 400 bushels of oats; 30 tons of clover hay and 20 tons of timothy and clover. The wood land would serve usefully for an occasional week's pasture for the sheep. A bushel of grain per day is enough for 100 sheep with 300 lbs. of hay and whatever oat straw they will eat. A change from corn to oats would be useful occasionally. It is easy to figure out from these moderate crops how many sheep the farm could carry; but it ought in time to keep 200 or 300. The ten acres of corn fodder and ten of oat straw will go as far as half as much hay in feeding. Two or three acres of mangolds should be grown every year, and one acre of these will be equal to three acres of hay, according to the land. From experience in this pursuit I would suggest that a moderate estimate of resources and crops should be made and 50 per cent. discount

from it for the beginning. It is easy to enlarge the business when the foundation is laid.

The kind of sheep most profitable are what are known in the Albany or Buffalo market as Canada sheep, grades of Cotswold, Leicester and other heavy sheep, and the best breed to use for crossing for market lambs is the Shropshire, its black face and legs being very popular in the markets.

The income from 100 sheep would probably be as follows: 600 lbs. of wool; 75 lambs, ought to sell for \$5 per head, and the sheep should net \$7 per head when sold, and should be bought for \$5 per head. Each sheep would then return for its cost and keep \$7.80. They would consume 180 bushels of grain, 45 or 50 tons of hay, and an acre of mangolds, which would be worth for feeding say \$3.90, thus giving a return of 100 per cent. profit on their feed. The manure ought to be worth the labor, as one man will be sufficient to care for the flock, with help at shearing.

These estimates are put as unfavorably as possible both ways. For instance, I never had less than over 100 per cent. of lambs when raising them for market; and such sheep as those mentioned gave a fraction over 8 lbs. of wool per head; while my crops for feeding averaged almost double as much as the estimate above given. But much depends upon the land. If it is in poor condition, and the crops are small, there will be sufficient time to know this before the sheep are purchased, and the size of the flock may be matched with the amount of feed. Again, a careless feeder will waste as much feed as is eaten, while with care none need be wasted. So that the man is also an important item in the calculation.

Finally, it may be said that rearing lambs for market and fattening the ewes as soon as the lambs are sold, is the most profitable business that can be undertaken under the circumstances described. The soil and character of the land are exactly suited for sheep; sheep are the most productive of farm animals, and no others will improve and enrich the land so much as they will.

A good many useful hints will be found in the Shepherd's Manual. H. S.

### Bran—Linseed—Hurdle-Feeding.

#### INCREASING PRODUCTION.

EDS. COUNTRY GENTLEMAN—I have "Feeding Animals," and I have read most of it through many times. In estimating value of wheat bran, does he mean roller or the old kind? A Cleveland firm advertised linseed meal as worth eight times as much as bran. I can buy one for \$8.50 the other for \$21 a ton. Which is cheaper? If bran is worth \$8.50, what is linseed meal worth? (1)

I was also much interested in plan of hurdling sheep, but it does not tell us how to make a cheap hurdle. (2)

I built a 60-foot octagon bank barn, according to directions in book—9-foot basement, 28-foot posts, circular hay track, manure gutter and all, at a cost of \$3,300.

I am raising a calf according to directions in "Feeding Animals." He is 11 months old and weighs 800 lbs. I shall gradually introduce soiling, commencing this year. I have 200 acres, and keep 25 horses (20 of these brood mares) 25 cows and steers, 5 hogs and 80 sheep. I wish to keep my sheep in two lots, in hurdles. I wish to double the stock kept on the farm. (3)

Cloverdale, Ind.

L. A. S.

L. A. S. in asking the comparative value of wheat bran and linseed meal, presents a question which we have answered so frequently. We cannot consider a single food as having an

absolute value, unless it be a food which contains all the elements required in the right proportion.

1. The first edition of "Feeding Animals" treated foods as they then existed. The roller process was not then generally in use, and in recent editions the digestible nutrients of wheat bran have been modified, increasing the albuminoids and decreasing the carbohydrates. But still it is true of every food that its value consists in its effect in balancing a ration. The best linseed meal has about two and a half times as much albuminoids as wheat bran, and perhaps this one element is as good as any single element to determine relative values, and if wheat bran is worth \$8.50 then for the purpose of balancing a ration where albuminoids are deficient, linseed meal would be worth about \$21, so that S. will see that the market price of the two foods is about right. Yet in many cases the difference between the two would not be so great, because the carbohydrates in the bran would be worth more than the carbohydrates in the linseed meal.

2. The economical use of hurdles for feeding off a green crop with sheep or swine, requires a sufficient number of straight, movable hurdles to stretch across the field in two rows. These hurdles can be quickly set by making holes with a bar and driving down the hurdle, placed end to end along the outside line of the field. This hurdle, as usually made, consists of three stakes about 5½ feet long, with the lower end sharpened, with four cross rails about 14 inches apart, pinned or bolted to the stakes, with a brace running diagonally from the upper rail on one side, to the lower rail on the other side, to hold the section in position. This brace is fastened to each stake. These sections of hurdles may be 16½ feet long, or shorter, as is most convenient. These horizontal bars or rails extend beyond the outside stakes about 10 inches.

In case a field 40 rods wide had a permanent straight fence on each side, it would require only sections enough of this movable hurdle to stretch through the centre, and then the field could be fed off on either side of the centre by the use of rolling hurdles across the strip to be fed. We will now describe the last kind of hurdle: Take a stout pole, say 4 inches thick, bored with two series of 1½-inch holes, 12 inches apart; one series is bored in one direction, and the other at right angles with this. Now round stakes, or split ones rounded, 6 feet long, are put through both the series of holes, and the project 3 feet on each side of the pole, and the end view of this hurdle is like the letter X. These hurdles are moved by rolling on the ends of these stakes. There are two rows of this hurdle, placed end to end, stretching across the strip of field to be fed. The sheep are to be kept between these two cross lines of hurdles.

Let us suppose that there is a thick growth of clover to be fed off by the sheep. We commence at one end; a line of cross hurdles is placed from 10 to 15 feet from the end, according to the number of sheep to be fed. The second row of cross hurdles is placed at the end of the strip. The sheep having eaten the green food on this strip, the forward row of hurdles is rolled forward for enough to include another day's food, and the rear line brought up.

We proceed in this way to the other end of the field, and then, if there are two strips of field, the sheep are placed on the other strip and eat across that in the same way, when they may be brought back and feed over the first strip again, and so continue through the season. But if the land requires an extra amount of fertilization, extra food, such as wheat bran, middlings, oil meal, &c., may be given in racks. It often happens that wheat bran may be purchased at a price which it is worth simply as a fertilizer. Thus the field may be fertilized and the sheep kept without extra expense. Whenever there is an extensive demand for hurdles, they will

be made of iron or steel, and although costing something more, will be more easily handled, and will last a life time.

3. We are pleased that S. proposes more perfectly to economize his land, and he will find soiling a great aid in that direction. It is much better to increase the productiveness of a farm than to buy an addition to it. The tendency with the most progressive farmers now, in the United States, is toward *intensive* farming.

E. W. S.

#### DE OMNIBUS REBUS.

*The roots of corn*—Mr. Tuok, Messrs. Dawes' foreman, finds the roots or stumps of the corn of last year very troublesome in the subsequent cleaning operations, and still more in the way of the turnip-sowing machine. How are they to be got rid of? Would it not do to pass the grubber over the field, pulling the roots up to the surface, and burn them? Of course this depends upon the time the corn is harvested. If the putting into the silo is delayed, as at the Cross' farm till October I see no cure for the trouble. It is not every one who likes to see his land disfigured by bulging lumps every two or three feet, and still fewer care to be obliged to stop the drill every five or ten minutes to free it from these impediments. I never saw a good farmer yet who was not extra careful as to the look as well as the actual condition of his land when the last finishing stroke was given to it. One curious thing connected with this enormous corn crop is this: the land on which it was sown had been in hops for many years. Now, as hops are manured every season and carefully cultivated, the soil must have been, one would suppose, in first-rate condition. Thinking thus of it, no manure was given to the corn. After the corn, oats were sown this spring, and a very poor looking piece of grain too; showing clearly that the monstrous crop of silo-maize, which was allowed to stand until the ears were fit to cook—in fact many a dozen bagfuls of them were carried off and cooked—acted as pretty strong exhausters of the soil.

When people compare the value of fodder- or silo-maize with that of mangels or swedes, they never seem to consider the very different state in which these plants, respectively, leave the land.

*Mangels for sows.*—Though I do not think mangels are good for in-farrow sows, inasmuch as I have known several instances of those roots bringing on premature labour, I make no doubt the flow of milk they produce after parturition must be favourable to the young pigs. The Messrs. Dawes, whose breed of Berkshires is so well known throughout the province, had a favourite sow, with a litter of 12 at her foot, and their man gave the mother mangels, raw, twice a day during the whole time of suckling. The treatment was most successful, as the pigs did well, and the sow, in spite of the constant dragging at her teats of the 12 little ones, never lost flesh.

#### CORRESPONDENCE.

Quebec, June 3rd, 1890.

To MONSIEUR LAURENT COMEAU,  
Henryville, Co. Iberville.

Dear Sir,—In reply to your letter of 17th May, I beg to say that you will find in "The Manual of Practical Horticulture and Fruit-tree cultivation, by Dr. G. Laroque, of Quebec, (Quebec, J. A. Langlais, publisher) complete information on the culture of melons, vegetables, &c. This work

has the great advantage of having been written for our province.

Still, we may as well say a few words on the pruning of melons:

According to Dr. Hoefer, the most experienced gardeners now recognise the uselessness of those perpetual pinchings which only cause the production of a mass of shoots, crossing each other in every direction, and adding neither to the number nor the quality of the fruit, if we can judge from the experiments made *ad hoc*. Still, it is necessary to perform the operation of topping, by which the shoot proceeding directly from the germ of the seed, and the first that rises between the cotyledons, is pinched out. This shoot, if left to itself, would absorb the whole vigour of the plant, and would not allow any collateral branch to thrive. It would bear fruit, but very late, and the produce would have neither the size nor the flavour of melons borne by the laterals.

This stopping can be done even before the plant is turned out of the pot, but it is better to wait till it has settled comfortably in its new abode.

