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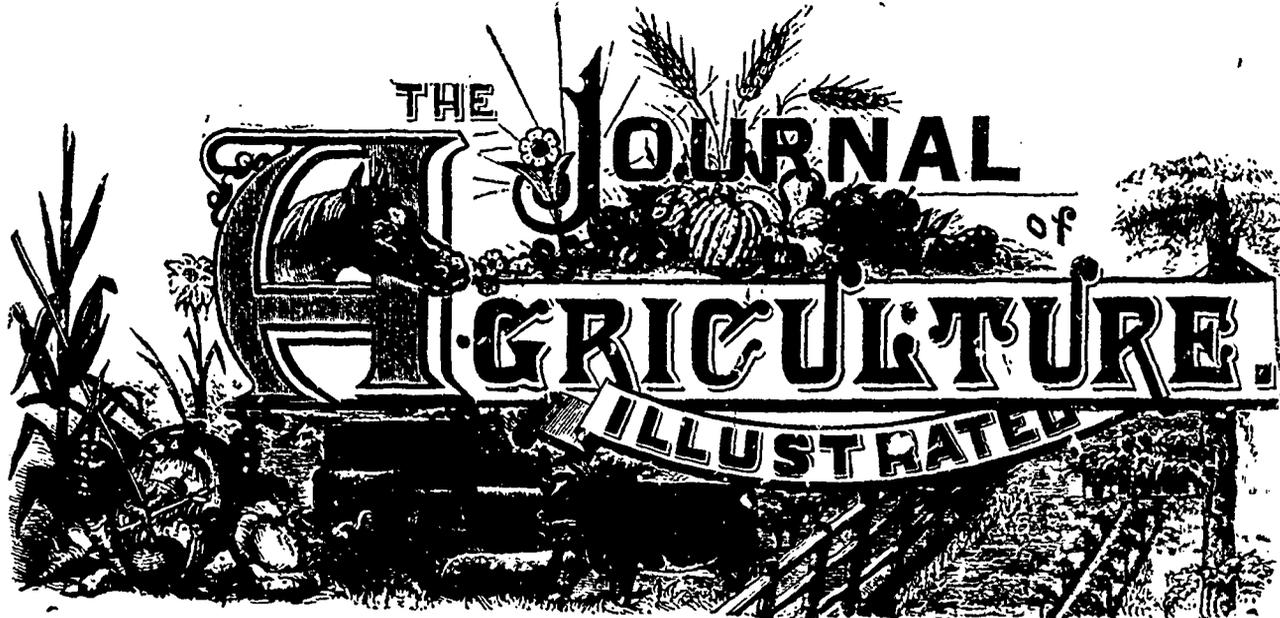
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**NOTICE.**—The subscription to the *Illustrated Journal of Agriculture*, for members of Agricultural and Horticultural Societies, as well as of Farmers Clubs, in the province of Quebec, is 30c annually, provided such subscription be forwarded through 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 *Journal of Agriculture, &c.*, Quebec.

OFFICIAL PART.

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what it can be purchased for; although of course we will put a buyer on a first class basis and all along do our best for him. For your information, however, chamber acid, 50 Baumé, can be bought from us at Capelton for \$15.00 per ton in bulk.

Truly yours,

G. H. NICHOLS & Co.  
P. H. WIGGLESWORTH.

At the price quoted above, I should prefer using the manufactured article to making it myself, even with sulphuric acid at \$15 00 and "Old Char" at \$16.00 a ton. Compare the above with Mr. Nichols' letter in the last number of the *Journal*: "The average of four samples analysed is 11.51 % available phosphoric acid," and with the price list of another manufacturer: "12 to 14 % available, \$26.00 a ton." The difference in something enormous.—*Jenner Fust.*

Capelton, P. Q., 22nd May, 1889.

A. R. JENNER FUST,  
Upper Lachine, Que.

Dear Sir,—Your letter of the 2nd with enclosure received. We are offering a plain superphosphate (apatite dissolved) at \$10.00 per ton in bulk f. o. b. at Capelton. As written to you previously this is not the high grade rock, but makes a fine superphosphate. Of course you understand after treading with acid the resulting material is not in a friable condition, but requires grinding and screening. To do this and put in sacks we charge \$2 50 extra. (altogether,  $\frac{5}{8}$  of a cent per pound. A. R. J. F.) Canadian farmers are getting advantages with this, that can never be continued unless they give the proper support, but they will be given time to show their appreciation.

In regard to sulphuric acid, we do not care to say exactly

COST OF GROWING ROOTS.

Even in England, nobody seems quite theoretically certain whether root-growing is profitable or not, and the reason for this is clear: farmers in that country do not keep accurate accounts of the expenditure incurred in the cultivation of any one of their crops. Practically, however, they are pretty sure about the matter, since every farm, except on soils so stiff that summer-fallowing is a necessity, has at least one-sixth of its acreage devoted to the root-crop. It seems to me rather unfair to debit the swedes or mangel with the whole cost of the cleaning and manuring of the land. The cleaning, for instance, is rendered necessary by the fouling of the land during the growth of the previous crops of grain, grass, &c.; and the necessity of manuring the land is due to its exhaustion by those crops. Again, the subsequent crops

would cut but a poor figure if the cleaning and manuring for the swedes and mangels were omitted. Lastly, the chemists have succeeded in bewildering many half-educated men by the analyses of roots they have published. That "90 % of water" startles many a good honest fellow, who has been accustomed to see his sheep and cattle thrive delightfully, under the old-fashioned regimen of cake and roots, and he begins to think it can hardly be economical to cart from field to farm-yard such a lot of water. But there is no getting over the facts that hundreds of thousands of cattle of all kinds have been sent to market *ripe-fat*, after having been fed entirely on swedes and straw, and that the great ram-breeders of the South of England, the Webbs, the Rigdens, the Goringes, &c., when their farms, in June, are covered with trifolium, red clover, tares, and all sorts of green food, will give any price for mangels for their exhibition sheep. And if the percentage of water in roots growing in the field seems to be large, we must not forget that day after day, when stored in the barn-cellar or in the root-house, they are losing water rapidly. Besides, what amount of water does the chemist find in the much vaunted beet pulp from the sugar-factories? According to Mr. Petermann, the well known chief of the Gembloux (Belgium) agricultural station, the following are the average constituents of best pulp after the diffusion process :

Water.....	90.00
Albuminoids .....	0.93
Fat.....	0.07
Carbohydrates .....	6.27
Inorganic matter. ....	0.75
Fibre .....	1.98
	100.00

Compare this with Wolff's analysis of swedes :

Water.....	87.00
Albuminoids .....	1.30
Fat.....	0.1
Carbohydrates .....	9.50
Inorganic matter (ash).....	1.00
Fibre .....	1.10
	100.00

You see at a glance that the swede is far more valuable than the pulp, for it contains 3 per cent. less water, .37 % more albuminoids, .03 % more fat, 3.23 % more carbohydrates—sugar, starch, &c.—.25 % more ash—including phosphates for bone building—and .35 % less indigestible matter—fibre. So, you see that, even theoretically, the root-crop is not so despicable a thing as it is too often esteemed to be in this country.

But about this water-in-the-swede-question. Is it so bad a thing after all? People who harp so on the matter seem to overlook the fact that this admirable commingling of the water with the cellular matter of the swede assists in producing a natural food suitable to the digestive system of animals. I do not believe that any man of science would differ from me when I state that in a well grown swede there cannot be found, barring perhaps an infinitesimal part of the fibre, any indigestible matter at all. The whole is available for nutrition. If the water contained in the root were only of the value of water from the spring, or from the well, as some want us to believe, then we might conclude that dried turnips, moistened with water, would produce the same results as swedes from the root-house! Similarly, it might be held that dried beef and water are as nutritious as fresh beef! Or, that hay and water are as good as grass! Or, that dry bread and water are equal to fresh bread! No one can main-

tain such a view; and the assertion that the water contained in a swede is of no more value than water from the pump, is therefore open to grave doubt. The effect on the palate, on the flow of saliva, on the animal when eating, must be allowed considerable weight.

Lawes, in his experiments on cattle-feeding at Rothamsted, showed that a ton of roots would produce 14 lbs. of beef or mutton. But this result was arrived at by deducting the actual cost of the hay, cake, and meal, fed with the roots, and assigning to the roots the balance in cash left after the sale of the animals. Thus if a lot of beasts leaves \$300, and has consumed \$200 worth of other foods, the \$100 left would be credited to the roots, and if fifty tons of roots had been eaten, they would be set down as worth \$2.00 a ton. To my mind, this mode of computing the value of a ton of roots does not touch the question: how far does the presence of the roots affects the feeding value—i. e. the assimilation—of the cake, hay, and meal?

Mr. Wrightson, the Principal of the Agricultural College at Downton, England, but in spite of his occupying that invidious position, a thoroughly practical farmer, esteems the value of root-crops very highly, particularly when they are consumed by sheep. He puts the average value of a ton of swedes at 10s. 4d. sterling = \$2.50. In the case of lambs of the improved Hampshire breed, which at eight months old have been sold for from 60s to 80s a head—\$12 to \$16—he seems to feel sure that the value of roots consumed to account for the yield of mutton cannot have been less than from \$4 to \$4.50 a ton!

My own impression is that swedes are worth to the farmer in this country, \$2.50 a ton. And now let us see, fairly, what they cost to grow.

First, what is the cost to the farmer of ploughing an acre of land? The wages of a man may be averaged at \$1 a day; a horse will consume, say, 10 lbs. of oats and 25 lbs. of hay and straw *per diem* which, at present rates, not counting the straw, are worth, *on the farm*, 17½ cents (1); therefore a man and his team cost the farmer \$1.35 a day. (2) They will plough, on an average, an acre and a quarter a day, at least; so, we get, as the cost of ploughing an acre: \$1.08:

2 ploughings.....	\$2.16
4 harrowings .....	0.40
2 grubblings .....	0.40
Drilling and splitting drills.....	1.20
Loading, carting and spreading 12 tons of dung.....	3.00
3 lbs. seed and sowing.....	1.00
Horse-hoeing 3 times.....	0.75
—Singling—4 women, one day.....	2.40
2nd hoeing.....	1.00
Topping, tailing, carting, &c .....	7 00
Rent—i. e. interest on capital.....	4.00

\$23 31

Now, supposing the rotation of crops on an average farm in this district to be a seven-course one, I do not think it would be fair to charge the whole of the cost of cleaning and manuring to the root-crop; I think two-thirds would be about right; for in a seven-year rotation you would have your farm divided as follows:

(1) A small charge might be made for wear and tear of horses, harness, implements, &c Mr Barnard thinks a allowance should also be made for the time the horses stand idle. A. R. J. F.

(2) No profit can be fairly charged on food given, *on the farm*, to the stock of the farm, as all expenses of marketing, &c., are saved.

One-seventh in roots or other hoed-crops.  
Two-sevenths in grain.  
Two-sevenths in hay.  
Two-sevenths in pasturo.

And the six-sevenths in grain, hay, and pasturo, would certainly benefit greatly by the cultivation received by the land in the first division. Deducting, then, one-third of the actual cost of cultivation and of spreading the manure, we find that the crop of roots has cost the farmer just \$20.05 an acre. I cannot put the average produce of an acre of roots, well cultivated, at less than 20 gross tons an acre. At Sorel, my friends and pupils have grown double that weight. But allowing 20 tons to be a fair crop; the cost of a ton of swedes appears to be \$1.00. Now a bushel of swedes will weigh about 45 lbs.; there will, then, be in a gross ton 50 bushels, the cost of which will amount to 2 cents a bushel; a cow eating half-a-bushel a day will consume in the winter half-year, say, 105 bushels, the cost of which will be \$2.10. Can any thing cheaper be found? Belgian carrots will cost a little more, as the singling and the seed will be more costly.

