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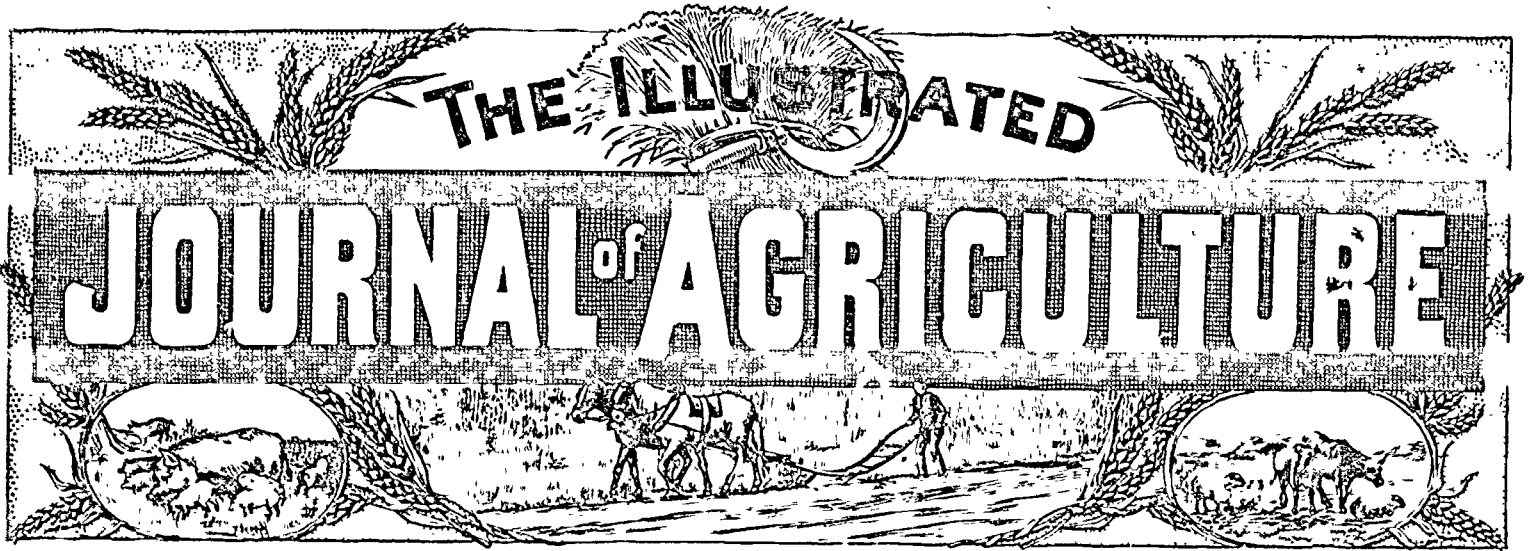
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The ILLUSTRATED JOURNAL OF AGRICULTURE is the official organ of the Council of agriculture of the Province of Quebec. It is issued Monthly and is designed to include not in name but in fact anything concerned with agriculture, as Stock-Raising, Horticulture, &c., &c.

All matters relating to the reading columns of the Journal must be addressed to Arthur R. Jenner Post, Editor of the JOURNAL OF AGRICULTURE, 4 Lincoln Avenue, Montreal. For subscriptions and advertisements address the Publishers.