When once this operation has been performed, the plant may be allowed to grow and spread in perfect freedom, and no more stopping is needed until the melons are not only set, but large enough to allow those promising to be the most vigorous in growth to be distinguished. Having selected these, the fruit bearing shoot is to be stopped two joints above the young melon.

As vegetation progresses, and new shoots are thrust forth, they must be stopped, and each wound caused by the pinching of a shoot should be immediately sprinkled with very dry mould to promote its cicatrization.

We may add, in conclusion, that the cultivation of melons, which, in France and Belgium generally requires to be carried out in hotbeds, can be done in the open air in many parts of the province of Quebec with excellent results.

Very truly yours,

(Signed)

H. NAGANT,

Asst. Ed. Journal d'Agriculture.

Mr. Smith, who, stops his melon-plants a second time when the two side shoots (laterals) have six or seven leaves, has now—June 10th—right or ten frames full of fruit, some of which are from five to six inches in diameter, and will probably be ripe by the first week in July, if this fine hot weather continues. *Habitans*, from Ile Perrot, pass my house every fall with lots of yellow melons, grown in the open air, but I must be allowed to say that a melon ripened by the July sun is a better flavoured and more succulent fruit than one tardily matured in the latter end of September.

A. R. J. F.

#### A few Hints on Vegetable-growing. (Continued.)

*Parsley.*—I fancy every one who has a garden, however small, grows this indispensable pot-herb, but, as general rule, it is sown very much too thick, or rather, it is not thinned out at all. My plan is this: I soak the seed for 40 hours, and let it swell in a warm place in the neighbourhood of a stove till the white tip of the germ appears. Having prepared a piece of land and made it very fine, I sow the seed in drills, half-an-inch deep, and a foot apart. If the soil is pretty dry, I place a board over the drills and tramp it down firmly; but, if the soil is in the least *chung*, this is better omitted, as it is apt to make a crust form, through which the young plant will find it difficult to emerge. You cannot sow parsley too early, if the land is in good condition. When the rows are visible, hoe between them at once, and do not be afraid of hoeing deeply. Single-out, as soon as possible, to three inches,

and ultimately to six inches, using the intermediate plants for the kitchen as they are needed. If you thin out parsley in this way, you will be surprised at the bulk and beauty of the plant when in full vigour. Parsley is said to take six weeks in coming up, but soaked, &c., as above, mine was up, this season, in less than a month. When about full grown, cut it and dry, or salt, for winter use: the plant will soon throw up young and tender shoots. Prepare a good sized, deep box of good mould, take up the roots carefully, and plant them, pressing the mould firmly round them. If this is done towards the end of October, and the parsley kept fairly moist, you will have a constant supply of tender leaves for your soups and gravies until the new crop come in again. Only, you must keep the growth low, not suffering the seed-stalks to run up, and the box must be placed in a sunny window.

**Parsnips.**—People are either very fond of this root, or they abominate it. I am of the former faction. The cultivation of parsnips is very simple. Dig or plough the land deeply, and as roughly as possible. If dug, the work should be done late in October, and the earth should be thrown up in as large lumps as possible and left so—the spade or fork should not touch it after it is once turned over. If ploughed, the furrows should be laid over at an angle of 45 degrees—half a right angle. In the spring, whether the land was dug or ploughed in the previous fall, it should require no deep stirring—which would only bury the finely pulverised mould—but the rake, in one case, and the harrows in the other, should bring it into a fit condition for receiving the seed. In gardens eighteen inches between the rows will be sufficient, but on a large scale, where the horse hoe can be used, 24 will be necessary. The seeds are very light, and if over a year old, many of them will fail to come up, so, after soaking for 40 hours &c., they should be sown thickly, about  $\frac{3}{4}$  of an inch, or even an inch deep. As they take a long time to germinate, I usually sow a few turnips seeds with them, which, coming up quickly, show the position of the rows, and gives a chance to the hoe to extirpate the weeds. I have known—it was in 1884—unsoaked parsnip seed lie six weeks in the ground before putting in an appearance. When up, chop out the plants with a 5 inch hoe and single, by hand to eight inches. Store in a cool cellar, in dry sand. Some may be left in the ground till spring; but the worst of this plan is that digging them up, unless which rarely happens at that season, the land is perfectly dry, the muddling about makes the soil harsh and nubby for the rest of the year.

Parsnips should never be cut in strips before cooking, but boiled whole and thoroughly done—not crisp by any means, but as soft as marrow. This root is never really good till the month of January, frost bringing out the sweetness in a wonderful manner.

In heavy land, well pulverised, the parsnips succeeds far better than the carrot. Why they are not more generally grown for the table has always been a mystery to me, but perhaps what I mentioned at starting, about some people abominating them, may account for it.

I may mention here that Bliss' American Wonder pease were in blossom on the 10th June, and on the same day, my early-roses had formed potatoes as big as a pigeon's egg. Both were sown on the 23rd April, on very superior but well-worked soil, so I am fortified more than ever in my preference for early planting. All my carrots, onions, parsnips, are singled. Early Minnesota and Stowell's evergreen corn looking well; spinach we have been eating freely, and barring the summer cabbage, which the *haltice* have played the very mischief with, everything is in a promising order, as I could wish it to be. Those who delayed sowing must be in a pretty back-

ward state, I fear, for the drenching rain and cutting winds of May seem to have had a very seriously bad effect on all this part of this province. My tomatoes bear the weather well, and have been in blossom for more than a week. (1)

**Pease.**—You may grow pease for the table on poor land out of condition: when you cook them you will find them not worth eating. The four most valuable garden—crops—cauliflowers, pease, onions and celery—had better be omitted from your list unless you are prepared to give them a full allowance of manure.

But you must understand, I do not mean that you are to dig in a lot of raw dung in the spring, just before planting-time; not all. The dung, two-thirds rotten, should be dug in during the fall and well buried, so that when the land is re-dug in the spring—6 inches in depth is enough—no rough lumps of manure shall be brought to the surface. Treated in this way the pease when they are about to swell in the pods, will find their roots penetrating into the richer layer of the soil, and you will reap the reward of your foresight by finding them tender and succulent instead of as hard as bullets and as dry as chips.

If the manure is near the surface, the plant will not thrust out its roots freely, its growth will be confined, and, in hot weather, the crop will not be worth gathering.

If however, you can spare the land that grew the previous year a *heavily* manured crop of cauliflowers, onions, or celery, pease may succeed the above plants without any additional dung. Do not plaster them: lime though a necessary constituent of the pea makes them, when added over and above what the land contains, hard to boil: it adds to the quantity at the expense of the quality.

Of sorts I only grow two: the American Wonder and Carter's Stratagem. Neither of these require sticking. The former does well at 15 inches between the rows, and the latter at 36 inches. I saw, yesterday in two gardens, pease of some dwarf kind or other sown thickly with, only 6 inches interval between the rows. What the proprietor's idea of the office of the roots of the pea might be I did not stop to inquire.

Where pea-sticks, can be had at a moderate price—everything at Lachine costs about three times as much as elsewhere—such tall growing sorts as the great marrowfats are to be preferred for late crops; but fortnightly sowings of the two I mentioned will answer all purposes. I generally sow the same number of rows of both kinds on the same day, and I find that when the dwarf American Wonder has finished bearing, the Stratagem is ready for picking. According to my experience, the *very* early pease, such as the Ringleader, Daniel O'Rourke, &c., are seldom worth growing in this climate.

Do not be afraid of thick-sowing for this crop. The farmer who grow "podding-pease" for the London market on a large scale, sow three bushels an acre at 27 inches between the rows. The seed is furnished by contractors, who will not enter into any agreement with the farmer unless he covenants to sow at this rate. The contract price used to be about £15 an acre—\$75.00,—the grower ploughing, sowing, and cleaning the land; the contractor taking the crop and leaving the haulm to the farmer. Swedes or white-turnips are invariably drilled in between the rows after the last horse-hoeing which are singled after the haulm is harvested; and these roots being consumed, with the haulm and some cake or beans, by sheep on the spot, more than compensate the land for the draught made on it by the pease. My friends in Sorrel would find the system pay them well; labour is cheap there, and women plenty. *Podders*, as we call the pickers, earn from 8

(1) I dug new potatoes on June 23rd. Pease for dinner on July 1st.

cents to 12 cents a bushel, according to the crop; here, owing to want of experience, they would probably want considerably more. From 80 to 120 bushels of pods to the acre would be a fair crop. Basket, holding half a bushel each, or small sacks, are the best packages.

*Sheep.*—A pretty state of things, that a man cannot keep sheep on account of the dogs! No wonder the Vermont farms are for sale by the thousand at low prices!

The *Connecticut Farmer* says: "Our accidental meeting with a farmer who is second to none in understanding the wants of the farmers of the state led to a conversation which ought to be reported in every grange and agricultural paper in the commonwealth. While passing by rail the hills bare of stock, he lamented the fact that sheep cannot be abundantly reared on our farms. 'I would keep five hundred,' said he, 'if a law protected sheep instead of, as at present, protecting dogs, and my farm would be the better for them, and carry just as many cattle as without them.'"

A fine flock of sheep belonging to E. F. Thompson of Warehouse Point, Conn., was raided by dogs recently. Seven were killed in one day. Sheep husbandry is about extinct in the Nutmeg State. Dogs did it.—*Vermont Watchman*.

ARTHUR R. JENNER FUST.

**Annual Meeting of the Dairymen's Association of the Dominion of Canada.**

The Association held its annual meeting at Ottawa, on the 17th, 18th, and 19th, of March.

The following is a list of the delegates and lecturers who took part in the labours of the convention:

**ONTARIO.**

<i>Names of delegates.</i>	<i>Residence</i>
Messrs. Bailey, A. E.....	Campbellton, Ont.
Bissel, Jas.....	Algonquin.
Broder, A.....	Russell.
Craig, M.....	North Gower
Denton, J. M.....	London.
Everets, E.....	Easton's Corners.
Haggarty, Jas.....	West Huntingdon.
Hudson, F. W.....	London.
Lang, Jno.....	Peterboro.
McCrea, F. H.....	Brockville.
McMillan, John M. P.....	South Huron.
McPherson, D. M.....	Lancaster.
Morgan, Ira.....	Metcalf.
Pearce, J. L.....	London.
Publow, Geo.....	Perth.
Reesor, senator hon.....	Toronto.
Robertson, prof. J. W.....	Ottawa.
Rowan, Jas M. P.....	West Bruce.
Ruddick, T. S.....	Lancaster.
Saunders, prof. Wm.....	Ottawa.
Sample, Andrew.....	Welland.
Sproule, Dr.....	Grey East.
Thompson, William.....	London.
Weld, Thoraas.....	London.
Wood, M., M. P.....	Brookville.
Wright, A. A.....	Renfrew.