As to the value of the dung which, it will be noticed, I have said nothing about, I would observe that if it were charged for, I should be entitled to value the straw, hay, roots, &c., eaten by the beasts that made it at market price, and this would add very much to the cost of the subsequent grain and grass crops. The fairest plan seems to me to be to value roots, &c., at *consuming price* on the farm and say nothing about the dung. Not that I have any objection, as regards my contention as to the cost of the root-crop, to charge it at market-price: that would only add to the strength of my position. For instance: swedes, in Montreal sell freely at 30c a bushel: that would make them worth \$15 00 a ton = \$300.00 an acre! (1)

As to the mode of growing roots, I would strongly advise all *heavy land* farmers to autumn-clean their stubbles, and plough in the manure in the fall. In the spring, the grubber, the harrows, and the roller, will prepare the land for sowing on the flat. Roll, whether you sow on the flat or in drills, both before and after sowing. If mineral superphosphate could be had for a reasonable price, I should strongly recommend the addition of 2 cwt. of it to the dung; that is, for swedes. For mangels, 125 lbs. to 175 lbs. of sulphate of ammonia will make a wonderful difference in the yield. The sulphate of ammonia can be had at 3½ dollars a hundred pounds at Vasey's, Hochelaga; and Messrs. Lömer, of Montreal, imported mineral superphosphate from my friends the Messrs. Downes, of Liverpool, this winter; they should be able to sell it here for a moderate price—\$20.00 a ton ought to leave them a fair profit. (2) If artificial manures are ever to be freely used in this country, prices must be lowered considerably. (3)

I am told that an Agricultural Station will probably be established shortly in this province. If so, I trust one of its duties will be to determine whether sheep folding off green-crops during the summer and autumn is not as profitable here as it is in Britain. I have proved it to be profitable by my own experience at Sorel, where sheep were folded on tares and rape, from July to the 5th of December, leaving the fold on that day for the slaughter-house, *ripe-fat*. As to the crop of oats and barley that succeeded the fold the following year, I can only say what my successor in the farm

told me: 48 bushels of barley and 70 bushels of Black Tartar oats to the imperial acre! All the manure used for the tares and rape was 300 lbs. an acre of an inferior ammoniated superphosphate. The sheep had each a pint of oats and pease, mixed, a day while in the fold. Neither tares nor rape require hoeing—simply sowing and harrowing, with a rolling to finish with. The cultivation is as follows:

For tares, a good sound fall-ploughing; 2 bushels of tares and one of oats per acre sown on the stale furrow, well harrowed in, and rolled.

For rape, the fall-ploughing grubbed, harrowed, and rolled, until a good tilth is secured; 8 pounds of seed sown broadcast and covered by a light set of harrows—chain-harrows preferentially—, at all events the seed should not be buried more than half-an-inch deep; and a light rolling to finish with.

Where the land is good heart, rape will do fairly without manure; but, as a general rule, a few bushels of raw bones, with a little hard-wood ashes, will not fail to produce a crop.

Four pounds of rape and 1½ bushels of tares, per acre, make good sheep-feed. In fact, we, in England, always begin the season with the mixture. In all cases, a little grain or a mixture of both, will profit the sheep and the land. As soon as the sharp autumn mornings make their influence felt, the flock will eat straw-chaff: during mild weather, that is, when the temperature is above 50° F., they will not look at it. The perfect food for sheep, when feeding off rape, is: ½ a pound of pease, ½ a pound of linseed cake, and a little clover-chaff, per head, per day.

You see, with this system properly carried out, the dung-cart is never required; consequently, the outlying parts of the farm, which, in the majority of cases, bear comparatively nothing, can be brought to yield fully as much as the rest of the farm, and that at a very trifling expenditure of time and labour:

One ploughing.....	\$1.10
4 harrowings.....	0.40
2 grubblings.....	0.40
Bone-dust &c.....	3.50
8 lbs. rape seed.....	1.00
Rent, interest, &c.....	4.00
	<hr/>
	\$10.40

Lastly, on the average of years, we may suppose some of the land on every farm to be cleared of its grain-crop by the 15th August. Why not break up some of this and sow a few acres of fall-rye, with 3 bushels of seed to the acre? This would give an early out of green-meat for cows in May, and would prepare them for their change of food from dry hay, &c., to grass. Rape might follow the rye, or rape and tares, as before mentioned. Another part might be sown with rape alone, which, if got in by the 25th August, would give a nice bite for sheep by the 10th October, by which time the sheep-pasture is generally pretty bare. There is no end of ways by which this most valuable plant might be made subservient to the great want of the country, the doing away with the notion that there are no means of restoring the worn-out lands of the province without the use of the cumbersome tumbril.

ARTHUR R. JENNER FUST.

The above was written for the Dairymen's Association of the county of Huntingdon, but, owing to the Secretary's absence in England, it was not read. A. R. J. F.

(1) M. Séraphin Guévremont, in his lecture at L'Assomption, asserted that he cleared \$95 an arpent by his root-crop.

(2) Unfortunately, the price of superphosphate has gone up \$3 a ton in England.

(3) See Mr. Nichols letter, above.

## HOED- OR FALLOW CROPS.

A lecture delivered at the Meeting of the Dairymen's Association of the Province of Quebec; January 10th, 1888: by Adolphe Bruncau, M. D., Sorel.

*Mr. President and Gentlemen,*—The soil of the greater part of our older districts having lost its wonderful fertility of ancient days, it behoves us to abandon the empirical cultivation of our forefathers, and to adopt a regular system of farming, that we may be in a condition to supply the wants of the present generation, and to be up to the level of the times in which we live.

Both theory and practice teach us that, on a well conducted farm, whatever rotation may be followed, it is essential that one member of it should be in fallow or fallow-crops: otherwise, it is impossible to enter boldly upon an improved system of cultivation, the only one that can tend towards true progress in the art of agriculture. Here, then, hoed- or fallow-crops appear to be absolutely necessary, since they lead us most surely to the end we have in view, since their effects are to thoroughly pulverise the soil, to expose by turns all its parts to the action of the atmosphere, to free it from weeds, and, thanks to the necessary manuring, to leave it in a favourable state of fertility.

These two propositions are now-a-days so generally accepted as true, that it would be a waste of time to demonstrate them.

Almost every sort of soil is adapted to fallow-crops, provided it is treated properly, and sown with the plants suited to its quality. The general rule is to put the fallow or the fallow-crop immediately after a grain- or pea-stubble which has been autumn-cleaned, still, on very light land, I have grown turnips and corn on a three-year-old ley (*Friche*).

Some time in the autumn preceding, the piece must be carefully ploughed at a depth proportionate to the state and quality of the soil, the depth of the top-soil, the quantity of manure at hand, and the habit of growth of the plant we intend to cultivate. Water-furrows in abundance must be drawn across the ridges to allow the escape of heavy falls of rain and of the melted snow in spring, that the land may enjoy the benefit of the alternate frosts and thaws which, during the winter, will destroy the weeds, and, in spring, will render the soil pulverulent and ready to produce any crop entrusted to it.

When the spring arrives and the land is thoroughly dry, the grubber or cultivator should be put to work along and across the ridges. My cultivator is of the kind called in England a "Duck's foot cultivator;" in other words, a large heavy harrow made of iron, six feet wide, with twenty-four teeth, curved towards the front, and flattened at the ends. With this implement, the ground is worked at a trifling expense, to the great improvement of its mechanical texture; the destruction of the weeds, too, will be complete if the operation is renewed after a few days of fine weather.

A short time before sowing, a last ploughing is given, which should not exceed the autumn furrow in depth; alternate harrowings and rollings follow until the soil is perfectly pulverised to the very bottom of the top-soil, taking care to finish with a rolling, to facilitate the passage of the drill, if sowing on the flat, or of the double-mould-board plough, if drilling-up is practised.

As manure is seldom abundant on our light, worn-out farms, in order to make it go as far as possible we always sow on raised drills, as this plan enables us to manure a greater extent of land, and, at the same time, increases our crops by 25% to 50%. The dung must be partially fermented, and should be in such an advanced state of decomposition that its fertilising constituents have become assimilable

and easily absorbable by the rootlets of the young plants. Besides, if raw dung is used, the weed-seeds of all sorts that infest it are sure to germinate, and the soil will be full of rubbish, which will greatly increase the cost of hoeing.

The hoed-crops suitable to our farms in general are: potatoes, mangels, Belgian carrots, swedes, white and yellow turnips, horse-beans, haricots or beans, pease, and Indian corn. As all these require pretty nearly the same style of cultivation, I shall speak to-day of the cultivation of the potato, the mangel, the carrot and the turnip; adding, perhaps, a few remarks on any operations peculiar to any one of them in particular. Pease and potatoes may be sown during the three first weeks of May; beans and corn, from the 15th May to the 1st June; carrots and mangels, from the 10th to the 25th May; swedes, from the 10th to the 25th June; and the turnips, from the 1st to the 15th July. (1)

## THE POTATO.

The advice that I give in another part of this lecture, to grow sugar-beets after a well managed crop of potatoes, necessarily leads me to explain what I mean by "a well managed crop of potatoes": it is this:

After having prepared the land in the above manner, we draw out, with a double-mould-board plough, drills with 24 inch intervals for the early sorts of potatoes, and 30-inch for the late sorts, the drills being made 4 or 5 inches deep, according to the distance between them, and the depth of the top-soil. We spread the manure in the drills at the rate of 40 one-horse loads to the acre, but if the dung is raw and full of litter, we add one-half more. (2)

After having planted the sets in the rows at a distance of from 9 to 12 inches, according to their sort, the drills are split with the same plough, which covers both potatoes and dung completely. A pair of horses do all this work better than one horse, as the drills are made more correctly. The large whittle-tree for this job should be 4 feet long for 24-inch drills, and 5 feet long for 30-inch drills. The operation is completed by rolling the drills to compress the earth and assist the germination of the sets.

About eight days after planting, the drills should be harrowed with a pair of light harrows, to destroy the sprouting weeds, and the operation may be repeated in a few days. There need be no fear of injuring the young shoots which the harrows uncover. This form of cultivation levels the ground, completely frees it from the first growth of weeds, and pushes on so rapidly the growth of the young potato plants, that they soon become masters of the soil.

As soon as the rows of potatoes are clearly defined, the horse hoe must be set to work, once a week, if possible, but always when the ground is dry. This should be continued up to the time when the flowers begin to open, and then, after the last horse-hoeing, the earthing-up plough should be passed between the rows. The plants should be only earthed up enough to preserve the young tubers, which will now be rapidly growing, from the sun and from early frosts.

There now remains nothing to be done, except to guard the crop from the attacks of the potato-beetle, which must be fought from the very first appearance of the plant. The second hatch must be destroyed as carefully as the first, or the loss of yield will be great, and the beetles will appear the following spring in even greater numbers than before. Paris-green, mixed with burnt and sifted plaster, is, in our opinion, more effective than when mixed with water, though, in our

(1) I should sow carrots and mangels as soon the land could be got ready.