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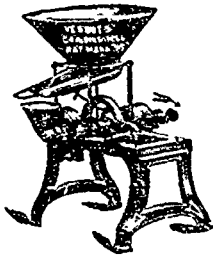
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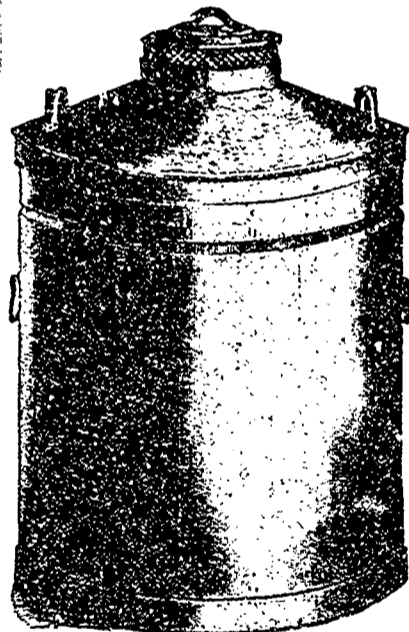
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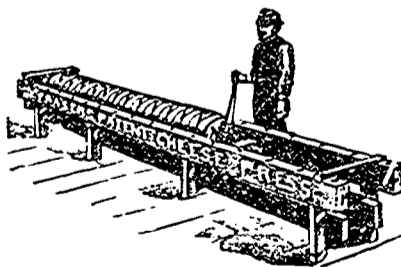
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Sound Horses are always in demand and at this season when they are so liable to slips and strains DICK'S BLISTER will be found a stable necessity; it will remove a curb, spavin, splint or thoroughpin or any swelling. Dick's Liniment cures a strain or lameness and removes inflammation from cuts and bruises. For Sale by all Druggists. Dick's Blood Purifier 50c. Dick's Blister 50c. Dick's Liniment 25c. Dick's Ointment 25c.

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THE ILLUSTRATED
Journal of Agriculture

Montreal, February 1, 1893.

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SPRING

4 Lincoln Avenue, Montreal.
February, 27th, 1893.

Before this number of the Journal reaches our readers, we may fairly hope that the longest and hardest winter known in our province for years will have nearly finished its dreary course. From the 19th of December till the date of the present writing, one almost uninterrupted succession of zero weather has tried the moral and physical health of the people. Fuel, thanks to the good store of coal laid in by the wise foresight of our dealers, has not mounted to such an exorbitant price as might have been expected. Bread and meat have remained at reasonable rates, thanks to the perfection of our means of communication; and, altogether, no great suffering has been apparent among our poorer classes. Payments have been fairly met when due, and we hear from all sides that, with the advent of spring, business may be expected to start again into renewed life, and the trade of the whole Dominion be all that its best friends can wish.

With spring comes work; and in order to carry on that work without any unnecessary delay, every farmer should make such preparations as shall enable him to set to work at once as soon as the combined influence of the sun and the wind shall have dried the land sufficiently. There should be no waiting for the smith to sharpen the harrow-tines, or for the collar maker to repair the harness. The horses, too, should be prepared for their coming work by food and exercise; for it is no joke for an animal to be

taken out of a stable or yard where he has been idling away his time, for weeks perhaps, with his belly ignorant of anything but straw and a little hay, and to be immediately compelled to draw the plough or harrow through a ten hour day. Many a horse has been rendered useless for weeks by this treatment.

Post and rails for fencing should be got ready and laid down where they will be wanted. Manure, where not already drawn out, should be laid up in well built cubic heaps, each load carted on to the preceding one; and, after being carefully trimmed, as soon as the weather permits, a foot thick of earth should be thrown over the top of the mizen.

Cows will be soon dropping their calves; ewes will be lambing; both of these will require attention as to food, and attention to the food of cows and ewes previous and subsequent to parturition is of the highest importance. The Arab woman dismounts from her camel, gives birth to a child, and remounts immediately after, as if nothing had happened. But it is not so with the highly refined females of our modern civilisation. We all know what care a woman of the non-working classes requires before and after her confinement, and it is a similar care that is required by the highly organised constitution of the improved breeds of sheep and cattle, for both of which no food is so serviceable in doing away with the dangers attendant on parturition as linseed, either in the form of cake, or the grain itself ground up with sufficient oats to absorb the oil, and mixed with dampened chaff.

Sows, too, require attention, though they can generally take pretty good care of themselves. Their litter should be scanty and short, when expected to pig—they keep their time almost to the hour—112 days—If any of the litter die, they should be removed at once, as the sow is very likely to eat them, and sows sometimes by this means require a taste that seldom leaves them. In the case of a very fat, negligent sow, that seems likely to overlord her young ones, a rail fixed round the sty about 6 inches from the floor affords a refuge for them.