**QUEBEC.**

Messrs. Ayor, A. A.....	Montreal.	
Barnard, Ed. A.....	Quebec.	
Bernatchez, N. M. P. P.....	Montmagy.	
Chapais, J. O.....	St-Denis.	
Choquette, M. l'abbé.....	St-Hyacinthe.	
Ewing, John Jr.....	Richmond.	
Fisher, S. M. P.....	Brôme.	
Foster, H. S.....	Knowlton.	
Ness, Robert... ..	Châteauguay.	
Patten, Col.....	Knowlton.	
Rhodes, hon. Col.....	Quebec.	
Taché, J. de L.....	Quebec.	12

**NEW-BRUNSWICK.**

Messrs. Peters, S. L.....	Queenstown.	
Willmot, R. D.....	Sunbury.	2

**NOVA SCOTIA.**

Messrs. Black, P. C.....	Falmouth.	
Blair, W. M.....	Nappan.	
McKay, Senator.....	Truro.	
Smith, prof. H. W.....	Truro.	
Starr, B. W.....	Port Williams.	
Starratt, B.....	Paradise Lane.	6

**PRINCE EDOUARD ISLAND.**

Mr. Robertson, Dr. M. P.....	Kings.	1
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**MANITOBA.**

Messrs. Bedford, S. A.....	Brandon.	
Struthers, E. A.....	Russell.	2

**NORTH WEST TERRITORY.**

Messrs. Dill, J. P.....	Wolsely.	
Perley, senator hon.....	Wolsely.	
Thorburn, A. G.....	Broadview.	
Vance, Jos.....	Moose Creek.	4

**BRITISH COLUMBIA.**

Mr. Henry, G. W.....	New Westminster.	1
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**UNITED STATES.**

Mr. Roberts, J. F., Prof.....	Ithaca, N. Y.	1
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Number of delegates and lecturers..... 55

The sessions of the convention were held in the session hall of the Town-hall, kindly lent for the occasion by the Mayor of Ottawa.

Many members of both Houses regularly attended the sessions of the convention.

**FIRST DAY.**

**EVENING-SESSION.**

Mr. McPherson, the president, took the chair at 8 o'clock. The secretary read the reports of the deliberations of the



last meeting which were unanimously adopted on the motion of Mr. H. Everets, seconded by Mr. Jas. Haggarty.

The president informed the meeting of the appointment of Prof. Robertson to the office of Commissioner of the Dairy-Industry of the Dominion; the appointment was made at the suggestion of the last year's meeting of this association. After a well deserved eulogium of the talents and capacity of the new commissioner, the president invited those who had motions to make to present them.

Mr. Ed. A. Barnard, seconded by Mr. Jas. Haggarty, proposed, and it was unanimously resolved:

That the convention, recognising that the organisation of the Dominion Dairymen's Association is due to the initiative energy, and labour of Mr. Henry, Lynch, formerly of Danville, P. Q., and now of Spokame Falls, Washington Territory, U. S., recommends the re-imbusement to that gentleman, out of the funds which may be at the disposition of the Association, of all the expenses he has incurred in establishing the association, and that Mr. Commissioner Robertson be entrusted with the duty of giving effect to the resolution.

The meeting then proceeded to the election of the following committee, after a long discussion on their organisation:

Committee of reception: Messrs. Ed. A. Barnard, Quebec; H. S. Foster, Knowlton, and Prof. J. W. Robertson, Ottawa.

Committee of organisation and admission of members: Messrs. Col. Patten, Knowlton; Ed. A. Barnard, Quebec, P. C. Black, Falmouth; Prof. J. W. Robertson, Ottawa, and the Prof. H. W. Smith, Truro.

Committee on printing: Messrs. Craig, Carleton; Prof. W. H. Smith, Truro; F. H. McCrea, Brockville; Prof. J. W. Robertson, Ottawa; J. de L. Taché, Quebec.

Committee on resolutions: Messrs. Prof. H. W. Smith, Truro; Ed. A. Barnard, Quebec; P. C. Black, Falmouth and A. G. Thornburn, Broadview.

Committee on business: Messrs. F. H. McCrea, Brockville; P. C. Black, Falmouth; A. G. Thornburn, Broadview; W. M. Blair, Nappan;

The finance-committee was left to the discretion of the President, and the session adjourned.

## SECOND DAY.

### SESSION OF THE EXECUTIVE COMMITTEE.

The session opened at 9.30 A. M., in one of the rooms of the Russell-House, and was presided over by Mr. McPherson.

Besides the President, were present Messrs. F. S. Foster, Ed. A. Barnard, Prof. M. J. Robertson, and J. C. Chapais.

The committee introduced certain modifications of the published programme, in consequence of the absence of some of the lecturers.

The president to whom had been left the appointment of the finance-committee named the following gentlemen to compose it:

Messrs. D. M. McPherson, Prof. J. W. Robertson, H. S. Foster, and J. C. Chapais.

This committee decided at once how the sum granted for the organisation of the present convention should be expended, and the session adjourned.

## GENERAL MEETING.

### MORNING-SESSION.

The president took the chair at 10.30 A. M. in the session-hall of the Town-hall. He addressed a few words to the meeting on the subject of the programme, expressed his regret at the absence of Governor Hoard, of Wisconsin, who was

unable to accept the invitation to the convention, and requested Prof. Wm. Saunders, director of the experiment farms of the Dominion, to address the meeting.

The professor, after having related what had been done for the dairy industry in the Dominion during preceding years, said that there remained still a great deal more to do. He briefly recounted what could be done in its favour in each of the provinces of the Dominion. He entered into details on the experiment made at each of the experiment-farms, especially at that at Ottawa, connected with dairy-work and allied to a great number of agricultural problems. Thus, many trials of different sorts of maize had been made, to find out varieties that might be suitable to the cold and exposed regions of the Dominion. Cows of various breeds are kept at the Ottawa farm to compare their different capacities as milkers. Lastly it is proposed to investigate all the questions connected with the dairy-industry so important as it is to the prosperity of Canada.

The professor having alluded, in the course of his address, to some experiments made with the milk of different cows, and the means farmers should take to ascertain the richness of the milk of each of their cows, he was requested to give explanations on these subjects, and a discussion took place, in which Messrs. Everets, Barnard, Smith, McCrea, McPherson, Taché, Ewing, and Thompson took part.

Professor J. W. Robertson, at the instance of the president, then addressed the meeting on Cultivation, as regards the dairy-industry of the Dominion. He traced out the principal lines of the dairy-industry, the improvement to be made in the soil, the selection of the best cattle-foods, and of the best type of cattle. Land devoted to dairy purposes produces the greatest quantity of food for man and beast and with less detriment to the soil of any branch of farming. An increase in the supply of food favours an increase of population, and an increase of population augments the prosperity of a country. (1) People often talk about the danger of the over production of dairy-goods. This danger does not exist provided we produce abundant goods at a low cost. It is cheap production that makes agriculture profitable. To succeed in producing cheaply, our best plan is to consume all the other products of the land on the farm, except meat, milk, butter and cheese. But, that the consumption of all the farm products by the cattle may be remunerative, the herd must be composed of the best cattle, best from the point of view which concerns the products expected from them. The professor pointed out the rules and marks by which the selection of stock should be regulated. The selection once made, it remains to afford the animal that food, care, and lodging which it requires; and all these must be suited to the climatic conditions of the region in which the farmer resides. These conditions, in the Dominion of Canada, vary immensely, on account of the enormous extent of territory it embraces.

When once the raw material, the milk, has been drawn from the cow, it must be manufactured in accordance with the best methods; and the speaker showed that, of all methods, the co-operative was the best. To make this system pay as much as possible, the custom of not letting cows calve in autumn, and thereby produce milk throughout the winter months, which custom is the ruin of the Canadian farmer, must be got rid of. He who feeds his cows for six months without reaping any benefit from them, had better give up keeping cows.

In conclusion the professor spoke of the accessory products of the dairy, such as pork derived from the consumption by pig of whey and buttermilk, a product always sure of finding a sale on the foreign markets.

(1) I presume the professor means an increase within certain limits  
A. R. J. F.



Messrs. Ward, M. P., Col. Rhodes, Bissell, Thorburn, Everets, and Blair, discussed some of the most important points of Mr. Robertson's lecture and the session adjourned.

#### AFTERNOON-SESSION.

The president took the chair, and declared the session opened, at 2.30. At his invitation, the members continued the discussion of Professor Robertson's lecture for about an hour.

The delegates were then requested to place their railroad tickets in the hands of the secretary to be initialed by him so as to enable them to get the reduction of their fares they were entitled to.

Mr. Ed. A. Barnard, secretary to the Council of Agriculture, and director of the official Journals of agriculture of the Province of Quebec, was then requested to address the meeting.

Mr. Barnard's lecture was entitled "The rational feeding of milch-cows." He laid down the principle that the intelligent milk-producer regulated his system of cow-feeding so as to obtain the greater possible net profit at the lowest possible cost. The greatest yield to be got from a cow in a year is thirteen times her weight. A middling yield would be seven times the weight of the cow, as there are some who only give twice their weight in a year. A table was displayed showing that cows do not always give milk in proportion to their weight. Generally small cows give more milk in proportion to their weight than large ones. Thus a good cow of 440 lbs. will give eight times her weight, while a cow of 1760 lbs. will only give five times her weight of milk in a year. On the other hand,

it was shown that the small 440 lbs. cow will eat more in proportion to her weight than the 1760 lbs. cow. The smaller one requires 4.12 lbs. of hay per 100 lbs. of her weight; the larger cow only about 3.35 lbs., per 100 lbs. This was shown in another table.