(2) The Sorel one-horse load does not weigh more, as a rule than ½ of a ton.

neighbourhood, most people employ it in the latter way. (1)

In harvesting the crop, which is not done until the leaves are perfectly dried and withered, we split the drills with the double-mould-board plough, having previously taken off the mould-boards and attached to the heel a sort of large fork, the teeth of which, allowing the earth to pass through them, raise the potatoes out of the ground. After having gathered all the potatoes visible, the piece is grubbed lengthways and across with the cultivator mentioned above, and the tubers thus brought to the surface are gathered in their turn. This operation is repeated as often as it is thought profitable. This manner of dealing with the potato-land—a practice in certain parts of France—is followed by Messrs. Lunan and Taylor, whose farms are situated near Sorel. These gentlemen grow, each more than 2,000 bushels of potatoes a year.

Almost the whole of this system of cultivation is done by horse-work; no manual labour is employed, except for spreading the dung, planting the sets, and gathering the tubers; a great advantage for those who, like ourselves, have to employ paid workmen.

I am not prepared to assert, Mr. President, that this method of potato-growing is the best; but it suits our couch-infested light lands and the style of labourers we have at our disposal.

When this system has been properly carried out, the soil is found to be so thoroughly pulverised, so free from weeds and improved in fertility, that it is capable of bearing such important crops as flax, tobacco, sugar-beets, and wheat, with the fairest prospects of success; besides, we have harvested first-rate crops, which have frequently gained first prizes at the county exhibitions; and for these reasons, we continue to practise the above system and recommend it with confidence to others.

Mr. Ferland, a wealthy farmer at Berthier and a member of this association, grows an immense quantity of potatoes—7,000 bushels a year.—His method of cultivation is simpler, more economical, and more expeditious than the one I have described, and if Mr. Ferland would make it known to the agricultural public, either in writing or in any other form, he would be doing a real service to those of his countrymen who, like him, make potatoes their principal crop.

#### MANGELS AND TURNIPS.

The mode of cultivating mangels and turnips which I am about to describe to you is that practised by the Messrs. Guévremont, of Sorel, since 1835, and which we ourselves have followed for the last few years. By rights, Mr. Séraphin Guévremont ought to have treated this point himself before this important meeting, but his refusal to do so, owing to other engagements, have thrown the burden on my shoulders. Wherefore, gentlemen, I beseech you to pardon the defects and omissions I shall doubtless be guilty of in consideration of the importance of the subject I am about to submit to your attention.

The different ploughings, grubbing, &c., the land has to undergo before the sowing of these crops are the same as for the other hood-crops. At the beginning of May, the last ploughing is given, and this should not exceed the autumn furrow in depth. Then, after a proper amount of harrowing and rolling, as in the preparation of land for potatoes, when the land is thoroughly pulverised, the drills are drawn out with the double-mould-board plough to a depth of from 3 to 5 inches, according to circumstances, and at a distance of from 24 to 27 inches from one another. After spreading 40

loads of rotten dung to the acre in the drills, they are split, and the dung is covered up at the same equal depth all over the piece. A pretty heavy roller is then passed along the drills to solidify the ground. This rolling flattens the tops of the drills, giving them a smooth, level surface of from 9 to 10 inches wide, on which the seed, whether of mangels, carrots or turnips, is sown. (1)

The seed-sowing cannot be properly done except with a machine made on purpose. The drill used by the Messrs. Guévremont is a sort of barrow in which the seed is placed, and artificial manure as well, if required. The sower is pushed along the flat tops of the drills, making a little furrow about an inch deep, into which it drops the seed and covers it up, pressing the disturbed ground again by means of a small roller which is attached to its hinder part.

Seeds of carrots and mangels may be previously made to germinate and sown by means of a wheel on the periphery of which have been placed points a couple of inches in length. These teeth or points, the wheel being rolled along the surface of the flattened drill, make holes 6, 9, or 12 inches apart and a woman drops a pinch of seed into each hole.

The important part of this operation is the deposition of all the seed at the same depth, in the exact centre of the drill, in the following quantities: 4 lbs. to 5 lbs. of mangels, and at least 3 lbs. of swedes; which if sown thickly and all at the same depth, will come up thickly and all at the same time, which will enable them the better to resist the attacks of the *halica* or fly. (Two pounds of *turnip-seed* is enough for an acre—the seed is much smaller than *sweede-seed*. A. R. J. F.)

Mr. Lunan, of Sorel, in order to simplify the process of hoeing and diminishing its cost, only sows  $1\frac{1}{2}$  or 2 lbs. of seed to the acre. He asserts that by passing the horse-hoe between the drills the moment the plants show themselves, a great many of the flies are destroyed: at the approach of the implement, he says, they jump up from the plants, tumble into the space between the drills, and are there destroyed by the teeth of the horse-hoe. (2)

His sower, made by himself, is drawn by a horse and sows two rows at once at a depth of two inches. (At least an inch too deep. Half-an-inch is quite deep enough for mangels, swedes, carrots, turnips and parsnips. A. R. J. F.)

In a French work on agriculture I observe the statement that *coal-tar*, on rags, plaster, &c., spread about the fields, will from its penetrating smell, drive away the fly. The plan is well worth trying. Kerosene is said to have the same effect, if the seed is steeped in it.

The first act of cultivation is done with the horse hoe, which should be of light construction and adapted to its purpose. As soon as the weeds begin to show themselves, even if the crop has not yet appeared above ground, this implement may be started. The hoes, at this first hoeing, should not cover more than 16 or 18 inches of ground, and must not touch the top of the drills where the seed is, and on which the mark made by the coulter of the sower is still visible.

After a week or so, the horse-hoe, with the side-hoes set wider, so as to cover from 20 to 24 inches, may be worked again. In spite of this widening of the implement, the young plants will not suffer, because the knives of the horse-

(1) I never make my drills more than 24 inches apart except for tobacco and corn. A. B.

(2) The truth of the matter is, that swedes and turnips had, up to 1884, been so seldom cultivated at Sorel, that the fly is very rare there; in fact, I have never seen enough to endanger the crop. I advised my pupils at the place to try their utmost to avoid a repetition of these plants on the same land at a less interval than seven years. Mr. Lunan's idea of the horse-hoe killing the fly in its passage is, I regret to say, untenable. A. R. J. F.

(1) Burnt and sifted plaster—sulphate of lime—is generally called "Plaster of Paris." A. R. J. F.

hoe, which are to be kept sharp, out the ground cleanly and never tumble it about. (1)

When the swedes or mangels are about three or four inches high and have made their second (*true*) leaves, the hand-hoes go to work on the narrow strip of earth—4 or 5 inches (2 to 3?)—which the horse-hoe has not touched, and at the same time, the hoers single the plants at the desired interval. Mr. Guévremont for this purpose employs women or lads. With a 7-inch hoe, a woman strikes the narrow strip of ground on which grow the plants, and draws to her feet in the middle of the vacant space between the drills the width of the stroke of carth and the plants and weeds growing on it. Then, leaving untouched a length of 2 or 3 inches, she continues in the same way to cutting away at each step a length of 7 inches and leaving untouched a space of 2 to 3 inches; so that, after having gone over an acre, she will have hoed  $\frac{2}{3}$  or  $\frac{1}{2}$  of it. Follows her another woman, who singles *by hand* the spaces of 2 to 3 inches hitherto intact, leaving only one plant—the best of the bunch—. When the latter woman has finished her job she will have cleared  $\frac{1}{3}$  or  $\frac{1}{4}$  of an acre, and the two will have completely singled an acre between them. Competent judges have told me that, in ordinary soils, four women accustomed to the work can thus hoe and single an acre in an ordinary day's work. Mr. Lunan thinks he can do it faster, seeing that he sows thinner and does the entire singling with the hoe. (2)

If this, the first hoeing, is really well done, it may well be that, in well prepared land, no other hoeing will be needed; but, generally speaking, a second going over may be necessary—very rarely, indeed, a third—These, however, will not occupy much time, and will cost but little. (3)

When the singling is done, and the plants left have righted themselves, i. e. in two or three days, the horse-hoe should be passed between the rows, and this operation should be repeated as often as necessary, that is: when the weeds show themselves; when a heavy rain has beaten down the ground; or when a long drought has prevailed. For this horse-hoeing will break up the surface of the ground and allow the air to penetrate into the soil, preventing thereby the evaporation of the moisture contained in the subsoil, which evaporation might be followed by disastrous effects to the lessening of the expected crop.

One observation I must not omit: when once the young plants are up, they demand continued watchfulness; the proper moment must be seized upon for the hoeing, the singling, the horse-hoeing, and the working of the land, and the execution of these operations must never be postponed for even a day under any pretext. Herein lies the whole secret

(1) The shape of the side-knives of the horse-hoe is a matter of the greatest importance. The Scotch *drill grubber* usually employed in this country is necessary in rocky ground, I suppose, but elsewhere it is an abomination I hope, if there is an exhibition at Montreal this autumn, to show my own sort of horse-hoe. The two side-hoes are curved, so that the sides of the drills are pared down and thrown into the mid-drill, leaving not more than two-and-a-half inches for the hand-hoe to work upon.

A. R. J. F.

(2) I should very much prefer myself doing it all with the hoe, as we are accustomed to do in England and Scotland; but it would have taken too long to teach the operation, even if I could have found men willing to learn. M. Bruneau hardly gives the right method of striking with the hoe: the action is an alternation of *push* and *thrust*, *push* and *thrust*, and can be done most rapidly; M. Séraphin Guévremont can do it correctly and at a slow walking pace—certainly at a mile an hour.

A. R. J. F.

(3) Whereas, in the singling the hoers should work at right-angles to the row of plants, in the second hoeing they should take the rows between their feet, and make three strokes to each step: one on each side, and one athwart the interval between the plants in the row. The plants of swedes and mangels *cannot be left too bare*.

A. R. J. F.

of success: negligence and delay in these matters never fail to create extra trouble and subsequent disappointment.

The different hoeings should be so conducted that the drills disappear entirely, leaving the plants level with the ground so that their growth may be unimpeded, their roots being, however, kept from injury and undisturbed. The mangel, the Belgian carrot, the swede and the turnip grow *out* of the ground, which habit of theirs enables us, by means of the drill system, to grow them successfully on our light soils, even where the depth of top-soil is very little; while the sugar-beet and the long-red-carrot grow in the ground, and require a deeper soil, heavily manured, a more careful and more costly cultivation, as well as an increase of labour which continues even up to the harvest.

In spite of my desire to shorten this lecture, I cannot resist the temptation to relate to you certain hints that I have received from Mr. Ferland, whom I have already quoted. In 1880, Mr. Ferland sowed, after potatoes carefully cultivated, eight acres of sugar-beets. They were sown on the flat, in rows 18 inches apart, in obedience to the advice of the manager of the factory; and there were, of course, 120 rows to the arpent. In the hoeing he employed eight labourers, in addition to himself; one of them with an eleven-inch hoe, between the rows, and, in addition to his work of milking the cows night and morning, easily got over two arpents a day. The other eight, hoed between the plants, and singled them by hand, at a distance of from 6 to 8 inches from plant to plant: they too, got over two arpents a day, and the work, Mr. Ferland says, was well done. At \$1.00 each for two men and himself, board included, this would amount to \$3.00; to the lads he paid 40 cents a day and their board 25 cents = 65 cents each which for the six would amount to \$3.90, which sum, form a total of \$6.90, or \$3.45 the arpent of 120 rows, or \$2.59 the arpent of 90 rows. He was satisfied with the crop and with the net profit per arpent, considering that it was his first attempt. (1)

The cultivation of sugar-beets is to be encouraged we hear: well, it needs encouragement if its development on a large scale is intended, for I do not fear to assert that in this part of the world this crop is both difficult and costly, the mode of cultivation not being yet understood here. One effective means of encouraging it, in my opinion, would be to fix the price that the proprietor of the factory should pay to the grower per ton, say, \$4.50, and that, in addition to this, the farmer should receive, directly from the Minister of Agriculture, a dollar a ton for all the beets received at the factory: a large grant for the purpose would, no doubt, be required, but one that would gradually be diminished as soon as the successful enthusiasm is excited and the system of cultivation familiarised to our habitans. Without some aid of this kind, you will hardly succeed in persuading them to undertake a new and unaccustomed style of cropping, one which up to the present time has hardly paid, since the quality and extent of our farms enable us to sell, at a profit, butter, cheese, fruit, tobacco, potatoes, turnips, wool, and meat of all kinds, which bring in a good return without risk and at an inconsiderable expenditure. I make bold to draw the attention of our farmer-members to this point, especially those who belong to this association.