Oatmeal and water, given lukewarm, is about the best food for a sow after pigging. For the young ones barley or corn, and pease, ground together, in the proportion of 4 of corn to one of pease, will bring them along nicely after weaning. Geld the males and spray the females at from 10 to 14 days old, except of course those to be kept for stock. An unsprayed sow-pig is a troublesome beast, and if slaughtered when at heat is, ough! Pigs are too frequently weaned too soon: six weeks at least they should be on the sow.

If the litter is numerous, one or two may be killed for suckling-pigs: delicious indeed, if well dressed, and not over a month old.

The Great Christmas Market at Islington.

What a change the prices of meat in London have undergone since the year 1874. At the Xmas market that year, the best Scots, Dovons, and Welsh runts were worth 6s. 10d a stone of 8 lbs., equal to about 21 cents a pound, "sinking the offal," and on the 12th December, 1892, the finest 90 stone beast in the land could have been bought for 16 cents a pound; \$35.00 a head of difference!

Our readers will understand that all cattle are sold at Islington by salesmen. The buyer looks at a beast,

judges its slaughtered weight to be so and so, and offers accordingly; then comes the chaffering between the two: that does not take up much time, as they know each his own business pretty thoroughly; the beast, or the lot of beasts, is sold, the buyer pays his cheque, at one of the banks, to the salesman; the salesman sends his cheque to the owner of the cattle by the night's post, with a statement of sales, condition good or bad of the beasts, faults to be found or perfections to be praised in the cattle; and the affair is finished and done with.

The feeling as to the future was that prices would be better. During the latter fall, multitudes of half-fat beasts were sold, their owners fearing that, owing to the short hay-crop, sheep would be scarce, but the roots have made wonderful progress, and many farmers see a prospect of not turning out their fattening beasts till they are duly ripe.

Sheep, too, as regards the best short-wools, were more saleable. Good Downs, from 60 lbs. to 68 lbs.—whether Southdowns, Hampshires, or Shropshires, makes no difference—fetched from \$10.00 to \$11.30 a head; while great, coarse long-wool ewes weighing 80 lbs. when slaughtered, were only worth \$9.50.

Small, "London pigs"—from 45 lbs. (1) to 50 lbs., the four quarters—brought from \$6.75 to \$7.50 each.

English grain-markets—
Average price of wheat
December 10th..... 26s. 10d. a quarter
Average price of barley
December 10th..... 25s. 1d. a quarter.
Average price of oats
December 10th..... 17s. 4d. a quarter

No quotation for Canadian wheat on Mark Lane (where does it go to?), Canadian barley is noted at 18s to 20s a quarter of 400 lbs., while Saale, Moldavian, &c., goes as high as 46s. a quarter of 448 lbs.

Canadian oats are worth 16s. a quarter of 304 lbs., while New-Zealand oats are quoted as high as 28s. a measured quarter.

The Competition of Agricultural Merit.

THE GENERAL REPORT TO THE COMMISSIONER OF AGRICULTURE AND COLONISATION, QUEBEC.

The undersigned have the honour to submit to you the report, as judges of the Provincial Competition of Agricultural Merit, for the year 1892.

This is the third year of the Provincial Competition, inaugurated in 1890, the duration of which is fixed for five years, one year for each of the five agricultural districts into which the province is divided. This summer, the competition took place in district No 3, comprising the following 16 counties: Arthabaska, Beauce, Bellechasse, Bonaventure, Dorchester, Gaspé, Kamouraska, Lévis, L'Islet, Lotbinière, Mégantic, Montmagny, Nicolet, Rimouski, Témiscouata, Wolfe.

We commenced visiting the farms on the 7th of last June. We have made a special report on each of the 80 competitors, but we thought it useless to print all of them, and we determined only to publish those that are included in the general report.

The district in which the competition was held this year, is much greater in extent, particularly as to length, than the district of last year.