In these calculations, not only must the milking value of the animal be considered, but the quality of its food, the care given it, and the temperature of its abode. Thus, a third table proved that if an animal requires 13.2 lbs. of food as a maintenance-ration at a temperature of 32° F., the same animal will only require 6.6 lb. at 68° F.

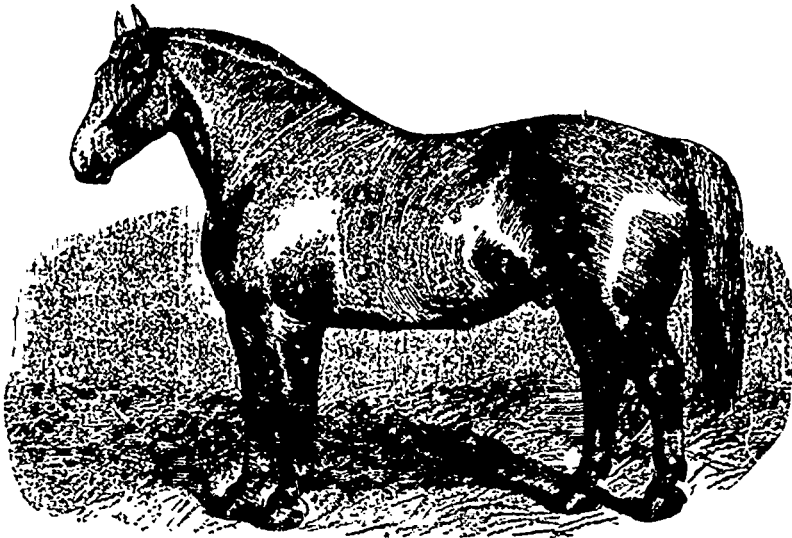
As to the quality of food, it is settled that the young grass in June, growing on the side hills, is the best for the production of milk. (1) We must therefore try to provide throughout the year a food composed of elements approaching as nearly as possible the composition of this grass. A very elaborate table showed how this food is to be composed.

(1) All the best pastures for milch cows in England are, as far as I know, and I have visited most of them, on the dead level, and many of them below the level of the sea or tidal rivers. A. R. J. F.

The lecturer, applying the principle he had just laid down, demonstrated by a fifth table the yield he had obtained, by means of it, from a herd of ten Jersey-Canadians belonging to him. The cows averaged, in weight, 700 lbs., and gave in a twelvemonth an average of 7,500 lbs. of milk each. The cost of their keep was \$31.64 a head, for the year, and calculating the milk at a cent a pound, the net profit per cow was \$43.36 a year.

At the request of Mr. K. Everets, immediately after Mr. Barnard's lecture, the president invited M. A. G. Thorburn, N. W. Territory, to say a few words. Mr. Thorburn expatiated on all the advantages offered by the North-West to those occupied in the dairy-industry. The land is of superb quality, the climate, though very cold in winter, is dry, and the summer magnificent. The grasses are rich, and must be capital food for milch-cows, as they were for the immense herds of bisons which formerly used to frequent the prairies of that region. At present, milk and cream are scarce, and any one who devotes himself to the dairy-business must reap great profits from it. Just now, the cost of transport is so great, that no profitable export business can be carried on. The speaker would be glad to join the Dominion dairymen's

association, but he was sorry to see that, before he became a member he must be a member of some provincial dairymen's association. He hoped that this rule would be modified in favour of those who lived where none of these associations existed. (To be continued.)



A YOUNG ENGLISH SUFFOLK STALLION.

#### OUR ENGRAVINGS.

A young English Suffolk Stallion. — A horse that weighs about 1500 lbs., and is active, steady at a

pull, and can walk  $4\frac{1}{2}$  and trot 8 miles an hour, is a valuable farm-horse. Such an animal is the Suffolk, and I never could understand why they are not popular here.

*Turnip-hoers at work.*—The hoers, you will observe, stand squarely to the drills, and don't fiddle along the rows as too many of our men and women so Sorel persisted in doing until I worried them out of the practice. Edge-hoe potatoes and corn along if you like, keeping the row of plants between your feet; but mangels, swedes, &c., that require singling, and the pulling down of the drills, should be struck at right-angles. One careless man in the picture is standing on the plants, and the griever or steward blew him up I hope.

A. R. J. F.

#### CORRESPONDENCE.

June 17th, 1889.

To Mr. JENNER FUST.

Sir,—I send a list of the seeds that I sowed at Lachine on April 26th. They are all doing perfectly well; the pease

are in full bloom, and we have been cutting spinach for the last ten days. Onions and lettuce I am pulling for salad. Cauliflowers will be out to-morrow.

CHARLES A. SMITH; gardener to Mr. Thos. Dawes.

VEGETABLES.

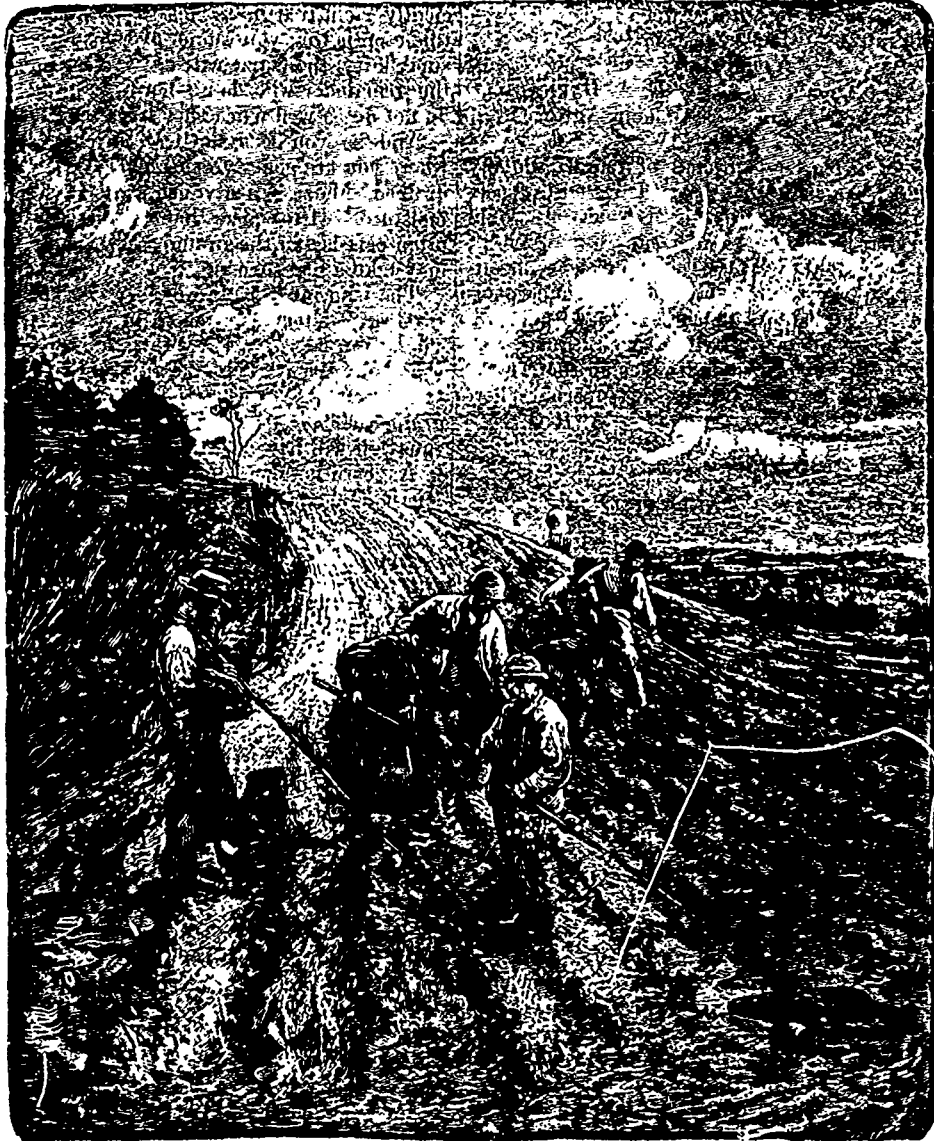
Spinach - round and summer;	Largo red Wethersfield onion,
Salsify;	Yellow Danvers "
American Wonder pease;	White American "
White turnips;	Express cabbage;

Fennel;  
Savory;

Marjoram;  
Rosemary.

I looked over Mr. Thos. Dawes' garden yesterday (June 20th) and I am bound to say that, with every wish to find fault, I could not find a chance to do so. The work is neatness itself, the ground is perfectly stocked, and there is every prospect of a thorough supply of vegetables being ready for the table throughout the season.

A. R. J. F. (1)



TURNIPS SINGLERS: A HARD TASK MASTER.

Long smooth blood beet;  
Egyptian " "  
Early horn carrot;  
Danvers "  
Chatenay "  
Hollow-crown parsnip;

Drumhead Savoy cabbage,  
Fottler's drumhead "  
Scotch-kale;  
White Paris Cos lettuce;  
Gardener's Favourite lettuce;  
Leeks.

HERBS.

Lavender;  
Parsley;

Sage;  
Thyme;

Warwick, 29 5-90.

E. A. BARNARD, Esq.

Dear sir,—Where would you recommend the use of lanl plaster, besides for corn? Do you think that plaster at \$1.50 or so per brl. is cheaper than the phosphate "Reliance" at \$3.00 per 200 lbs? What will it do on a piece of grain which is in grass for pasture or hay?

Please be kind enough to answer by next mail and through your valuable paper in French and English.

Yours respectfully,

C. E. JOHNSON.

(1) Since the above was written, Mr. Smith informs me the onions and cauliflowers have suffered greatly from the depredations of the grub.

A. R. J. F.

, 30th. May, 90.

C. E. JOHNSON, ESQR. WARWICK, P. Q.

Dear sir,—Land plaster has an entirely different effect to that of phosphates, and the only way of testing the needs of your soil is to try both; land plaster at the rate of one half barrel per acre, and the various phosphates at the rate of 200 lbs.

Plaster will have no effect on the improvement of grain except peas, tares and *perhaps* corn, but will tell certainly on the grass seeds sown, unless the land be wet.