Mangels may be got up when the leaves are spotted with red and have a tendency to droop. Mangel-harvest should

(1) An arpent is  $\frac{1}{4}$  of an acre. Mr. Vernon stated last month that he and his man single 4 in 6 *acres* a day; the Editor of the Agricultural Gazette, England, says that the price of singling and hoeing a second time is \$1.75 an acre; Séraphin Guévremont gets 4 women at 60 cents to single an acre in a day; so I hope we shall hear no more about an *arpent* of mangels costing \$12.00 to single.

A. R. J. F.

be begun by the 15th October to save them from the first frosts; swedes and turnips from the 15th October to the 1st November. When we remember that on an arpent of land 20,000 mangels or turnips have to be handled, and often more, a method of working rapidly at this job will diminish its cost considerably, so it is indispensable to learn the most expeditious mode of procedure. We will, therefore, describe as briefly as possible the method of harvesting these crops in England and in some other European countries.

The labourer, with his right hand, takes the mangel by the neck, and when he has pulled it up, he seizes the bulb with his left and twists or wrings off the leaves with his right hand. No knife must be used, for fear of cutting the fleshy part of the neck; it would bleed, if cut, and the mangel would not keep. Swedes and turnips are also pulled by the neck, but with the left hand; then, a stroke of a knife cuts off the root, and a half-turn to the right brings the leaves forwards when the labourer separates them with one blow of his knife; and drops the swede or mangel at his feet so that a row of roots is formed as he goes along. (I prefer throwing them into small heaps of half a cartload each. A. R. J. F.)

Before pulling sugar-beets, long-red-carrots and parsnips, we must pass a common plough, without the mould-board, on each side of the rows, and sometimes, even, under them, and then proceed as above. The whole neck of the sugar-beet must be cut off, as not the vestige of a leaf must remain.

THE WHITE BELGIAN CARROT.

This sort of carrot demands from 4 lbs. to 5 lbs. of seed to the arpent, to be put in about an inch deep, and, like its congenus, on drills about 20 inches apart. (1)

Carrots are to be singled, when the leaves are about 3 inches high, with a hoe 2½ inches wide, and should be left, when finished, about 5 or 6 inches apart. Their cultivation is more difficult than that of the mangel, as the operations connected with it require most delicate care. The harvesting of this crop is too simple to need description, and need not begin before 1st November. (Rather late. A. R. J. F.)

In conclusion, I recommend those who are in the same predicament as M. Guévremont, and desire to embark in the cultivation of roots, to make their first attempt on a piece that has grown potatoes the previous year. M. Forland approves of this, and he knows by experience the advantage of it, but only on the express condition that the cultivation of the potato-crop was perfect. He says that in general this is not the case; the land is very often left full of weeds, of the worst kind, a fault that cannot possibly occur if the instructions for the cultivation of this crop that I have given above are strictly adhered to. In France, sugar-beets often follow the potato-crop, and I see no reason why, in certain cases, the same practice should not obtain here. The land, then, will receive all the attention requisite; all the operations of sowing, hand- and horse-hoeing, and working, will be executed with punctuality, even if they do not seem to be absolutely necessary; and, thus, dealing with a soil already pulverised, cleaned, and manured, the farmer cannot fail to succeed, and satisfied with the results obtained, and with the experience he has gained, he will pursue with ardour the exploitation of this, to him, new source of profit.

This essay, Mr. President, is very far from being complete: the value of roots as cattle-food, the importance of the sugar-beet as the raw material of the sugar-factory, the value of the pulp in the economy of the farm, the cost of production, the crop obtained, the profits realised, the employment of artificial manures, the advantage derived from ploughing in

green-crops, the improvement of the soil by means of hood-crops and their importance in the rotations pursued on our farms, are all questions closely allied to one another. The Messrs. Guévremont, who are present, can enlighten you more on these matters than I can pretend to do, for their explanations will be the more acceptable in that they have in their favour that authority which practical experience alone can give.

ADOLPHE BRUNEAU.

(From the French.)

RHUBARB "VICTORIA."

FOR SALE.—A large quantity of Rhubarb Plants, the largest and the finest kind known.

Address: PRACTICAL AGRICULTURAL SCHOOL, For Deaf Mutes, Mile-End (near Montreal) P. Q.

Price of Fertilisers.

The price of artificial manures is a matter that wants looking into. Is there any reason why they should cost ten dollars a ton more here than they cost in the States? Ammonia, in the form of sulphate, is worth in Montreal \$3.20 a ton containing 25 lbs. of ammonia = 12.8 a pound. Phosphoric acid is valued by the Directors of the agricultural experiment stations in the States at 6 cts. a pound for soluble and reverted—available—and the insoluble is hardly worth speaking about, as it is, comparatively speaking, useless, is present in all well made fertilisers in very trivial quantities, and can be bought for a couple of cents a pound in finely ground Carolina-rock; in our own apatite, I need hardly repeat, when undissolved, it is valueless for any crop. Potash—potassium oxide—is taken to be worth 4½ cents a pound.

In the following tables, I shall take the above valuations and compare them with the selling prices in Montreal, giving the average of the guaranteed analyses from the published list of an importer:

No. 1. Compound general fertilisers:

Phosphoric acid (soluble and precipitated).....	10 %	\$12.00
Ammonia.....	2 %	5.12
Potash.....	1½ %	1.06
		18.18
Balance.....		9.82
		\$28.00 the selling price.

No. 2. Cereal compound fertiliser:

Phosphoric acid (soluble and available).....	10 %	\$12.00
Ammonia.....	3 %	7.68
Potash.....	2.12 %	1.80
		21.48
Balance.....		11.52
		33.00 the selling price.

No. 3. Compound root fertiliser:

Phosphoric acid (soluble and available).....	9 %	\$10.80
Ammonia.....	4 %	10.24
Potash.....	7½ %	6.38
		27.42
Balance.....		9.58
		37.00 the selling price.

(1) Horse-hoe would not work to advantage in such a narrow space. A. R. J. F.

The potash, which in No. 3 forms an important feature in the cost, I am inclined to think may be omitted without much loss to the crop of roots, and if the same amount were expended in sulphate of ammonia = 200 lbs. = 50 lbs. ammonia, I am sure the mangels, at any rate would be the better for it.

As I am writing, a letter is put into my hand from Mr. Labatt, the Secretary-treasurer of the St. Lawrence Sugar-refinery, in which he offers to sell "old char," the animal charcoal used in refining sugar after it has done its work in their establishment, for \$18.00 per gross ton = \$16.00 per 2,000 lbs. This form of phosphate of lime contains, on an average, about 70 % of phosphate = 32 % of phosphoric acid, with 10 % of carbonate of lime, and about 12 % of charcoal. Now, 300 lbs. of this "old char," added to 125 lbs. of sulphate of ammonia, would only cost \$6.46, and applied to an acre of land would, I believe, cause it to yield a far larger crop of mangels or swedes than any of the advertised mixtures or compounds.

If brown sulphuric acid could be had here for 2 cents a pound, I should be inclined to use the following mixture for swedes and turnips :

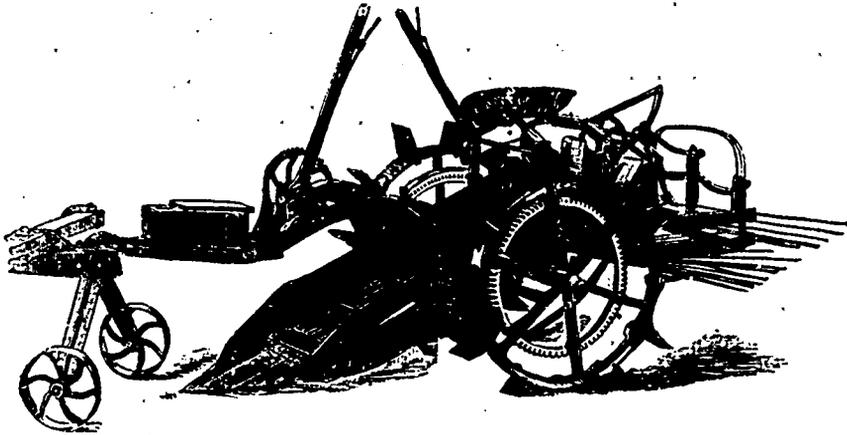
To convert this entirely into bi-phosphate we should require :

Sulphuric acid (oil of vitriol) to neutralise the carbonate.....	10 lbs.
Sulphuric acid (oil of vitriol) for the phosphate .....	31 "
	41 "

The composition of the product when dried would be, in a hundred parts, something like this :

Moisture .....	10
Sulphate of lime—plaster.....	49
Bi-phosphate of lime.....	25
Sand, &c.....	16
	100

This 25 % of bi-phosphate is equivalent to about 18 % soluble phosphoric acid, a quality rarely to be met with, though 33 %, and even 35 %, of soluble phosphate of lime is always to be had, and Messrs. Downes, of Liverpool, England, advertise 37 %—see next paragraphs.



HOOVER POTATO DIGGER.

200 lbs. old char .....	\$1.40
140 lbs. sulphuric acid .....	2.80
	\$4.40

adding water = twice the bulk of acid to the old char, and mixing in the acid by degrees, stirring briskly with a long-handled tool all the time. This, with a half-dressing of dung ought to bring a good crop : mangels, as my readers know, must have nitrogen. This old char and acid will be when finished in a state of very thick gruel, and must be dried up with something or other to make it fit for sowing. Finely sifted earth would do, but I should prefer bone-dust for the purpose.

The theoretical quantity of sulphuric acid required to dissolve a mineral phosphate of lime and its results are, according to Way, chemist to the R. A. Soc. of England in its early days, as follows ; the example is from the coprolites of the Suffolk Crag :

Water (of combination).....	10
Sand, clay, and oxide of iron .....	21
Carbonate of lime.....	10
Phosphate of lime.....	56
Fluoride of calcium, &c. ....	3
	100

**SUPERPHOSPHATE OF LIME.**—Influenced by large export demand, and, to a lesser extent, by the consumptive demand, the market buoyant, and would be more so, but manufacturers evince great firmness. For prices, terms, and conditions of sale of the D'N'S brand, the reader is referred to the scale on the annexed page. In proportion to the current price of 26 to 28 per cent. soluble the 35 to 37 per cent. strength is the cheaper, irrespective of the advantage in railway carriage, to the consumer ; three tons contain an amount of soluble, equal to four tons of the lower strength, so that the receiver would benefit to the extent of carriage on one ton by ordering the 35 to 37 per cent. soluble.