We did our best to place clearly before the farmers the good examples to

(1) The perfect leg a pickled pork, fed on barley-meal and skim-milk, for the "West-end" trade, weighs four pounds. Ed.

be followed, as well as the errors to be avoided; and we tried, especially, to make them all understand that intelligence, an orderly method, economy, and resolution would tend to the prosperity of the farmer, under whatever climate and in whatever circumstances he might find himself.

It will be observed that, as we did last year, we have laid great stress upon the utilisation of manures. However favourable may be the results obtained in a moist climate, where rains are frequent, like England, by spreading manure as a top-dressing, we unanimously agree that in a country like this where summers are so dry, there is only one really profitable way of employing manure, namely, ploughing it in. Still, in certain cases, according to circumstances, such as a second year's meadow, immediately after the hay has been cut, and during rainy weather, a light coat of well-rotted well-broken up dung, mixed with bog-earth, will do good: for the grass, pushed along rapidly by the manure will guard it from the rays of the sun.

The same effect will be produced on young, growing grain, especially where grass-seeds take with difficulty. The take of new grasses will be ensured by a light top-dressing of dung. But in carting this on, the wheels of the tumbrils must be wide, and the dung thoroughly mixed beforehand. (1)

The accounts, as a rule, leave much to be desired, though this is a matter of great importance to the farmer; for if they are well kept, they will not only show him what his profits for the year are, but also teach him what crops or what operations bring in the greatest remuneration; and, at the same time, he will learn what those are that yield the least return, or perhaps turn out to be a dead loss. We particularly advise farmers to make out, at the close of each year, an inventory, as accurate as possible, of their stock, implements, etc., and to compare these inventories with each other.

We strongly recommend the use of plaster in the stables and cattle-sheds to absorb the gases that render them morbid, and, at the same time, to preserve the most costly element of the manure, i. e., the nitrogen.

A diploma of the highest merit, and a silver medal, are granted to each of those who obtain 85 points out of a 100; a diploma of great merit and a bronze medal for 75 points, and a diploma merit for 65 points.

In making this our third report of the competition of Agricultural merit, we have thought it our duty to add a few remarks on the present state of agriculture in the province of Quebec, and more especially on what it ought to be. These remarks ought perhaps to have been made in the first report of the competition, but the difficulty, then, would have been to make them judiciously. Now, however, that the previous reports have displayed more in detail the state of our province as regards agriculture, it is a much simpler task for the judges who have the honour to send you the present report to express their ideas on this subject.

AGRICULTURE.

As to the general farming of the province of Quebec, our opinion is that the direction towards the dairy-industry, given to it by both the Dominion and the local governments, is founded on correct views.

The greater part of our soil has been ruined by the abuse of grub-cropping. As to meat, it is almost if not quite impossible for us to compete

(1) About all we have ever contended for. Ed.

with the breeders of western Canada. The almost exclusive cultivation of grain for sale can no longer pay us, on account of the competition of the western States. Besides, our late spring and our premature autumns make grain-crops hazardous.

For many a long day, then, we must direct our efforts to a system of farming devoted chiefly to the rearing of stock for dairy-purposes.

THE CULTIVATION OF GRAIN CROPS.

All the same, we do not wish to lead people to think, from the preceding statement, that we are opposed to the growing of grain-crops; far from it, we would suggest a system of rotation that, while leading the farmer to put most of his land into pasture and meadow, will show him how to cultivate the rest in roots and grain. The keeping of a large stock of cattle for the dairy will enable the farmer to make plenty of dung, which will furnish him with the means of manuring abundantly the small extent of land he keeps under the plough, and from this reduced area he will obtain three or four times the yield he used to harvest under the old system of routine. But a point on which we must insist, everywhere where other manures besides dung cannot be economically obtained, is that the whole of the produce of the farm must be consumed by the cattle and the family of the farmer. According to this system, the products that are sold off the farm must only be butter, cheese, and meat, poultry fed on the refuse of the dairy, the grain, and the fodder consumed, and the crops of some fruits that suit the locality and that sell well.