Hoping this will prove satisfactory, I remain,

Yours truly,

(Signed) E. A. BARNARD.  
Sec. Coun. Agr. &c. &c.,

I doubt very much if plaster—sulphate of lime will do any good to other plants than those that bear their seed in pods, such as clover and tares mentioned by Mr. Barnard. It would be worth while trying its effects on alternate rows of corn; but I think there is no doubt that the most efficient chemical manure for that crop would be 200 lbs. of plain superphosphate and 150 lbs. of sulphate of ammonia, added to half dressing—say, ten tons—of good mixed farmyard dung.

When a purely *green growth* is desired, as in the case of corn given to cows while in the pastures, the superphosphate might be left out.

A. R. J. F.

## THE SILO AND ENSILAGE.

BY M. L'ABBÉ CHARTIER.

Contrary to my usual practice, and although I greatly prefer *speaking*, I shall be obliged, in order to allow more time for the other lecturers, simply to *read* the notes I have made on the different proceedings to be adopted by those who desire to make silage with as much perfection as possible. I suppose that a good deal of explanation will be needed, and if the president will allow me, I will undertake to reply to all the questions I am able to answer.

To begin with, I ask you to be patient; what I am about to read is a discursive sort of essay. I was asked to speak on the progress ensilage has made; now, to treat that question fully, and to lay before you what has been done in it and what is being done to-day, would lead me into too long an address. The subject could not be exhausted in less than an hour or an hour-and-a-half; but I am restricted to thirty minutes. I am about, then, to read you these disconnected notes; they are only some observations I have made.

Four years ago, we began to make ensilage at the Seminary of St. Hyacinthe; I have attended to the business as closely as possible; all the improvements that I thought ought to be made, I have made; and I think we have succeeded tolerably well under, pretty nearly, all sorts of circumstances.

I do not by any means assert that we have arrived at perfection. There are probably in this numerous assembly many people capable of giving you information more learned and probably more exact than that I am about to relate to you, which is absolutely nothing but the result of my own experience.

To talk about ensilage, we must understand three points: 1. the cultivation of the plant to be ensiled; 2. the construction of the silo; and 3. the manner in which it should be filled. I will proceed after the manner of this nomenclature.

As to the plant to be ensiled, I think we are all agreed

that it should be Indian corn, or maize. I do not think there is any other crop that we can grow in the province which will yield as great a bulk as maize will. (1)

Now, how ought maize to be grown. In answer to this question I will try to say as little as possible, because I think most of you know more about it than I do.

Still, there are certain conditions essential to success and when one does not succeed it is a dead loss: nothing pays better than maize when it is a good crop, and nothing makes such poor ensilage when it fails. How shall we proceed so as to insure success? We must have a soil well prepared sufficiently rich, that is as rich as possible. The advantage of this crop is that you cannot over-manure for it. If there is superfluity the maize will take up an immense quantity and the remainder will do no harm; a great many other plants do not do as well when they have too much manure.

And so, you need not fear enriching your soil too much where you are going to sow maize. The piece must be well drained. Maize, when young especially, is very susceptible to moisture. If the piece has not been well drained, the seed often perishes in the ground, and even if it come up, the crop may take a bad turn and never attain its proper bulk.

The land must be thoroughly worked, as perfectly pulverised as possible. To succeed in the cultivation of corn, every chance must be given it in its young state. If the land is badly prepared, if it be full of clods, you delay greatly the growth of the plant, and you run the risk of having many germs that never come up, or that having come up, die; and thus you will have many a gap in your field.

As corn is sown late, you will do well to give one or two stirrings to the land before sowing, so as not to let the soil harden in the sun; drag it with a grubber or harrow it thoroughly in order to prevent it from getting baked, which if it happens to do, it will be very difficult to get it fine again.

As to the way of sowing corn, I believe some people sow it broadcast; but with us, who make ensilage, I think there is no broadcast work practised because we do not care to fail in our undertaking. We therefore sow in rows; until we get more light, I think 20 to 24 inches between the rows is enough.

One thing I wish to draw your attention to: up to the present time, I think we have sown too thick.

From the time we began growing corn, we have every year lessened the quantity of seed, and we find the quality improved, and perhaps, the quality increased a little. At first we sowed a bushel and a-half to the *arpent*; now, only three-quarters of a bushel.

Well, I have almost made up my mind to sow only half a bushel next year, I think that will be enough, and that we shall get as much, if not more, than with three-quarters, or with a bushel, and certainly more than with a bushel and a-half.

As soon as it is sown, roll the corn, to firm the land, and give a chance to every seed to be pressed by the mould so that it may begin to root at once.

Do not wait too long for the first harrowing. If you wish to get your corn properly worked before the weeds give you any trouble, hoe, harrow, grub the land before the weeds appear. When once they show themselves, it is always difficult to destroy them. But, if you stir the land before the weeds are visible, when they have only just germinated, then, you kill part of the germs, and by that alone you destroy a considerable proportion of the weeds that would otherwise grow.

It sometimes happens that the harrowing cannot be done soon enough, and from the moment that it is done *after* the

(1) My own impression is that two cuts of clover, June and August would be worth more than the maize-crop.

A. R. J. F.

weeds have sprung up all over the piece, it is always a more difficult job to destroy them.

Next, with regard to hoeing, I propose to draw your attention to a fact which you have probably noticed, but about which you cannot study too much. You are aware that maize forms a multitude of radicles, little roots, which spread on all sides; these give it its great power of growth; its nutriment is imbibed through this multitude of ducts. Well! I advise you to pay particular attention, after your corn is up, to horse-hoe, &c., very shallow. If you hoe deep, you will destroy a great number of these rootlets, you will injure the plants, and you incur the risk of your corn not coming to perfection. I have no doubt you know this very well, but it will do no harm to repeat it. (1)

As soon as the plant begins to grow, it must be *lightly* cultivated, so as to do as little injury as possible to the rootlets which feed the plant and give it its strength.

I need not speak of the way to sow corn, since I presume every one has his own way, and will hold fast by it. They are all about equally good, but, as some may care to know how we sow ours, here is the description:

We simply make a furrow with the plough two or three inches deep, and scatter the corn in the row, and, last year, we covered it, too, with the plough. We found that it was buried at a much more uniform depth. When we used to cover it with the rake, there were always a good many seeds left above ground, while by passing the plough along at about the same depth as in making the furrow, the corn was well covered, and, after a rolling, came up uniformly.

Take great care in selecting your seed to have it sound and full of vigour. There is a way, which is very easily practised, to judge of the quality of seed. You have simply to take, indiscriminately, fifty grains from the bulk of corn, and sow them in a box of damp earth. At the end of a few days the plants will be up. You then count the percentage of plants to seed, and, then, you must reflect that in the open field you will not have as many grains come up as in the box, since the corn is under more favourable conditions in the box than in the field. By making this trial, we know precisely the value of the seed-corn, and do not hazard the loss of our best piece of land. For it is the best piece of land that is kept for silage-corn, and when this is sown, the season is over for sowing anything else, except buckwheat.

When I speak of sowing half-a-bushel to the *arpent*, you must not misunderstand me. Of course, if you are about to sow a corner of your piece in maize for your cows in summer, when the grass has become hard and the cows will no longer eat it, you should sow thicker. For, if you sow corn for that purpose, when the cows are in the pastures, and sow it so thin, the stalk will become too coarse and the cows will not eat it, or will leave the greater part. That is why a piece is sown thick; the stalks remain thin and tender, and the cows will eat it up to autumn.

I do not doubt but that in well fitted land, well manured and drained with  $\frac{1}{2}$  a bushel of seed to the *arpent*, the weather being propitious, we may reckon on a yield of 20 tons to the *arpent*.

But when I say 20 tons to the *arpent*, it must be understood what corn I am speaking of. It is very sure that if you sow Canada corn you will never get such a crop as that, and if you sow Southern white-corn, you may harvest a good deal more. But until science has said its last word on the relative values of these different species, I can only advise you to sow the horse-tooth kind, or Western corn. With this, you may grow your 20 tons to the *arpent*, and if you sow it thinner,

you will have a crop of ears to enrich your forage, and with which your cattle will be highly pleased. I think, until we know from the positive decrees of science that other kinds of corn are preferable, we had better keep to this sort. Our climate is not unfavourable to the Western corn. I know that we cannot reckon on its ripening its grain, but that is not what we want. Later, we shall see at what period of its growth the maize should be cut and ensiled.

I have very few remarks to make on the construction of the silo. All those who have entered on the business know how to build one, and those who are beginning to grow corn for silage, and consequently have to build a silo, will find in almost every locality plenty of information on the subject. I will only make a few remarks on my experience in silo-building.

The whole secret of success with ensilage consists in putting the silage into an air-proof building. You may make it in any way you prefer, if this rule, which is peremptory, be faithfully observed. Whether it be constructed of wood, brick or stone, is no longer a question. Experience proves that wood is as good as either, if not better.

The most important part of the silo is the bottom. The best material for those who do not care to rake it of cement is beaten clay, raised to about half the thickness of the sleepers. This clay, beaten carefully, will guard against any influx of air from beneath, for this would be fatal to the silage. It is the air that enters from below that has the most disastrous effect. This is why I cannot advise any one to make the bottom of the silo of wood, because vermin will from time to time, without your suspecting it, make their way through the boards; thence, follows an escape of gas, a current of air takes its place, and a quantity of the silage is spoiled, without your being able to help it.

Of course, those who do not mind the expense (which is not very great) of a cement bottom, are still more secure. Still with a bottom of beaten clay there is no great danger of vermin getting in; especially if the building be earthed up outside to half the thickness of the sleepers.

The sides and the gables may be made secure by paneling them with two ranks of dove-tailed boards, one rank within and the other without. But for greater security against the entrance of air, I recommend putting two ranks of dove-tailed boards *inside* with felt paper between the two ranks.

As I have already said, I do not consider this necessary but it is a still greater security. It sometimes happens, that with a single rank outside and the same inside, air will enter without your knowledge while, when you have two ranks inside, with felt paper between them, you are safe from all danger.

If you want to exclude frost, fill in the space between the outside and the inside paneling with sawdust or tan-bark.