There is one point in connection with the purchase of superphosphate not generally known, that is deserving of the consideration of intending buyers. Superphosphates made from coprolites containing iron have a pronounced tendency to what is technically termed "go back" i. e., the raw phosphate, after having been rendered soluble by acid, may to some extent again become insoluble, and therefore of diminished value to the crop to which it is applied. Thus, as the value of superphosphate is determined by the amount of soluble phosphate it contains, a quality testing 26 per cent. sol. at the time of manufacture might, owing to the presence of iron, deteriorate within a very brief period to a marked extent—for instance, 26 per cent. super. delivered within, say, 100 miles from the works, costs about £3 per ton, equivalent

to about 2s 3d per unit; now, if it "goes back"—recedes—say, for illustration, 3 per cent., which is not unusual with inferior makes, the depreciation in money value is 6s 9d per ton, in addition to which there is perhaps the more serious item, namely, a deficient crop, owing to the inferiority of the fertilizer. The lowest priced article therefore is by no means necessarily the cheapest. The only security for agriculturists is to purchase from firms of high repute, or to confine their purchases to those brands which have an undoubted reputation.

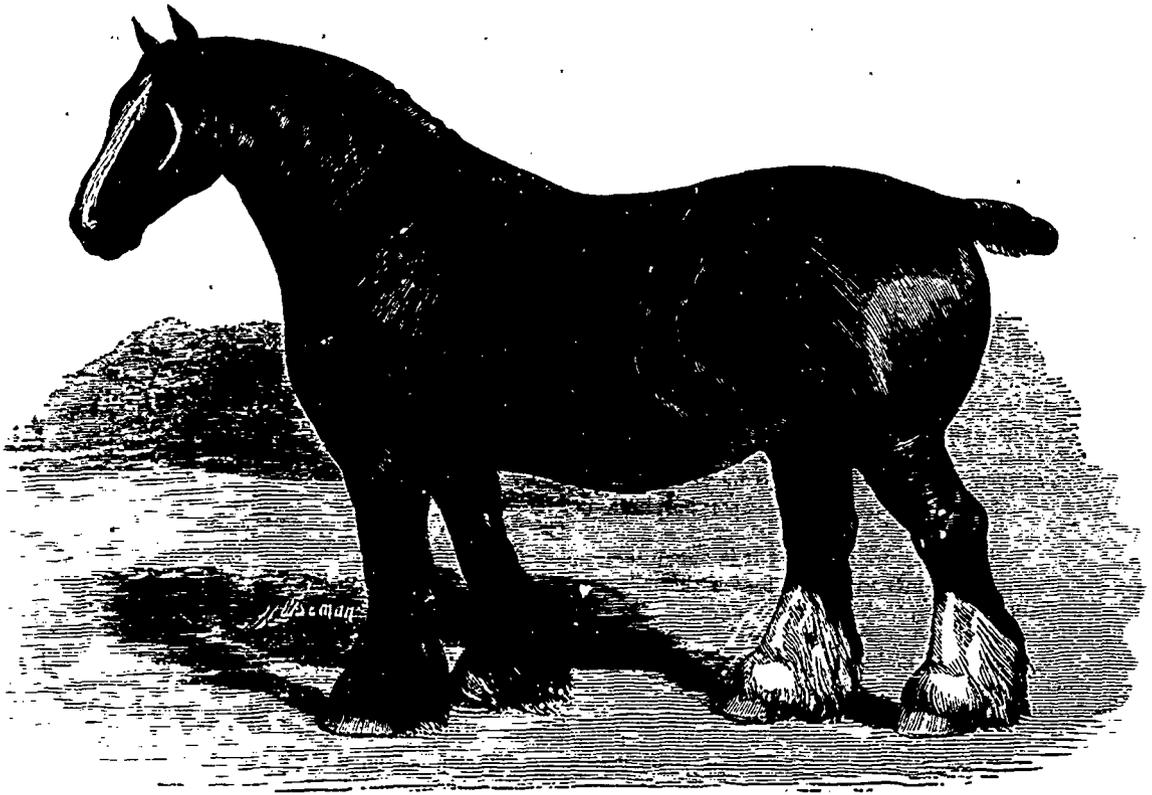
**Sugar-Beets.—Important Competition.**

We wish to draw the attention of our readers to the following official letter addressed to each of the Directors of our

The prizes will be awarded in September by the Hon. Commissioner, who will himself decide the merit of the work.  
I remain, with respect, your obedient servant,  
(Signed) GEORGES LECLÈRE,  
Director of Agriculture, &c.

We are happy to hear of this excellent innovation, the first effect of which will be to accustom still more the pupils of our schools to the cultivation of hoed-crops, which are really and indeed the base of all improvement in cultivation.

By preferring the production of sugar-beet, the Hon. Commissioner encourages still more the study of a question of the greatest interest at the present time, that is: Is it better to give our sugar-beets to our cattle or to sell them for the manufacture of sugar? This question, truly a complex one, does not spring from the present competition, so that we



SHIRE MARE BLOSSOM 2ND.

*Blossom 2nd, bay, foaled 1880; sire Thumper 2,136, dam Blaze, by Champion 450. The property of the Earl of Ellesmere, Worsley Hall, Manchester. Winner of Champion Prize as best Mare at the Shire-horse Society's Tenth Annual London Show, 1880.*

three Agricultural Schools, Richmond, L'Assomption and Ste-Anne Lapocatière.

Depart. of Agriculture and Colonisation,  
Quebec, May 1st, 1889.

Sir,—I have the honour to inform you that the Hon. Commissioner of Agriculture, with a view to the special encouragement of the labours of the pupils of your school of agriculture, and to stimulate their ambition, has decided to offer three prizes for the best cultivated half-acre of sugar-beets.

The first prize will be \$25.00, the second \$15.00, and the third \$10.00. The prizes will be awarded to those pupils whose work shall be declared to be the best and most profitable by the judges, but one of the essential conditions will be, that the whole of the cultivation required by this crop be entirely the work of the pupil himself.

shall say no more on this point to-day.

All will admit that the competition just opened is of a kind to produce excellent results, since it will accustom the pupils of the schools to all the operations which are necessary to the best cultivation of vegetables, as well as to the advantages, as much to the land as to the cattle, which proceed from them. It will have, too, the effect of causing the higher appreciation of a crop for manufacturing purposes, which, without any doubt, has regenerated agriculture throughout the whole of the North of Europe.

ED. A. BARNARD.

Ottawa, Ont., April 3rd, 1889.

Dear Sir,—The small differences in the density of the common oil of vitriol in the table you mention are too small to be

worth noticing in using it with phosphate. I looked the subject up at the library of the Geological Survey to-day, and find that Morfit, one of the best authorities on the manufacture of superphosphates, says that to 10 of good apatite, 0.81 of brown oil of vitriol is required. This is of vitriol of 1.75 density. In the phosphates of the Templeton district, the percentage of fluoride in eight samples varied from 5.8 to 7.9 per cent. But this makes no difference in the amount of acid required, as the molecular weight is so near that of phosphate. An excess of acid is always calculated upon, and a small difference in this excess is unimportant.

Mr. Hofman, the chemist of the Survey, thinks that with the present small demand in Canada for superphosphate it could not be manufactured at much less than its present price.

I expect to go to Toronto on Friday, and my address there will be 118 College Avenue, West. I shall be glad to answer any other question about this if I can.

Yours very truly,

ERNEST C. SAUNDERS.

A. R. JENNER FUST, ESQ., Lachine.

As will be seen by the following letter, Mr. Nichols, of the Capelton mines, will sell *plain superphosphate of fair quality* at \$10 a ton.

A. R. J. F.

EXTRACT FROM A LETTER TO THE SHERBROOKE EXAMINER;  
APRIL 19TH, 1889.

Both ammoniates and potashes are on the free list, and there is no reason, beyond difference in freights, why they should cost more in Canada than in England. *Plain superphosphates of good quality can be bought at Capelton for \$10 per ton in bulk.* Hence if any foreign manufacturers offer goods at a price any where near that named by you, you may depend upon it that they offer only plain superphosphate, or else "the truth is not in them."

In conclusion we beg to assure you that it is our intention to give the Canadian farmer full value for his hard-earned money. The more he buys, the cheaper we can afford to sell; and if the happy time ever comes when the demand for our goods in Canada shall be in proportion to the need, we know we can supply them at a price which will leave no room for criticism. In the meantime we must possess our souls in patience, and fill such demand as there is at the lowest price that can be given for honest value. It is fortunate for the Canadian farmer that the condition in the townships are such that he can commence by purchasing at lower prices than his American neighbor has reached after years of competition, and without so called tariff interference.

Yours truly,

G. H. NICHOLS & Co.

#### A Few Practical Hints.

The spring work of putting in crops, and directing the growth for the season, if properly performed, will have a large controlling influence for success. Among some of these operations are the following:

**Plowing Stubble Ground**—On any land other than sod, may be done in a thorough manner on one hand, and superficially on the other. A most important requisite is thorough pulverization. Some sowed crops have been nearly doubled in preparation by repeated harrowing, reducing the soil to a finely pulverized state. But much of this work may be done by the right kind of plowing. Farmers are apt to hurry the matter too much in their anxiety to push rapidly their spring work. Their plowing is too much like the old "cut and

cover" way. A part of the soil is never moved at all. It lies solid and undisturbed, and the narrow furrow slice which the plow turns up is thrown upon it. If this furrow slice consists of clods, the whole is in a very poor condition for receiving the seed—fig. 1, where the horizontal lines show the soil un-



Cut-and-cover Plowing.

disturbed by the plow. In direct contrast with this slipshod work, is the complete mellowing of the whole soil by the simple and effectual plowing of *narrow furrow slices*. All the soil, to the full depth of cultivation, is turned and crumbled—fig. 2, where loosening all the soil forms a deeper bed of



Narrow-slice Plowing.

mellow earth. It is much better to plow off only five or six inches from the land than to try to drive the work so fast as to attempt to turn a foot and a half at a time. Plowing narrow slices pulverizes the whole to the full depth, and in this respect does better work than repeated harrowings, which only mellow the surface. Both, when combined, fit the soil for the seed in the most perfect manner, and make it as fine as an onion bed.

**Plowing Sod**—A common preparation for planting corn, on the contrary, requires a certain width for laying the slice over handsomely. The next work with it of importance is to prepare a fine bed of earth on the freshly turned surface. The old vertical tooth harrow will not do it without tearing up the sod which has been so handsomely laid under. We must employ one of the several harrows which press down like a roller, and at the same time cut and pulverize the top soil. Among these are the Shares, disc, Acme and



smoothing harrows, all of which operate well. For subsequent broadcast culture, the smoothing harrow, or any slant-tooth implement with fine teeth, will answer an excellent purpose, running over the whole ground, grinding up and destroying the starting weeds, and at the same time gliding harmlessly over the stronger plants of corn. The other harrows would not answer, as they would cut off the young plants if passed over the rows. The spring-tooth harrow is an efficient implement for other purposes.

**Spreading Manure**.—Manure applied in the spring is greatly improved in its efficiency if evenly spread, and on stubble ground thoroughly mixed with the top soil. Kemp's or the

"Empire" manure-spreader soon pays for itself on a farm of much extent. Following with a harrow, to mix the manure well with the soil before it is plowed under, assists in the thorough intermixture, and very often doubles its value. Where the manure spreader cannot be had, a brush harrow is an efficient implement to break up and pulverize the lumps of manure. Such a brush is represented in the annexed cut, the brush pointing slightly downward behind, held by the simple plank frame. Such a brush harrow is just the thing to grind up the manure which has been spread in winter on the grass land of meadows and pastures; and it is likewise a good implement for brushing in grass seed.

*Reaper in Pastures.*—As soon in spring as pastures have made a vigorous growth, the earliest growers among the grasses will begin to form seed-heads. As the seeds ripen, the stalks die, and irregular patches of dead grass are seen over the pasture, lessening its value and exhausting the soil. About the same time, various perennial weeds spring up with additional detriment. A common reaping machine, set to cut 10 to 12 inches high, will run over ten acres in a day, cut the seed stalks and the weeds, and leave the pasture with a neat and even appearance.