SELECTION OF SEED

In order to successfully institute a system of cropping like the above, as well as any other sort of farming, the first thing necessary is to know how to select seed. In our province, we have, most emphatically, to reckon with the severity of the climate. Both for cereals and grasses we must look for hardy and quick-growing sorts. Another point: we must choose those that tend to overpower weeds. Weeds are one of the greatest curses, if not the greatest curse of our agriculture. In every one of our journeys we saw, queening it over charlock, daisies, wild chicory, tansy, alongside of their worthy rivals, both common and sow-thistles. Almost universally, when we searched for the original cause of this invasion of weeds, we found that it was attributable to foul grass-seeds, bought frequently, because they were cheap, by some careless or ignorant farmer. Wherefore, we think it our duty to stigmatise the disastrous work of certain seafmen who thus expose for sale foul, damaged seed, to tempt the cupidity and the poverty of farmers, whom cheapness invariably seduces.

EXPERIMENTS IN CROPPING AND BREEDING.

To help us to make a judicious choice, not only of our seed but also of our cattle, we have positive need of experiments. For, the province of Quebec occupies an immense superficies between the 45th and 49th degrees of latitude, and the difference of climate between these two extremes is immense. Nothing, then, but the experience of the farmers of each region can teach them what suits them and what is useful to them. For instance, certain kinds of maize which do very well in the extreme west of the province, fail entirely in the east. We may justly recommend the fine Ayrshires or the Jerseys, both so product-

ive of cheese and butter, to a western farmer; while to one in the east we must say: stick to your little Canadian; improve her by selection, feed her well, for she is the cow of all others best suited to your austere climate. Above all, do not be in a hurry to sell the best specimens of this good and useful breed to the western breeders, who, convinced of their merits, come to your farms to buy them.

On this subject of experiments, we are happy to say that the Ottawa Experimental station is doing much good by its distribution of seed of all kinds among our farmers. We know many who have availed themselves of this distribution and have greatly benefited by it.

HORTICULTURE.

Not only are the experiments mentioned above necessary to successful field-work, but they are also useful in the garden; for, if the field supplies the household with bread, it is indebted to the garden for those delicious vegetables, those appetising condiments, which are not only agreeable to the taste, but are also necessary to the maintenance of a salutary equilibrium in the general economy of food, and to the preservation of the health of the members of the family. In certain parts of the province, horticulture is held in honour; and in the neighbourhood of the great towns it is a source of large profits to those who carry it on. Contrariwise, in but too many places, it is sadly neglected, and we have seen too many farms where the garden is a thing unknown.

FRUIT-TREE CULTURE.

All that we have said about the garden is applicable to the orchard. In every place, the farmer may, with some trouble, grow fruit for his family. We say "in every place, since, even in the farthest North-east, where the plum and the apple are much more difficult to grow, cherries, raspberries, currants, and strawberries will succeed. Fruit-growing which, in these less favoured regions, is hardly to be recommended except for the use of the household, may be made a source of great profit on local and foreign markets for those farmers who undertake it on a liberal scale. In the eastern part of the province the most favourable region for the plum and the cherry is found from Kamouraska to Quebec.

These fruits succeed well along the St. Lawrence from Quebec to Montreal. We saw with pleasure that several attempts at growing the newly imported Russian apples are going to extend the cultivation of this excellent fruit much farther into the northern and eastern parts of the province than it reaches at present.

SILOS.

To return, before we conclude, to regular farming, we must say something about the practice of ensilage relatively new, but now becoming very common in the province. In order to establish, in a general manner, a system of rational cultivation, suitable to the dairy industry, recourse must indisputably be had to the silo, if it be desired to obtain the greatest possible yield of milk at the least possible cost. Indeed, to make the dairy pay, our cows must be induced to give milk throughout the year. Now, in winter, this continuous yield of milk can only be cheaply ensured by the use of silage or by the use of fodder treated with hot water. We cannot too highly congratulate our legislators on their having offered prizes to encourage the construction of silos. On the other

hand, we are delighted to see the number of farmers who have put in for these prizes, and we trust that the movement brought about by this plan will increase more and more. As an encouragement to those who propose to go in for ensilage in the future, we can assure them that, throughout our tours, we never saw one farmer who had made a silo who would now be without one; and that, on the contrary, we saw many who intended to double the capacity of those they already possess.