As to the size of the silo, that is a matter of practice, which all who concern themselves with the matter understand. You are aware that, as a rule, the average weight of silage is 40 pounds to the cubic foot; sometimes more, rarely less. But by taking an average of forty pounds, you are not likely to be deceived and consequently the dimensions will be easy to calculate. Forty pounds to the cubic foot is equal to fifty cubic feet to the ton. Now, supposing you intend giving ten pounds of silage to each of your cows at each meal, three tons each during the winter, you have only to allow, in building, 150 feet to each cow, and you will have room for 30 lbs. a head till spring arrives. If you want to give them more, build accordingly.

It is better to build less in breadth and in length, and to add to the height. The higher your silo is, the better will be the packing (*fouillage*). If your herd is large, build on a large scale and divide the silo into two or even three compartments:

(1) I hoe as deeply as possible until the corn is about 9 inches high—4 or 5 inches deep.

you will find the benefit of it. The interior divisions should also be air-tight; though this is not absolutely necessary; but to secure impermeability to the interior divisions, it will be enough to make them of two ranks of boards with felt-paper between them. I say that this is not absolutely necessary, because when one of your compartments shall have been emptied, the other will done fermenting. Still, if your division is not air tight, the silage will lose some of its quality by the entrance of air, which, though it will not utterly ruin it because the fermentation is already complete, will make it flat—*éventé*—and diminish its value. Air-tight divisions are not expensive to make, and I think they had better be made so.

It remains to speak of the silage properly so called.

At what season must we begin to fill the silo? As much as possible, we should begin to fill soon enough to finish before the first frosts.

Frost is seriously detrimental to maize. It destroys almost completely the nutritive value of the leaves, and very much diminishes the value of the stalk.

On the other hand, according to the opinion of men of great experience, corn is in its richest state for silage, when the grain has passed the milk-state, and is beginning to harden. Judging from this opinion, which I have every reason to think well founded, it is of great importance to sow corn as soon as the soil is warm enough, and the danger of spring-frosts, in all probability, passed away. Sown at this period, one may hope that the maize will have arrived at the desired degree of maturity at the end of August or the beginning of September.

I will here give you the reason why I advised a diminution in the quantity of seed, and why I shall probably before long advise an increase in the distance between the rows. The nutritive value of silage depends greatly on the quantity of ears mixed up in it. Now, in thin-sown corn, more and larger ears are formed. At the same time, the quantity of forage is not lessened, because the stems having more room grow larger and longer, and compensate largely by their weight for the diminution of their number.

Cutting the corn  $\frac{3}{4}$  to  $\frac{1}{2}$  an inch with the chaff-cutter seems to me the right proportion. I believe that I have proved that reaping the corn in the field half a day at least before chaffing it, is a good plan. These few hours of exposure to the sun and air make it lose its first freshness, and seem to prepare it to make *sweet* silage.

It was this very last season that, following faithfully the principles that rule elsewhere, even in the most advanced districts of the United-States, I succeeded in making silage that might be called *sweet*, although it was thoroughly fermented. This year, I had the corn cut and left in bundles in the field for at least half a day before carrying it to the cutter, and I attribute the absence of acidity and the other good qualities of our silage this year to this little operation. I believe the maize lost its first freshness, its moisture too perhaps, which is always excessive, and by this mode of proceeding we succeeded in making *sweet* silage. *Sweet* silage does not mean silage that has no acidity, that would make it insipid for the cows. They would eat it perhaps, but they would not like it so well as if it had a little piquant flavour. Silage, in general, has had too much acidity. And on this account, I lay some stress on the apparently trivial plan of leaving the reaped corn on the field for some time before it is taken to the cutter, because I believe it to be a point of great importance. Indeed, I cannot account for our not having been able before this year to make silage perfectly fermented and yet *sweet*.

I saw, to-day, some *sweet* silage, but it had not fermented. It was among the samples exhibited.

In some places, as you know, chaff-cutters are used with

an elevator attached which carries the corn into the silo as fast as it is out. It is a great economiser of labor, and does not require any great additional power to work it. It is very certain that those who can arrange so that their chaffed corn shall be thus carried into the silo, without being touched by the men, will save a good deal by it.

I believe that the general practice to day is to fill the silo only at intervals, and to allow each layer to heat up to at least 100° F., before adding the next layer, which requires, generally, 48 hours.

But, lately, I have seen the theory promulgated that it is not needful to fill the silo by intervals. This thesis is sustained by a professor in one of the agricultural colleges in the States. Until he has given irrefutable proofs that he is right in his conclusions, I would rather preserve the custom we have of only filling at intervals; for the first trials we made of filling the silo at once, did not give us full satisfaction. There was certainly more acidity in it than there is in ours of to-day when we practise the method of leaving intervals when we are filling. That is why I advise those who have a large silo to divide it into three, if possible, so as to be able to work at it every day, and to finish as soon as they can; for at that season of the year, there is great danger of frost. If you can by any means fill the whole silo from above, I advise you to do so, that the door may be closed even before the filling up is begun.

I have always found the door the most difficult point to close hermetically. Since we have filled entirely from the top we have had no loss at the door-way.

Before beginning to fill in new layers, always look carefully at the corners and sides, and fill up the crevices which may have been formed there by the settling (*fouillage*) that will have already begun.

When the silo is full, let it heat up to 135 F., or even to 140 F., then put on the cover, which may be of rough planks, and put a layer of 7 or 8 inches of earth on the planks, so as to thoroughly exclude the air.

No pressure is wanted; this question is now completely settled.

Any other kind of cover, as long as it is air-tight, will answer as well as a layer of earth.

I will now repeat what I said at Three Rivers: the silage need not even be covered. As to those who want to use it at once, they will sustain no loss. Only, you must understand, that, at first, the silage will have about the same flavour to your cattle as the maize as it stood in the field; but there will be none spoiled.

Those who are not obliged to use the silage at once, can also leave it uncovered, but in that case, they must put up with the loss of the upper layer 10 or 12 inches deep. There will be, at the top, a layer of that thickness of carbonised silage. But when that layer is formed, the rest will be as perfectly sound as if it has been covered.

Thus, each will have to decide whether it is better worth his while to lose a layer such as I have described, or to take the trouble to put on a row of boards and cover it with earth or any other material that is air tight.

Now, we must not forget to water this layer of earth during the settling, because the silage does not always settle equally. If it do not, then crevices are formed, and if care be not taken, the air will get in through them, and you will have places on the top of your silage which will be a little damaged.

When the settling has finished, there is no need of further care; the silage can wait till it is required for use.

I forgot to mention one thing in its proper place: when filling the silo, there is no need to tramp it. It is enough to spread the chaffed corn as fast as it arrives, so as to leave no voids, the settling will be brought about by the fermentation

and the weight of the stuff itself. I do not mean to prohibit tramping; it will not injure the silage, though it may retard the fermentation; you will arrest the fermentation, which has its use, particularly if you tramp forcibly.

I cannot tell you how long you should wait before opening the silo, but certainly three or four weeks will be enough.

I recommend you always to take the silage from the top. It may be taken from other parts, but that is the way to preserve the same quality of silage throughout the whole mass. You can see that if you cut it out in slices, that will always make a partition wall (*cloison*) of silage which will be exposed to the air for weeks at a time, depending upon the rapidity with which you consume it. If you use it slowly the silage will become a little flat (*éventé*); while if you take it from the top, you will take two, three, or four inches a day, according to your requirements, and it will be always fresh, the surface not having had time to be affected by the air, which always injures it.

I think I have touched upon the principal points in such a manner as to give you an idea of the progress we have made through practice and experience. There is still a good deal to be done before we can be certain that we are travelling in the right road.

Practice will secure to us the one part that we have not at present, the other part, the scientific, we can only obtain by means of the experiment station. As to the way of making ensilage, that is a practical affair which we can learn; but with regard to the value of different kinds of silage, sweeter acid, silage of green corn, or silage of or nearly ripe corn, no practice can decide their relative merits: that must be settled by chemical, analytical tests and by experiments specially made on certain specimens.

Take three or four cows and give them different quantities of each, but in accordance with the analyses which furnish the value of the different nutritive matters. It may be that experience will contradict the principle; that it may be true in theory but false in practice. By taking in this way three or four subjects for experimentation, acting upon them with different quantities and stating the results obtained, we hope to arrive at the answers to many questions.

What consoles me is, that we have now come to this point: we can trust to data so certain that there is no danger of suffering dead loss, and little risk of suffering any loss at all.

The first silo of modern times was built in 1874. No doubt in ancient times there were siloes, but in our date it was in 1874 that Goffard made his first silo, and since that date we have gone on from discovery to discovery, and have placed the silo within reach of every one.

Goffard's invention was of hardly any use to the average farmers; it was supposed that buildings of stone or brick connected within or without, were necessary.

It was we Canadians who said: Since the only thing necessary is to exclude the air, wood is better than stone or brick. We were the first to make wood-siloes. It is in this way that we have gone on and made as rapid progress as we could expect.

In future I do not believe that our progress will be so rapid, for we are now at a juncture when science must come to our aid. Still we have the experiment station at our command, and I hope that, thanks to it, we shall be able to get on without too much delay. J. B. CHEATIE, PRIEST.

**THE RYE GRASS CONTROVERSY.**—Mr. Carruthers, botanist to the Royal Agricultural Society, has revived the rye-grass controversy by publishing in the Society's Journal an account of experiments carried out last season. In 1888 Dr.