**FODDER CORN.**

Careful tests at the New York Station show, what was becoming pretty well understood before, that corn planted either for fodder or ensilage produces most nutriment by being planted thinly in drills, or hills, and allowed to nearly or quite mature before cutting up. Both of these points are of great importance. Broadcast corn at the station produced, in feeding value, upon a single acre, but \$19.72, while an equal area, cultivated in drills, gave a crop worth \$35.74, or nearly double.

This experiment has now been repeated so many times with practically identical results, and is so well confirmed by general experience, that there can be no doubt about it. As to the question what sort of corn to plant, a short-jointed, leafy variety is preferred. A slightly later kind may be used for fodder, or ensilage, than would be safe to plant for grain but it is not wise to go very far in this direction.

DR. HOSKINS.

**QUESTIONS ON ENSILAGE**

The following letters in answer to queries on ensilage may prove useful to many of our readers.

To S. A. F.

Dear Sir—Experiments in various Experimental Stations in the U. S. go to show.

1. That corn for ensilage should be grown very much as if for grain;
2. Should be of a variety which matures fully, when cultivated for seed.
3. That *quality*, as food value, must be considered as well as quantity per acre. In fact, recent experiments (1888) would lead us to expect that one ton of our own Canadian (Quebec) corn would be equal in food value to over 2 tons of Southern seed corn, grown here. Dr. Goessman of Massachusetts and Professor Porter of Minnesota have arrived at similar conclusions. I believe,—that the best Eastern early corn more than compares with the Southern in quantity of food produced per acre.

Respecting the most economical way of doing the work, I labored on this problem some years back.

We prepare (clean) the land as well as possible, spread the manure with a machine, sow on the flat, about 26 inches apart for the Quebec corn, sowing and covering 3 drills at a time,

rolling heavily and spreading the fertilizers all at one operation with a two-horse machine. We cultivate with the smoothing harrow and horse cultivator entirely. We cut, with the ordinary reaper, two drills at a time; allow the corn to wilt for about 24 hours, draw in on a very low two horse truck, use a two horse cutter and elevator to carry into the silo, filling leisurely, for *sweet silage*, trying to secure 125° Fahr. for each layer, of about 2 feet finely cut corn ( $\frac{1}{2}$  inch).

Why should not the Experimental Station at Ottawa take up these experiments without any further delay? *We want to know*, as you very properly remark, what varieties to recommend for our various soils and climates. Also, the food value of such ensilage as compared with various roots, *when fed under the best circumstances*, either for milk or meat.....

My seeder is an improvement of my own on Vessot's roller and seeder which you have no doubt, seen at Exhibitions. Vessot's (Joliette) is a queer machine, without wheels, sowing at an angle, the roller giving the motive power.

I got him to add front wheels, add a fertilizer attachment, sow in drills, or broadcast at will, and perpendicularly. ~~But~~ after the machine was made, I had to set to work and improve it again.—It now works to my satisfaction—having also a marker attachment &c., &c. The machine is here in Quebec, to be worked extensively next year. It sows beans and grain, as well as grass seed. Quebec corn—yellow and white—has been grown in the French country from time immemorial—being, no doubt what the Indians had in Jacques Cartier's time. Around Varennes and l'Assomption considerable selection is made annually, and this corn is certainly both very productive and early.

There are numerous varieties of it. Down below Quebec, it does not grow over 3 or 4 feet in height, whilst at Varennes, I got it over 8 feet high, after 8 weeks cultivation from seed sown on 15 July.

We sow 26 inches apart, and about 6 inches in the drill. I have not weighed the crop—but would expect 15 to 20 tons per acre with everything favorable.—I am positive it contains double the food value of the Western varieties grown here. Here is work for the Experimental Station at Ottawa.

We use the large cutter with two knives on the fly wheel. Our elevator was made here, on my advice, and cost \$30.00 in all, from the patterns, &c., which had to be made.

We cut, I suppose, about two (2) tons an hour.—When we were through, we tried the elevator with earth (for the sealing up of the silo after the board covering was fitted on the top.) Two men could not shovel in as fast as the elevator would carry—on a rise of about 15 feet or more and a run of over 35 feet.

You are quite right respecting allowing fermentation in the silo before spreading it and trampling the corners &c. But we want to carry as little water—out of the 74°/10, the plant contains or more—as we can. Therefore, we allow the corn to lie for 24 hours on the field in fine weather, and we hope to gain 15°/10 less weight to carry. Here again is work for the Experimental Farm at Ottawa.

I cannot see why experiments on corn last year were a failure at Ottawa unless mismanaged in some way.—The season was very bad—but corn grew everywhere.—Why not at Ottawa? and then, the varieties would show by analysis, what they contained—whatever that might be.

Very truly yours.  
(signed) "ED. A. BARNARD."

**GYP SUM.**

GLOVER.—Of this plant gypsum is the indispensable, natural, and most favourite food, and in which it delights to lux-

uriate. Upon a measured portion of young clover and other spring seeds, on a light, gravelly soil, Mr. Long, of Brancroft, sowed the ground gypsum as a top dressing in showery weather. Comparing the produce and growth of this portion with the remainder of the field, he expresses himself thus—"You have often seen a particular spot where a manure heap has been laid, its thickening and towering above everything around it—now this is exactly what the gypsum has done." The best time for applying gypsum to clover is in April (1) or May, the former being preferred.

Formerly, one-half of the farmyard manure was kept under cover, and the other in an open pit. It was noted that the manure from the covered pit gave better results than that which had been all along exposed, and therefore the whole of the manure pit has now been roofed in. In fresh farmyard manure the ammonia—the most valuable ingredient—exists in a highly volatile condition, and is thus very apt to pass away into the atmosphere. To prevent this, Mr. Barter uses gypsum freely. The gypsum box sits in a corner of the byre, and, immediately after each cleansing, a little of this useful stimulant is sprinkled on the fresh manure, and over the spaces behind the cattle. Gypsum is very cheap—not more than about 30s per ton—and, in addition to its inherent value as a fertilizer, it possesses properties which make it very useful for the purpose just mentioned. Besides helping greatly to fix the ammonia—that is, to prevent it from flying off into the air—the gypsum is also useful in keeping down unpleasant odour.

Gypsum is present in considerable force in the clover plant. It is said that an ordinary crop of clover will contain per acre about two hundred weight of this mineral, and the same may be said of sainfoin. Hence, when dressing your seeds with gypsum, there is no special need for a *heavy* dressing, three hundredweight per acre will be enough.

"Worn out" land is above all others suitable for dressing with gypsum. On any farm where the clover plant fails to make a strong growth the year after sowing, there the need of gypsum is apparent. It is best to scatter it on a misty day or very early in the morning, when the plant is saturated with dew.—N. DEVON.

With regard to gypsum as an ammonia fixer,<sup>(2)</sup> I consider it one of the very important items connected with the farming of the present day. There can be no question about the great quantity of ammonia wasted every year in open foldyards, and many farmers are quite alive to the fact, but, like the landlords, are unable to bear the expense of covering them, hence the necessity of endeavouring in every known way to save the most costly of all fertilizers. In my own case I have a small covered foldyard, but am obliged to empty it once, if not twice, during the winter, and all I can do—as far as I know—is to keep scattering a little gypsum in the foldyard while the manure is being carted away, or on the mixer when each load is emptied. The action it has is to prevent the ammonia escaping in the air.—NORTH RIDING.

*Sulphuric acid.*—As mentioned last month, whether in a lecture or in this periodical I really forget, the papers say that the duty is to be removed from sulphuric acid. If this is the case, a great absurdity will vanish from our trade. What can be more absurd than for Canada to send her rough apatite to England, there to be ground and dissolved in the acid, to be sent back again to us in the form of mineral superphosphate of lime. See p. 82.

(1) This is for England: apply gypsum when the grass begins to grow is my rule. Ed. A. B.

(2) By the sulphuric acid, &c. to be effective the application must be liquid. A. R. J. F.

*Root-crops.*—"The deplorable state of agriculture in this province is greatly due to the absence of root-crops." This wise sentence must have struck many who observed it in the article on the *Beet-sugar Industry*, by Mr. Wilfred Skaife, in the March number of the Journal. The generality of our farmers do not see that no amount of *lying idle* in grass will profit the land half so much as the constant cultivation it receives during the preparation for, and the horse- and hand-hoeing of, one root-crop. It is worth while repeating over and over again, till the idea sinks into men's minds, that manure is good, but that manure and tillage are better.

*Frozen seed-wheat.*—A professor of agricultural science in the States has been conducting certain experiments by which he has ascertained that from 40 to 50 per cent of frozen wheat will grow. May be so, but I hope my friends in the lower parts of the province will not be tempted to risk it, though Mr. Mackenzie, on his 40,000 acre farm in the West, announces his intention of doing so.

*Oats.*—It appears that the *American Agriculturist*—to the publishers of which periodical I am indebted for a sight of the best farm-paper I have yet met with on this side of the Atlantic—has offered a prize of \$500.00 "for the largest yield of oats per acre": open to the whole of North America. Mr. Harris, a well known writer on agricultural matters, contributes a very sensible article in aid of the efforts of those who may be tempted to try for this very liberal prize. It will be found below.

I do not think spring ploughing will assist Mr. Harris' neighbour. There is nothing like a stale-furrow for spring-grain of all kinds. Again, why not drill the whole of the seed? Surely, the equal depth at which the seed is deposited by that implement is more likely to produce an equal *braird*, which, again, is more likely to produce an equally ripening crop, than the half and half plan of the *neighbour*! The quantity of seed—3 bushels—is, if the land is, as it appears from the description to be, in perfect condition, about right for the drill. But what does "a ton of hill and drill phosphate" mean? One of the first lessons to be taught by the very handsomely endowed experiment stations in the States should be a proper system of nomenclature. *Phosphate* conveys to the scientific mind a compound of phosphoric acid and a base—lime, iron, &c.—, what the *neighbour* means by the term is some indefinite mixture of phosphoric acid, in a soluble and insoluble state, potash and nitrogen. And a ton to the acre! And this preposterous dose on "a piece of land that has had for years more than its proper proportion of manure"! Why, the cost of this dressing alone will exceed \$30.00, and, as oats are selling in the States, that would be equivalent to the value of nearly one hundred bushels! It is not this extravagant style of work that the American Agriculturist desires to encourage, I am sure.

Mr. Harris is, I am glad to see, sound on the quantity of seed question. The English farmers, having an earlier seed-time, never sowed quite so quickly as the Scotch. The latter, even as late as 1882, frequently sowed a quarter—8 bushels imperial—to the Scotch acre of five roods = 6 bush. 2 pks. to the imperial acre. (1) Besides, the drill was common, I may say universal, in the South-East of England in 1830, whereas, in Scotland, it was rare when Stephen's Book of the Farm was published—1852. We, in the "home counties," seldom exceeded 3 bushels with the drill, or 4 bushels broadcast.

In this province, as farmers often sow grain just as it comes

(1) See Transactions of the Highland and Agricultural Society for 1881.

from the threshing machine, no one can tell what quantity of seed is used: I regret to say that I have seen, *even at Sorel*, the works of an expensive sowing machine choked up with bits of straw and other impediments which a little trouble, even with a sieve, would have removed.

Mr. Ewing. I may say once more, of McGill Street, Montreal, will have Black Tartar oats for sale in the spring. I *strongly* recommend every one of my readers to try them.