THE DAIRY-INDUSTRY.

We return, for a moment, to the dairy-industry because, as may be elsewhere easily seen, according to what we have already said, we consider it as the basis of all good farming in our province. We attack it anew to beseech our legislators to continue their encouragement of this great business, to pray our agronomes to continue their instructions on the subject, to popularise the knowledge of its principles, and to develop its latent resources; that our farmers may be encouraged to practise it more and more, and to profit by the numerous advantages which are offered to them in order to render it still more profitable.

FARM-IMPLEMENTS.

In making a fair copy of these our notes on the Competition of Agricultural merit, for the present report, we observed that one of the things that have helped the numerous competitors in the improvement of their farming is the judicious use of perfected agricultural implements, such as those that are within the reach of all those that care to get them. Every thing in this line is improved: ploughs, harrows, rollers, grubbers, mowers, horse-rakes, harvesters, separators. All these apparatus have been the constant study of engineers and agricultural mechanics, and enable nowadays the intelligent farmer to perform, perfectly and with ease, those operations that, formerly, were among the most laborious, the most difficult of execution. As instances of these improved implements, we note, cursorily, the iron wheel-roller, the Acire pulveriser, chain-harrow, the Excelsior chaff-cutter, &c., &c. Of these it may be said, without exaggeration, that to those who use them with intelligence and true economy, they return more profit than they yield to the firms that make them.

RESOURCES TO BE IMPROVED IN EACH SECTION OF THE PROVINCE.

In every region, the wisdom of Providence has assigned all that is necessary to the well-being of its inhabitants. This is as true as regards our province as it is as regards all other countries. Beginning at the East, we find the Baie des Chaleurs, a district eminently fitted for pasturage and root-crops, especially potatoes, thanks to the abundance of manure furnished by the sea. The climate of this part is also well suited to fruit culture, as we saw "with our own eyes." Travelling westward, we found the country between Rimouski and Quebec to be excellently adapted to dairying, on account of the facilities it offers for the economical production of pasture and fodder plants. No place is more suitable to sheep-farming than the higher districts of this region. Onwards, towards the west, south of the St. Lawrence, we enter the fine valley of the Chaudière, and the splendid Eastern-Townships, the ancient name of which, "Les bois francs," testifies to the richness of the soil.

Here is the Eldorado of cattle-breeders, who formerly devoted themselves to the production of meat, but they, too, have now become dairymen. To the north of the Townships, on both sides of the St. Lawrence, dairy is coming to the front. Lastly, around Montreal, and all over the western part of the province, the climate being more favorable, agriculture is flourishing in all its various branches: horticulture, fruit-growing, dairying grain growing, tobacco planting, and the breeding on a large scale of horses, cattle, pigs, sheep, poultry, &c., all are carried on successfully.

TENDENCY TO ASSOCIATION.

A remark that applies to all those parts of the province over which we have just cast our eyes, is that great good has been effected by co-operative work. Progress we found invariably wherever associations of farmers had been formed. Farmers' clubs, dairy men's associations, syndicates of creameries and cheese-makers, cattle-breeders' clubs, all those associations that serve to bind together like a faggot our agricultural class, and to guide the members along the road of improvement, have worked, and are now working before our eyes, marvellous developments of our national resources.

Let us, then, congratulate these men of progress, of investigation and labour, who, possessing the faculties required to manage these associations, form them, direct them, and distribute to their members, as their daily bread, the information which they need, in order to promote the great and noble calling of agriculture, the gallant craftsmen of which art the order of Agricultural merit was instituted to crown.

The whole respectfully submitted,
E. CASORAIN,
JAMES McINTOSH,

Jurys of the provincial competition of agricultural merit.

Provincial competition of agricultural merit.

THIRD YEAR, 1892.

AGRICULTURAL DISTRICT NO 3.