Fream transplanted turfs from some of the best pastures in the kingdom, out the produce when it was mature, and analysed the herbage, the results being that he found a very large percentage of rye-grass in nearly every instance. The Council of the Royal Agricultural Society deputed Mr. Carruthers to examine the same pastures last season, with a view to the correction or confirmation of Dr. Fream's evidence. This he did; but, instead of transplanting small pieces of turf, he hurdled round much larger pieces close to the spots from which Dr. Fream's turfs had been taken. This was an improvement, as the larger the piece of pasture taken for experiment the more likely it is to be fairly representative of the pasture as a whole. Unfortunately, however, Mr. Carruthers also made alterations in the methods of cutting and weighing the produce. He had it mown with the scythe, and weighed the several grasses after, drying them; whereas Dr. Fream had the growth from his turfs closely shaven with shears and weighed in a green state. The difference in processes may in some measure account for the extraordinary differences in results, though not for anything like the whole of them. In one pasture where Dr. Fream found that 88 per cent. of the graminaceous herbage consisted of rye-grass, Mr. Carruthers found only 1 per cent., and in another he found no grass of this variety, though Dr. Fream obtained 77 per cent. In seven out of twelve pastures, however, he found percentage, of rye-grass ranging from 12 to 81, five of them being over 30. Therefore, his researches tend to prove that rye-grass is commonly perennial, although he found much less of it than Dr. Fream obtained. (1)

## EXPERIENCE WITH ENSILAGE.

### WEIGHTING AND CUTTING GREEN BEST.

EDS. COUNTRY GENTLEMAN—It is somewhat singular that there should be so many contradictions involved in the method of preserving green crops by siloing. A plan that brings success to one man will frequently cause utter failure when adopted by another. In an article in "defence of the wooden silo" (p. 523 1889,) I said, after giving my experience in light and heavy weighting: "I determined to stick to heavy weighting in the future." And yet I was induced to alter that determination by reading repeated articles from your able and always interesting correspondents, Prof. A. J. Cook, Mr. Gould, and J. G. These gentlemen have devoted much time and labor in seeking how to obtain best results from the silo, and their opinions are certainly valuable as coming from practical siloists and not theorists. In discussing this question of weighting, J. G. (p. 104, 1889,) said as follows: "My opinion is that a man had better spend the time fishing than weighting a silo." From which disparaging remark I would infer that either fishing is very dull sport in the Western Reserve, or that J. G. is not partial to "ye gentle art." At any rate, I concluded these gentlemen must know, and as it is both troublesome and expensive to weight a silo, I determined to give the non-weighting plan another trial. I did it last season and—"I'll never do so no more."

After my siloes were filled (I have two) I waited three days

(1) The Pacey's perennial ryegrass and the cow-grass (*trifolium pratense perenne*) I sowed together on the Cross farm last spring, are looking splendid. The sainfoin, except where the snow melted and formed ponds, subsequently frozen, is strong and healthy.

The sainfoin turns out to be at least ten days earlier than the clover on the adjoining piece of land. It was in full bloom on June 15th, and fit to cut for green-meat on the 7th. For hay, sainfoin should be mown very early, as it soon gets hard and sickly.

A. R. J. F.



and then covered with 18 inches of oat straw placing over this two layers of boards, breaking joints. Still skeptical, and haunted by the idea that all was not well, at the expiration of four weeks I made an examination of one silo, and found the ensilage already well advanced towards rottenness and *very hot* as far down as I could investigate. I began using from it at once to save what was possible, and promptly covered the other with two feet of earth. I estimate the loss in the first silo at not less than 25 per cent. I opened the second silo in January and found that my promptness in weighting had prevented serious loss, as not more than a foot of ensilage from the top had spoiled utterly. Though affected to the depth of two feet or more yet it was eaten by my stock. Also I find, what I had never seen before in my ensilage when heavily weighted, frequent patches of mould at intervals from top to bottom. I also find the ensilage not so compact, and liable to mould after short exposure. Altogether, the experiment has been satisfactory, if not satisfactory, the loss, a serious one to me, and the lesson one I shall not forget.

Another point on which my experience differs from that of some very eminent authorities. I have been following directions for securing ensilage sweet and of the greatest feeding value. Does not science tell us that by allowing the corn to "glaze over" in the ear before cutting, we not only get sweet ensilage which is most desirable, but also harvest our crop at the stages of greatest value? The alchemist of the analytical chemist tells us that maize at that stage contains a greater amount of digestible nutrients than when the ears are silking. Very true, but just here the analytical cow steps in with her alchemist, and tells me a different story, both at milking, pail and churn. In other words, my cows have yielded more milk and butter when fed on corn ensilage made from corn cut when the roasting ears were in the milky stage, than when fed on ensilage made from matured corn. It may be that my cows—graded Jerseys—are peculiar in this and different from others, but such is the fact. The ensilage from the un-matured corn is more acid, but the milk and butter from it is as sweet. In feeding matured ensilage I notice that my cows eat the corn and the leafy portions and reject the stalks, while, per contra, they eat the ensilage from the greener corn clean. They don't go at the former with the eagerness and avidity with which they devour the latter.

I think Prof. E. W. Stewart mentions somewhere that corn at the silking period is just as rich in feeding value as when at a later period glazing over and maturing the ear, but that the nutrient values are distributed at the former time through the entire stalk, blades and ear, and that at the later period they are withdrawn and concentrated in the ear. (1) If this is true, and I believe it, then I can readily understand why my cows pick out the pieces of ear and the greener portions of leaf and reject the remainder, partly for this reason and partly because the short-pieces of stalks hurt their mouths.

Again, by the time my corn had glazed over last season, the stalks had "fired up" at least two feet above ground, and all of the lower blades were in a similar condition and absolutely worthless. Now this was another source of loss and waste. At the time the corn was in full silk it was perfectly green from the ground to the tassel, and had it been cut then, my supply of ensilage would have been at least one-fourth greater.

For all these various and combined reasons I have resolved un-animously that: Firstly, I shall continue to weight my silo heavily, as the one method giving me the best results; and secondly, I shall cut my corn in the future when in the early roasting-ear stage, as at that time my entire corn crop can be harvested without loss and with the assurance that it possesses, for my cows at least, its maximum feeding value.

Buncombe County, N. C., Feb. 15. JOHN K. HOYT.

(1) This is, theoretically, true. Whether it is true practically, remains to be shown. A. R. J. F.

### A POTATO LETTER.

#### SHALLOW TILLAGE—THE EARTH MULCH—BREED'S WEEDER—COST OF PICKING UP SACKS FOR HANDLING—SPROUTING WITH MACHINERY.

EDS. COUNTRY GENTLEMAN—Mr. Chas. A. Councilman's article on potato culture in Maryland (p. 264) is one of the best I ever read. That heavy mat of clover left on the ground until plowing time in the spring the "rows perfectly straight and just 30 inches apart," and the dropping of every thing else to harrow the crop at just the right time, sounded particularly homelike to the writer.

But we can all learn of each other, and if friend C. will allow me, I think I may be able to suggest how he can slightly improve on his culture in two or three respects. He speaks of using a double-shovel, twice in a row, as the last working. Now the soil was made for the roots of plants to grow in. They would have none too much room if given all of it; but practically we cannot give them quite all, as we must stir some of the surface to keep weeds down, and, in the potato field, to check evaporation and let in the air. (1) To obtain these desirable results, however, we need only to work the surface to the depth of an inch, or at the most an inch and a half. The rest of the soil can be given to the roots undisturbed after the first working which may safely be deep and thorough. (2) The roots of potato plants occupy all the space between the rows by the time the plants are from four to six inches high. We sometimes forget this. To tear off a part of them after this time by deep tillage, is simply putting the plant to the expense of growing more when it might be better employed—that is, putting all its force into growing tubers. With such a growth of clover turned under and so much fertilizer used, the injury from roots destroyed of course would not show as where there was a less abundant supply of food. But is it worth while to feed plants to grow roots to destroy unnecessarily? Many corn growers in this State have found that they cannot plow corn deeply, destroying many of the roots, as their fathers used to on the then rich, virgin soils. On our ordinary fertile soils I think the same rule holds good in the cultivation of potatoes, although not quite to the same extent, as potatoes naturally root deeper than corn. I feel certain that I know of fields of potatoes that last season were greatly injured by deep cultivation after the tops were half grown or more. This on soil only moderately fertile. And more particularly were they injured, because a dry, hot spell followed the deep culture, with rain just after they might have been recovered. Abundant fertility would have helped them get over this injury also. They were early potatoes, in addition, with no time to spare for making surplus roots. (3)

My tillage after the first cultivation (usually done before the potatoes are up) will all be shallow this year the same as last. Instead of C. A. C's spike-tooth harrow we shall use Breed's weeder, a very light smoothing harrow (now advertised in your columns), going over the field about once in five days on the average, until the tops are half grown. Then we shall end with the Planet Jr. and light teeth, seeing to it that they never go more than 1½ inches deep under any circumstances. No careless boy or man will be allowed to "ride" the cultivator, thus sinking the rear teeth three or four inches deep right next to the drills, and tearing off masses of little roots. Of course all harrowing and cultivation will be done just at the right time to check evaporation, as soon as it is dry

(1) I never earth up my potatoes. If, here and there, they throw up a few green ones, keep them for seed. A. R. J. F.

(2) Good, indeed! A. R. J. F.

(3) Early potatoes should be hoed once by hand, and once by the horse-hoe, and then left alone. Like co. this first work can hardly be too deep. A. R. J. F.



enough after every shower, and again in five or six days, any way, if it does not rain, as the ground will then be settled so as to be a better conductor of moisture than when first stirred.

I have written so much on this point that more may seem unnecessary; but there are thousands yet who do not fully understand it, and this, as well as the shallow tillage, is a very important point to the ordinary grower of potatoes.

Farmers said to me last winter: "Why, stirring the soil makes it dry faster." Certainly, the inch or two that you stir dries faster; but after that it acts as a mulch, and greatly retards evaporation from the mass of soil, and wet soil below. You lose a little purposely to certainly save most of the rest.

A word about Breed's weeder: It is a perfect, light smoothing harrow. It cannot "track" as it is drawn by a horse walking between thills. But it is a tool to be used only on mellow land, free from stones and all rubbish, and for level culture. It does rapidly in the field just the work that you would do, in the garden with a steel-toothed rake, stirring the soil to prevent weed growth and to mellow the immediate surface.

My friend C. pays for picking up potatoes three cents a bushel. We are ahead, for it does not cost us more than half that. Labor is probably cheaper with him; but I think the difference lies in the way they are dug. He speaks of plowing out the potatoes. It is double work to pick up after any of the plow diggers that I have tried. The elevator diggers, like the Hoover, leave the tubers so clean and right together, on top of the ground, that a man working for a dollar a day and board would be ashamed to pick up less than 100 bushels for a day's work.

Our friend speaks of some growers using bushel boxes to pick up in, and others two-bushel burlap bags. He prefers the latter. We have the boxes for field use; think we can pick up faster, and they are more durable. But for putting potatoes on the cars, from the barn or cellar, the bags are much the best. An extra man can shovel the potatoes up into bags (one bushel in a bag) while my regular man and myself are gone to the depot, each with a load. Then when we get back, the two men can hand them to me as fast as I can load them, and in 20 minutes we are on the road again with 100 bushels or more. They can be loaded on the car very rapidly also, and there is little dead weight to draw back and forth. For this purpose we use hundreds of burlap sacks.