And now for what I should do were I going to compete for the prize offered by the American Agriculturist: I should choose a piece of land which had borne a root-crop last year, and had been—as it surely would have been on any farm of mine—well manured, and well cultivated during the growth of the crop. This I should not plough again after the autumn-furrow, which would have been deep enough to get below the dung and bring it near the surface, but I should grub and harrow it until a fine and equal-treading surface was produced, give it 150 lbs. of sulphate of ammonia and 200 lbs. of mineral superphosphate, drill in, 3 inches deep, 3 bushels or  $3\frac{1}{2}$  bushels—according to the tilth—of Black Tartar oats, harrow a couple of times along the ridges, draw out the furrows and water-furrows neatly, and finish with a moderately heavy roller across the ridges. If that did not bring the biggest crop of oats the land was capable of producing, I am incapable of saying what would.

Mr. Harris advises sowing immediately after the plough, lest the seedtime be deferred by a heavy fall of rain: quite right, too, if spring-ploughing for grain is right at any time. But I cannot imagine anything more likely to produce a fine tilth as a good fall-furrow set up at an angle of  $45^\circ$ —10 inches  $\times$  7, or 9  $\times$  6, or 8  $\times$  5. The  $2\frac{1}{2}$  bushels of seed treated as Mr. Harris recommends, would be quite equal to  $3\frac{1}{2}$  bushels sown in the state our average Canadian farmer sows oats.

When the oats are all well up, a time with a set of light harrows will greatly benefit them; and—but this will seem an extravagance—a good hoeing, or even two, will increase the crop by, probably, 3 or 4 bushels an acre. Almost all our grain-crop is hoed in England, either by horse- or hand-hoe. This, doubtless, is *one* of the reasons why it is so superior in yield to the grain crop of other countries.

#### POINTS ON SHEEP.

Sheep are not endowed with such muscular power as horses, dogs or even cattle. They have never been used for any species of labor. The fibre even of their stoutest muscles is finer than that of the ox or horse. There are, moreover, some intrinsic chemical differences in the muscular tissue of sheep and oxen which have not yet been investigated, but which are shown in the fact that freezing does not injure mutton, although it appears to disintegrate beef, which after being frozen loses a large amount of albuminoid fluid. Relatively to their weight and probably dependent in part on their taking little fluid, sheep relatively to their weight, have less blood than other domestic animals, the amount not exceeding 4 or 5 lbs. Sheep are not endowed with any great amount of brain power or intelligence. Educated dogs and learned pigs have been heard of, but the preamble of an old highway Act truly states, "Whereas the sheep is a stupid animal" Their nervous energies are mainly expended in providing for their livelihood, and in the case of ewes in devoted attention to their offspring.

Sheep graze more closely than cattle. They thrive best when run thinly. They never do well, how abundant soever be the grass, if it is stained with their droppings. Hence, where the grass or other forage crop is heavy it pays to hurdle the sheep over it, giving a fresh break daily or oftener. This sys-

tem intelligently carried out, is, under certain conditions, not only the most profitable manner of managing the flock, but the most economical method of manuring the land. Sheep have great capacity for converting poor scant herbage into valuable animal food. In health their digestive powers are vigorous. Their capacious stomachs macerate and soften hard fibrous food, and by subsequent rumination extract therefrom very thoroughly their nutritive constituents. In order to maintain weight, they require to consume daily from 3 to 4 per cent of their own weight of hay. Useful sheep of any improved breed ten to fifteen months old, weighing 120 to 140 lbs., will consume about 25 to 30 lbs. of swedes, and eat or waste about 1 lb. of hay. On dry land, during tolerably fine weather, with this feeding they should increase about 2 lbs. per week.

They are sometimes senselessly treated as mere scavengers. They are made in late autumn and winter to clear up the pastures after cattle and horses; are expected during the winter to maintain condition on thrifless sodden frosted grass; while on such poor fare pregnant ewes of improved breed are supposed to be able to find their own nourishment, and satisfactorily bring to maturity a vigorous lamb. Under such management, diseases abound, mortality is high, profits are nil. Faulty, generally insufficient feeding is indeed the chief cause of sickness and loss amongst sheep in all parts of the British Islands. After a severe winter thousands of sheep, for want of adequate nutritive food, are deteriorated in health, and may die. Many ewes lack the strength to bring forth their young or are unable to afford them adequate nourishment. Thousands of lambs are born anæmic and stunted. Again when lambs are weaned, an unnecessary large proportion for want of tact and management, do not take kindly to their altered dietary, scour, lose weight and time and sometimes become hopeless casualties.—North British Agriculturist.

#### How to secure a fast Walker.

Recognizing the fact that the fast walker is always desirable, and more valuable than any other, the question is how to secure this trait in all the colts. There must ever be differences in speed, no matter whether walking, trotting or running, but these are each largely matters of education, and it is to this we would call attention. In the first place the colt must be got bridled as early as possible, and the earlier this is attempted the easier for both owner and animal. When fully under control the harness should be gradually added, and the use of the reins in guiding in every direction. This work cannot be too thorough or systematic, for here is the foundation for the future. He should be made to go in every way at the will of the driver. This much gained, the walking gait comes next. The aim must be to encourage the natural action in walking, without allowing the colt to trot. If this is attempted, bring to a full stop at once and begin again. In this way he will soon catch the idea that it is fast walking and not trotting that is desired, and improvement will be seen. Gradually urge an increased speed in walking until the habit becomes fixed. This may be trying to the breeder, but in this way only can this very desirable trait be established. In is of the highest importance, and the breeder who fixes this characteristic in his family will always find a ready sale for his colts at prices that will repay for all trouble. The work accomplished in an individual renders it much easier in the next generation, and soon it becomes a trait in the family. Here is where the greatest compensation comes in to the breeder. These advances gained in a single animal pave the way for still more later, and add to the work of all stock. These questions are repeatedly urged, not alone with reference to present results, but with the thought of future possi-

bilities. They all run in the practical line, where the farmer with one brood mare, can secure as much advantage as the breeder with twenty.

Remarks.—The above from the Maine Farmer sets forth clearly the value of the fast walking horse, but like others they find it a difficult matter to give much that is definite as to the methods of training colts and horses to walk fast. One reason for this is the lack of experience in this direction. This valuable trait in horses has not been important. We may venture a few suggestions. Years ago we experimented some with young horses in teaching them to walk fast. We may urge a horse to walk fast and gain considerable, but the better way is to seek opportunity when the horse of its own will walks fast, such as driving home when he is hungry or late in the evening. If he is not permitted to change from the fast walk to the slow trot, so that he learns the will of the driver, and this be repeated and finally practiced when ever the horse is driven, the horse will become a fast walker if he is adapted to it. This trait as well as the trotting ability may be bred into horses.

### THE FUTURE OF SHORTHORNS.

READ BEFORE THE ILLINOIS SHORTHORN BREEDER'S CONVENTION AT SPRINGFIELD, ILL., JAN 16, 1889,  
BY HON. D. W. SMITH.

The subject which has been assigned to me is one in which fancy or imagination may find a wide field; a field rosy or sterile, bright or gloomy, as the individual predilection may determine. Whichever view may be entertained can be supported by facts and figures that will argue strongly for either the hopes of the optimist or the forebodings of the pessimist.

The rational predictions as to the future must be based largely upon the experiences of the past and present, yet it is well to always bear in mind, the utterance of Napoleon that "Circumstances do not always make the men; men sometimes make circumstances." Then there is a wise old proverb that we should bear well in mind, namely, that "All winds are favorable to a skilful navigator." I am therefore inclined to argue that the "Future of Shorthorns" depends largely upon the men who breed Shorthorns, and that no matter what adverse winds may blow the skilful breeder will always be able to steer his craft through stormy waters and rocky channels into safe harbors of profit and honor.

How much depends upon the breeder was forcibly illustrated at the Dexter Park sales at Chicago in November, where one day a draft of cattle from a fashionable bred herd of Shorthorns sold at prices ranging from \$5 to \$35 per head and on the next day ten Shorthorns sold for \$25,000. Both breeders had sailed through the same waters, had encountered the same adverse winds which have been so persistently blowing against all of us for the past five years; yet how jauntily one steered his craft into port, and how sadly was the other one wrecked against the rocks of the channel.

The Shorthorn is unquestionably the oldest established of the improved breeds of cattle, their type is the most firmly fixed, their prepotency the most certain and their quality most superior. Should there be a reasonable doubt as to the future of a breed embracing all these excellencies? The Shorthorn is everywhere the standard and test of bovine merit. Did anyone ever hear the claims of the Hereford pitted against the Angus, or the Holsten against the Devon, or the Sussex against the Highlander? Certainly not; the advocate of each breed compares the merits of his favorites with the acknowledged and undisputed merits of the Shorthorn. Each one dwells upon some particular breed, but each particular merit of each particular breed is embraced in the Shorthorn. The big girth around the heart of the Hereford, the hardihood

of the Angus, the activity and docility of the Devon, the fineness and handling quality of the Highlander, the milking quality of the Holsten—admit them all—and you will find them all and more embraced in the Shorthorn.

Three years ago I spent considerable time in the western range country. The Hereford bovine was then at its height, and Hereford bulls were costing from \$500 to \$1000. Each had been, and were then, being used upon many range breeding herds. The results derived from the use of these high priced and in many cases imported bulls, was being contrasted with the results from past use of \$40 and \$50 grade Shorthorn bulls, and of course the comparison was not always favorable to the so called Shorthorn bull. It was manifestly an unfair comparison, and I made careful inquiry to learn if a \$500 or \$1000 Shorthorn bull had ever been used upon a herd of range cows, and could not learn of a single one, and it was a rare thing to find one that had cost as much as \$100 in the States. Since then I have watched with much interest to learn if the progeny of those high priced Herefords sold for any more in the Chicago markets than did the progeny of the low priced and very ordinary Shorthorn bulls usually bought for the ranges. For every sale of Hereford rangers at an unusually good price I have found twenty sales of Shorthorn rangers at equally good or better prices. The Hereford has steadily lost ground on the ranges for the past three years, the famous Hereford ranch near Cheyenne has gone into bankruptcy, and the Shorthorn is not only holding his own but is rapidly regaining the favor that it had temporarily lost. I am satisfied that "The Future of the Shorthorn" upon the ranges is an assured success, and that in another year there will be a largely increased demand at increased prices for Shorthorn bulls for the range country.

Don't let this prediction however, my friends, prevent you from castrating about one third or one half your bull calves. There is probably no one third or one thing more conducive and necessary to the prosperous future of Shorthorns than a free and judicious use of the castrating knife and the spaying needle.

The following figures are encouraging as to the future, viz: In 1884 in Scotland, the seat of power of the Pollé cattle, the average price of the Polls sold at public sale was \$43.80 per head higher than the average price of Shorthorns so sold. Since then there has been a gradual and steady change until in 1888 the Shorthorns averaged \$6.76 higher than the Polls. There seems to be encouragement for the future of Shorthorns in Scotland.