Table with columns: Order of Merit, Names, Addresses, Counties, Total Points. Lists winners from various counties like Kamouraska, Rimouski, etc.

47 Vital Talbot, St-Norbert, 75.25	Arthabaska,	75.25
48 L. N. Gail, Bie, 76.16	Himouski,	76.16
49 Louis Carle, L'Islet, 76.05	L'Islet,	76.05
50 John L. Smith, New-Carlisle, 75.63	Bonaventure,	75.63
51 John B. Cyr, Cap-Nord, 73.01	Bonaventure,	73.01
52 Jos. Bolland, St-Francois, 72.90	Beauce,	72.90
53 Alf. Tarnon, Lambton, 72.90	Beauce,	72.90
54 P. Champagne, Shanley, 72.80	Beauce,	72.80
55 P. Voyer, Bie, 72.10	Himouski,	72.10
56 A. St Laurent, St-Vallier, 72.09	Hellechasse,	72.09
57 Chs Barbeau, St-Marc, 70.35	Beauce,	70.35
58 F. X. Gaudin, St-Eugene, 70.15	L'Islet,	70.15
59 Alp. Poirier, St-Joseph, 70.02	Beauce,	70.02
60 Alp. Laliberté, Lotbinière, 69.97	(St-Ls), Lotbinière,	69.97
61 Jos. Olivier, Rivière, 69.85	Bas Clair, Lotbinière,	69.85
62 And. Larocq, Ste-Marie, 68.65	Beauce,	68.65
63 Edward Steel, Cap-Nord, 68.55	Bonaventure,	68.55
64 Chs Hamel, St-Francois, 67.95	Beauce,	67.95
65 J. B. Vallee, Somers-et, 67.75	Mégantic,	67.75
66 W. T. Smith, New-Carlisle, 67.20	Bonaventure,	67.20
67 Nap. Gauthier, St-Vallier, 66.50	Hellechasse,	66.50
68 A. Gosselin, St-Victor Tring, 66.50	Beauce,	66.50
69 Adol. Jeanne, L'Islet, 65.45	Beauce,	65.45
70 Fra. LeBlanc, Ste-Monique, 65.15	Nicolet,	65.15
71 Amb. Thibault, St-Valre, 65.00	de Balat, Arthabaska,	65.00
72 La Branelle, Gentilly, 65.00	Nicolet,	65.00
73 Fra. Thiboutot, Lotbinière, 65.42	(St-Ls), Lotbinière,	65.42
74 Robert Nolle, Matapédia, 64.40	Bonaventure,	64.40
75 H. Belang, St-Vallier, 65.40	Hellechasse,	65.40
76 Narc. Croteau, St-Archie, 65.25	Lotbinière,	65.25
77 Jos. Lussard, St-Joseph, 65.00	Beauce,	65.00
78 Eug. Carrier, N.-D. de Lévis, 65.00	Beauce,	65.00

L'Islet, 22 October, 1892.
 (Signed) E. CASGRAIN,
 (Signed) JAMES MCINTOSH,
 Judges of agricultural merit.
 True copy.
 (Signed) E. CASGRAIN,
 Quebec, 10 January, 1893.
 (From the French.)

Brevities.

Pleuro-Pneumonia.

For the second time in twelve months, Mr Rusk, the Secretary of Agriculture in the United States, reports, according to Reuter's Agency, that pleuro-pneumonia has now been completely eradicated from the United States. Will he be surprised to hear that as many as twenty beasts from the United States have been found, when slaughtered, to be suffering from contagious pleuro-pneumonia? No number of reports declaring the United States to be free from inspection, even though issued monthly, will have the least effect upon the English orders in Council while the States send a regular supply of animals that, on being slaughtered, are found to be unmistakably affected with that dire disease.

English Estates.