There are few jobs more unpleasant to the writer than sprouting potatoes. We like the Beauty of Hebron to eat; but they will sprout early, with ordinary care. The other morning my son and myself went down cellar, and one emptied the boxes of potatoes into a revolving cylinder while the other turned a crank, and we took the sprouts off of a bushel or two per minute, doing the work quite well. The sprouter is made by the Hoover digger manufacturers. Truly the world moves on! But we haven't got a machine to pick up potatoes yet.

T. B. TERRY. Summit Co., O.

### SEASONABLE NOTES.

#### MANGEL WURZEL.

If we were asked to name a day upon which mangel wurzel might be sown with the best prospect of success, we should say, as we have said repeatedly, the 21st April. (1) It is, of course, impossible to fix dates accurately, as seasons differ in character, but, as a pivot by which to fix the most suitable period, the present may be taken as the best time for this purpose, and by the end of the week those who have not sown may expect to suffer by further delay. No doubt during the week now commencing the greater part of the mangel area

will be seeded. If our advice is valued by readers they may find it advisable to again look at remarks made under the heading "Seasonable Notes" for the two or three previous weeks.

Results obtained in certain quarters and reported last week were less favorable to the use of dung than our expressed opinions on this subject. The immense difference between the results of the two unmanured plots was in itself likely to shake the confidence of readers in the value of the experiments. How can we attach importance to an apparent increase of two or three tons per acre from the use of a manure, while there is quite as great or even a greater difference between two unmanured plots? Our own experience is contrary to the alleged superiority of superphosphate over dung as a manure for mangel, and it seems rather doubtful wisdom to raise questions as to the value of a manure such as dung, which is perfectly assured in its position. It would be by no means difficult to show by field experiments that superphosphate, nitrate of soda, and potash salts have acted injuriously by diminishing the yield of crops.

We have not space for examining the internal evidences which the experiments alluded to contain as to their invalidity as guides. It is, indeed, a question whether any field experiments can ever confirm, overturn, or modify the practice of good farmers, based upon long experience. If we are to this day to learn from experiments that dung is an uncertain, expensive, and ineffective manure, all we can say is, so much the worse for the teachers and the experiments upon which they rely. Soils and seasons are too various in character for generalising as to effects produced upon one soil in one season. We however, see very little symptom of insurrection against King Muck, or even of waning popularity.

One of the best reasons for using dung is overlooked or, in some cases denied—namely, its cheapness. Wherever cattle and sheep are kept at a profit, there dung is obtained for nothing as a bye-product. As cattle and sheep are now the only productions by which farmers can possibly live and pay their rents, it follows that farmyard dung and sheep droppings must increasingly be relied upon to keep up the fertility of the land. Where are the continuous wheat growers who were at one time going to revolutionise farming by pocket manures and corn every year? Who are prosperous among us? We answer: those who stick to their sheep and cattle, their dairies and young stock. Will anyone have the hardihood to dispute this?

J. WRIGHTSON.

#### MANURING MANGEL WURZEL.

Well-timed and admirably to the purpose are the articles on this important subject in recent issues of the GAZETTE, for they come to us just as we were in the full swing of preparations for sowing mangel, and they offer sound practical hints based upon the safe lines of actual results. Advice so given has much more weight than mere downright statements, however correct they may be, for everybody likes to know the reason why of a matter, and among farmers this feeling is so predominant that it not unfrequently tends to clog the wheels of progress.

No doubt deductions from experiments are useful, but they are certainly not to be regarded as conclusive. Take, for example those published by the Essex Agricultural Society in which the chief lesson taught by these trials "is the most unsatisfactory kind of manuring for mangels seems to be dung alone." As a general statement this is correct, but it must not be taken as a hard and fast rule of practice, for there are local circumstances always to be taken into account, or, in other words, every field of any farm must be treated according to its special condition and requirements. Let me give an example in my own practice. Last season I had a splen-

(1) In England. Here, May 10th.

did crop of Orange Globe mangel at the home farm, for which nothing but dung was used. Now I hold that dung is alto-gether inferior as a fertiliser to chemical manures, but in this instance preference was given to it, because the fertility of the soil had been well sustained for some years previously, and the barley which the mangels followed had a dressing per acre of 1 cwt. of nitrate of soda,  $\frac{1}{2}$  cwt. muriate of potash,  $\frac{1}{2}$  cwt. mineral superphosphate and  $\frac{1}{2}$  cwt. steamed bone flour. Care was taken to obtain pure manures separately; they were mixed under careful supervision, and drilled with the corn. An excellent crop of barley was harvested, and it was considered there was a sufficient residue of fertility in the soil to warrant the avoidance for once of any outlay upon chemicals for the roots. The result proved the correctness of the decision, for the mangel crop was decidedly superior to that of all the five other farms which I then had in hand.

For land low in fertility the dung and chemicals are both indispensable for mangel. Before all things we must try and render the crop as safe as possible from the effects of trying alterations of weather, and especially should our aim be to ensure brisk robust growth and power to withstand drought. Sown on the ridge, with plenty of dung below, and the soil rich in fertility, brisk growth follows germination, the roots lay hold of the dung and once the plant is well established in it we need care very little about drought, for farmyard manures contains 70 per cent. of water. The advantage of a liberal use of it for this crop is therefore obvious, it is equally clear why we require to have all of it in the furrows. Surely it is also self-evident how admirably a mixture of chemical manures is calculated to store the soil of the sides and base of the ridge with fertility? It is true enough that dung contains all the essential elements of plant food, but dung is a costly article, not often to be had in sufficient quantity for general purposes except on farms near large centres of population.

That much money has been lost on root culture there can be no doubt, especially when superphosphate alone has been used. Nitrate of soda and mineral superphosphate in equal quantities—say  $1\frac{1}{2}$  cwt. of each, with the addition of 4 cwt. of common salt, is a safe mixture per acre, which experience has shown to be suitable for most kinds of land. There is no doubt that potash salts may also be used with advantage in some soils while in other soils it is not wanted at all, and therefore, it remains for those who do not find results from the safe mixture entirely satisfactory to test the potash question for themselves, which after all, is a very simple matter. Only pray give preference to muriate of potash rather than kainit, for muriate of potash, 80 per cent. basic, contains 41.9 per cent. of potash, while kainit 24 per cent. containing only 9.6 per cent. of potash. Muriate is  $4\frac{1}{2}$  times more valuable to the farmer than the kainit, for though kainit is apparently the cheaper of the two, yet in reality it is not so and the muriate is the most soluble in water. One other important fact about potash is that it is not washed away by rain, soil holding it most tenaciously.

In using chemical manures I have invariably mixed the whole of them thoroughly and sown the mixture along the furrows before closing them to form the ridges for drilling. To withhold the nitrate of soda for about a month after the sowing and then to apply it as a top dressing is, in my opinion, a mistake. If we were certain of enough rain to dissolve and wash in the nitrogen to the roots the top dressing would then go to insure us against any loss of it but are we? It is only in an exceptionally wet season that there could be any risk of loss of nitrogen, and it is all important that it should enter the soil in combination with the mineral manure for a crop which is certain to be in full growth so quickly after the sowing.

EAST ANGLIAN.

## NON-OFFICIAL PART.

### Conservatism vs. The Rage for Novelties.

The Seed Annual for 1890, issued by D. M. Ferry & Co., of Detroit, Michigan, has reached our table. Its cover this year is especially artistic and attractive, and its contents as usual, interesting and instructive. Ferry's seeds are thoroughly reliable, and always come true. The directions given in the Annual for the cultivation of both flowers and vegetables are so full and explicit that no one can fail of success who uses their seeds and follows the instructions.

D. M. Ferry & Co. are very conservative, both in offering new sorts and in their claims for them when offered; but they take pains to inform themselves as to the true character of all new varieties, so if some much lauded novelties are not found in the Annual, the probability is they have tested them and found them of no value.

A request sent to the firm at Detroit, Michigan will bring you a copy of the Seed Annual for 1890 by return mail.

### Valuable to Know.

Consumption may be more easily prevented than cured. The irritating and harassing cough will be greatly relieved by the use of Hagar's Pectoral Balsam that cures, coughs, colds, bronchitis and pulmonary troubles.

### CONSUMPTION CURED

An old physician, retired from practice, had placed in his hands by an East India missionary the formula of a simple vegetable remedy for the speedy and permanent cure of Consumption, Bronchitis, Catarrh, Asthma and a Throat and Lung Affections, also a positive and radical cure for Nervous Debility and all Nervous Complaints. Having tested its wonderful curative powers in thousands of cases, and desiring to relieve human suffering, I will send free of charge to all who wish it, this recipe in German, French or English, with full directions for preparing and using. Sent by mail, by addressing, with stamp, naming this paper, W. A. NORRIS 820 Powers' Block, Rochester, N. Y.

### ADVICE TO MOTHERS.

Mrs WINSLOW'S SOOTHING SYRUP, for children teething, is the prescription of one of the best female nurses and physicians in the United States, and has been used for fifty years with never-failing success by millions of mothers for their children. During the process of teething its value is incalculable. It relieves the child from pain, cures dysentery and diarrhoea, griping in the bowels, and wind-colic. By giving health to the child it rests the mother. Price 25c. a bottle.

### A Plain Statement.

All poisonous waste, and worn out matter ought to escape from the system through the secretions of the bowels, kidneys and skin. B. B. B. cleanses, opens and regulates these natural outlets for the removal of disease.

**FOR SALE.** — Norman cattle, Ayrshire cattle, Chester-white and Berkshire pigs, Plymouth-Rock poultry. Apply: Honble Louis Beaubien, 30 St. James Street, Montreal.

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### A Night Alarm.

I awoke last night to find my little boy so bad with croup that he could hardly breathe, but on giving him some Hagar's Yellow Oil on sugar, and rubbing his chest, throat and back with it also, he soon was sleeping quietly and awoke next morning completely cured.

JOHN ELLIOT, Eglinton, Ont.