For more than a hundred years we have a history of the triumphs and reverses of Shorthorns. In 1784 Charles Colling bought Hubback for 8 guineas or \$42, and Duchess, the progenitor of Bates, Duchesses, for £13 or \$65. In 1810 he hired out his bulls at \$250 to \$500 each per annum, and refused \$2,500 for one cow. In the fall of that year he sold 47 cows, bulls and heifers at an average of more than \$750. Robert Colling, of equal note as a breeder, sold in 1818, 61 head at an average of \$640; yet only two years later at his closing out sales embracing all of his choicest and best, the average of 46 head was only \$245. Prices gradually depreciated from that time on for many years, until in 1831 we find Mr. Bates buying the best bull he could find in all England, Belvidere, for £50 or \$250, and in the same year he bought the Matchem cow for £11 or \$55. Then came another boom in Shorthorns, when prices ran up into the thousands of pounds, followed by depression in 1850, when Mr. Bates' entire herd sold at an average of only \$327. The 68 animals embraced in the sale bringing \$22,240; twenty-five years later a single bull of the Bates families sold for more than his 68 head, and at the New York Mills sale in 1873 one Bates cow sold for nearly twice as much. About

1842 there was a depression in Shorthorn values in this country worse than the one we are now passing through. Cattle which in 1839 and 1840 sold for \$200 to \$1700 depreciated in value until choice ones were sold for \$50 to \$200 each, and many traders abandoned their pedigrees, sold their cows and calves to the butchers, and thought the end had come for the Shorthorns. About 1852 a reaction set in followed by another boom until 1857, Jas. N. Brown paid in this city \$3,025 which was at that time the highest price ever paid in America for a cow.

This was immediately followed by another period of depression until 1865, after which time came the greatest boom of all, culminating in the New York Mills' sale where 108 cattle sold for \$380,490 and one cow sold for \$40,600.

Then depression again varied more or less until the present time. At the risk of being tiresome I have dwelt at perhaps too much length upon the past and present conditions of Shorthorns, hoping thereby to throw a reflected light upon the future. It is not given to any man however to peer into the future, yet coming events may truly be said to cast their shadows before and we know that history often repeats itself. The golden days of Colling and Bates, of Thorne and Campbell and Renick may never return again, but as surely as the day follows night and effect follows cause so surely will the Shorthorn come to its own again. I exhort you my friends do not fall into the listlessness of despair for better days, do not fall into the slough of despondency. Remember that future loves a cheerful face and a brave and determined heart. If you have got a lot of "ornery" bull and calves go home and cut every one of them; if you have got a mean dejected looking cow sell her to the butcher. Then go and buy a few of the best Shorthorns you can buy for the money and it won't take much—and if you don't feel good over it two years from now you may say that I don't know anything about "The Future of Shorthorns."

### OUR BUTTER IN EUROPE.

#### DANGER OF CANADA LOSING HER FOREIGN MARKETS ALTOGETHER.

British Importers Give Their Opinions—A Hard Pill for Canadian Dairymen—The Holding of Butter Condemned—More Advice Tendered.

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#### LETTER NO. VIII.

It will be only repetition to say that while on the one hand trade in Canadian cheese has assumed magnificent proportions and promises considerable increase, our butter exports have been dwindling to comparatively insignificant proportions. But are we ready to think it possible that we are in danger of

#### LOSING OUR BUTTER TRADE ALTOGETHER?

The prospect of low prices, in any case, when it first pressed itself upon my notice, was a most unpromising one, but it was an even worse outlook to find dealers already discouraged, not to say actually disgusted in handling Canadian butter all because of continued disappointment and loss, which have been repeating themselves with increasing severity! Everywhere throughout Great Britain there was but one story—Danish butter the favorite and increasingly so, Irish butter improving constantly, if slowly, but Canadian butter literally "worse than nowhere," for it were better for its reputation if it had not appeared at all on the market.

This retrogression in our industry has been going on for years. In some cities Canadian butter was already practically out of the market altogether. There was one market,

however, where Canadian butter had seemed to have a firmer hold than elsewhere, and that was

#### THE BRISTOL MARKET.

While Danish butter had been supplied in other centres for a few years, Bristol consumers were only beginning to know much about it. During this very season of 1888 it was being skilfully "boomed" and it was being sold very largely. The Danish butter supplied a somewhat exacting demand, the less particular demand being supplied, of course, by the indifferent qualities of butter and by margarine. It is needless to say there was no "booming" of Canadian butter! It did not complete for the more exacting demand, but ran its chances against—margarine! And even then, as we are about to see, in the effective phraseology of the day, it frequently "got left." What I learned in Bristol was through the means of interviews with importers. And here I desire to say that notwithstanding our repeated failures to satisfy their needs with our butter supply, and even the severe losses to some of them, due to that failure, the firms visited did not show any unkind disposition towards Canada. On the contrary, there was a friendly feeling manifested; and an evident wish that our desire and hopes to improve might be realized. Doubtless one explanation of the friendliness is the continued profitable connection with Canada in the cheese trade—so far-reaching and valuable are the advantages of a reputation for good service in any line!

In some of these interviews I was accompanied by a son of Mr. Downs, the Immigration Agent at Bristol. When we were returning from them, he remarked that I had been given some

#### "HARD PILLS TO SWALLOW."

My Canadian readers will kindly allow me to offer some of these curatives, without any sugar-coating, with the hope that they may be swallowed for the benefit and health of our dairy industry. Mr. Price, of Messrs. Price & Parker, referred to the increasing tendency of the market, in late years, to losses on Canadian butter. Last year's trade was a severe culmination of that bad tendency. The buying was unusually speculative, in view of expected shortage, and many dropped money in their transactions. As a result, nothing but "creameries" and finest "Eastern Townships" Dairies would be touched this year. Nothing doubtful would tempt the buyer. To make the culmination more severe, even the best of last year's butter was under its usual average. "Creamery butter, as a rule," said Mr. Price, had been good, but last season even it had been faulty in being "bluey," which was probably a "blue mould due to the wood of the package." They were obliged to "strip" (turn it out of the package), and scrape off the bluey portion. The difficulty was not only the direct loss on the bluey butter, but the indirect loss in having to examine all the butter because of some of it being bad. Messrs J. Lovell & Son said that last year must have been an exceptionally poor season for butter production, for the percentage of "Western" (Ontario) butter refused was perhaps an average of 50 per cent., whereas the average quantity refused the previous year was not over 10 per cent. "Creamery" ran up to from 104 to 110 shillings, but they bought the "Western" at about 90 shillings, and subject to approval at that! All of which goes to show that some of our Canadian butter in the market, even at the heavy discount of from 15 to 20 per cent., is bought subject to suspicious approval and with the certainty of half of it.

#### BEING REFUSED ALTOGETHER!

This refused portion was necessarily got rid of by handlers for what it would fetch, and it would be sold as low as from 60 to 70 shillings for confectionery purposes. Even after so

discreditable a downfall as this, the poor stuff had a risk of still lower drop. On this low level it had to compete with margarine, which, in the words of an importer, many confectioners are now using instead of butter. If this is any encouragement for making poor butter, any maker of such in Canada is welcome to make the most of it the most encouragement, not the poor butter!

Not only was our reputation suffering among those who had "been burned"—had lost money in handling our goods, but other dealers who had merely been aware of these losses were afraid of our goods. One dealer—Mr. Iles—had been called to inspect several hundred packages, even of creamery, which had suffered from

#### BAD TUBS AND BAD PACKING.

This lot proved a serious loss to the importer. From his experience, Mr. Iles expressed himself in plain words, as "disgusted with these faults" in our butter and he would "have none of it." Had he confidence he would be ready to buy 500 tons of creamery, but under the circumstances he would look to Ireland for his supply. He believed "not one in ten of the Bristol importers would buy a package this year." While frankly telling me of the glaring faults in our butter, all seemed ready to tender some excellent

#### ADVICE FOR OUR FUTURE GUIDANCE.

I will quote that given by Mr. Widgery, of Messrs. Crewe & Widgery, as something in which there was general agreement. Mr. Widgery said: "It is no use to send goods here, unless they can be sent fresh, mild, cheap, and come regular, or uniform. Danish goods were now coming in, at a low price; and the consumers were beginning to give preference to a mild cheap article, like the Danish, or even margarine. Our firm has hitherto kept out of margarine, but we do not know how long we can continue to do so. Think of it as we will, the people of England are disposed to eat margarine, knowing it to be such! Another season would tell the story. Danish butter had hitherto been confined to Birmingham, and other manufacturing districts, and Bristol had taken Canadian butter for the agricultural districts. The manufacturing population seemed to be more particular as to quality than the laborer in agricultural districts." Now even this less exacting Bristol market is being closed to

#### ALL IMPERFECT FOREIGN BUTTER.

All that Mr. Widgery said was confirmed by other importers. Others said they "could not sell Canadian butter—must sell Irish or Danish." Said one, "There has been a revolution in Bristol butter market this very year." Danish butter, which had barely been introduced in Bristol before, was taking strong hold of the trade. There had been opened in Bristol this season a retail shop for the sale (nominally) "only of Danish goods," and the trade being done was exceedingly large. Indeed, the second shop had opened or was about to be opened. Thus was the enterprise and success of the European brought into sharp contrast with our lack of enterprise and our failure, with a force which I wish could be impressed upon all Canadians interested.

One piece of advice given by Mr. Clark, or Messrs. Clark & Son, was intended for our farmers. He said they must

#### STOP HOLDING BUTTER.

Said he, "We cannot have butter too fresh. Holding it means loss in every way—by taxes, commission, storage, depreciation speculative disturbance of market, &c., &c." Doubtless it is, as a general rule, against their own interests that butter be stored, either by farmers or by dealers in Canada or by dealers in England. The holding of any farm product tells in the long run against the interest of the producer and even the

middleman. This is more emphatic in regard to butter than perhaps anything else, and the particularly bad condition of our butter industry demands that it be hooded all the more carefully.

There are, indeed, possible exceptions to the general rule, although none were discussed at these interviews. For instance, where butter is made at one season in excess of the demand, it must be held over by some one—either producer or dealer—till wanted. In such case, it must be made and packed with the necessity of holding in view, and provision made for proper storage. This would be legitimate holding. What is objectionable is speculative holding. The farmer who speculatively holds butter when he might dispose of it for a reasonable price, to satisfy an existing demand, is not alive to the best interests of himself and brother producers. The dealer who is not satisfied with legitimate profits, but must needs gamble as a speculator, deserves the burning which comes sooner or later to these who play with fire, better than he deserves the confidence of the hardworking farmer whose earnings he would tax to swell his own unlawful gains. This is strong language, but it is ill-considered, as applied to those whose rule is to speculate, and who trade legitimately only as an exception. The interests of all concerned will be served by all heading and acting upon Mr. Clark's excellent advice to stop holding butter, speculatively. Mr. Iles complained of serious loss from the evil of

#### SLOW TRANSPORTATION.

Other commodities than dairy products, Mr. Iles claimed, suffered from this evil. He instanced a shipment of bacon which had been two long months on the way. It had lain on the seaboard so long that the delay caused a fall in the receipts from 36 shillings to 21 shillings. It is easy to see that such experiences do not improve the temper of our valuable friends, the British importers, and are adverse to the great interests which have been and may be developed in this productive land dependent upon foreign needs for a market.

#### WHAT LESSON SHOULD WE LEARN

from all this? One of the importers said that "the correction of all the faults of our butter trade would encourage a considerable trade in Bristol." It would do the same elsewhere. This then is the lesson: that the "faults" which have nearly or quite lost us our trade must be corrected to enable us to regain it. How to correct these faults and to promote a butter trade will be the question uppermost, in the letters to follow.

Jan. 12, 1889.

W. H. LYNCH.

#### NON-OFFICIAL PART.

#### CONSUMPTION CURED.

An old physician, retired from practice, having 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 all throat and Lung Affections, also a positive and radical cure for Nervous Debility and all Nervous Complaints, after having tested its wonderful curative powers in thousands of cases, has felt it his duty to make it known to his suffering fellow-men. Actuated by this motive and a desire to relieve human suffering, I will send free of charge, to all who desire it, this recipe, in German, French or English, with full directions for preparing and using. Send by mail, by addressing with stamp, naming this paper.

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