People on this side of the Atlantic have no idea, as a rule, of the way in which the large landed estates in England are managed. They hear that such an one has so many thousand acres of land, and the general impression seems to be that the rents derived from the farms are all clear profit. A great mistake this, as may be seen by a glance at one of the largest properties in the island, the Holkham estate, belonging to Lord Leicester. The late Earl, who died in 1842, expended in buildings, &c., from 1776 to 1842, \$2,684,950.00, and his son, the present Earl, for buildings, repairs, fences, gates, drainage &c., from 1842 to 1883, \$2,451,090.00. The gross income of the estate, in 1882, was \$261,425.00: now, what deductions had to be made from that large sum before the owner got his "spending money"! Here they are:

Land-tax	\$ 7,050.00
Property tax	5,515.00
Other rents	21,395.00
Rates (poor, &c.)	1,395.00
Tithes	32,403.00
Voluntary payments	3,400.00
	\$74,160.00
Buildings and repairs	44,180.00
Gates and fences	2,005.00
Drainage	5,960.00
Law charges	730.00
Management (stewards, &c.)	6,515.00
Fundries	405.00
	\$49,795.00
	\$123,955.00

Condensed Jersey milk.—It does not seem to us to make much difference what breed of cows supplies the milk treated at condensed-milk factories, seeing that, according to the description of the system of manufacturing this article, given by M. MacCarthy in the appendix to the report of the Dairymen's Association, Montmagny meeting, the beginning of the process is to skim the cream off the milk by means of the centrifugal separator!

Pansies in pots and in boxes.—Has any one observed how much better pansies do in wooden boxes than in common pots? We have been often puzzled to account for this; but one day, early in December last, we tested the temperature of the earth in both pots and boxes, in the same window, and treated exactly alike in every respect. In the pots the earth was 60°, in boxes, 63°. Can the difference in temperature be taken as accounting for the improved progress of the plants in the boxes? Of course, it is the constant evaporation going on in the pots that reduces the temperature of the earth in them.

Long-wool sheep.—The class for long-wool wethers, i. e. for sheep over 20 months old, has been abolished at the Birmingham annual fat-stock show. The reason for this is that the vast for "neat, small joints," now universal in England, has so greatly lowered the price of heavy sheep, that they are to be discouraged as much as possible.

Canadian barley.—We hear, from Ottawa, that many Canadian farmers who had been induced to sow 2-rowed barley, with a view to exportation, have been bitterly disappointed. But the *Free Press* of the capital makes a great mistake in saying that "the British maltsters do not like 2-rowed barley." The fact is, the maltsters in England never use any other, as nobody in that country grows 4-rowed or 6-rowed. In Scotland, far North, a small acreage of "bere or bigg" is sown, but that is not intended for malting.

"There is no market for Canadian malting barley in England," continues the *Free Press*; wherein it is right, as far as it goes, but there is no reason why, in process of time, there should not be a market for it. As long as careful preparation of the land, the lumping together of lots of the grain from a variety of soils; the mixing up of deliveries of different degrees of ripeness; and the discrepancy between sample and bulk: as long as these endure, so long will Canadian barleys be "disliked by the British maltster."

Look at the prices at Mark Lane; London, December 19th, 1892:

Canadian barley	from 18s to 26s; (400 lbs.)
Saale and Moravian "	38s " 46s; (415 lbs.)

No quotation for English finest malting barley, as all the best qualities were sold in the early part of the season, there being very little of it this year, on account of the wet harvest; it generally sells for the same price as the Moravian and Saale shipments.

Now, if the finest malting barleys can be got together in Moravia and on the banks of the Saale, shipped in bulk and transported to England, where it gives unlimited satisfaction to the most difficult to please of men, why should not the same thing be done with Canadian barleys?

One thing is very certain: the American maltsters would not look at our 2-rowed barley when the ports of the lakes were comparatively free!

The 4- or 6-rowed grain of Prince Edward county and its neighbours they bought with avidity. What they used to tell the writer in 1867, was: "The 2-rowed yields well, but there is no flavour in it." And yet we ourselves have made plenty of fine flavoured ale from it, and so have Dow and Co., who, under the clever manipulation of Sandy Macleod, preferred it to the other kinds.

We have been harping on this subject till, perhaps, the tune may be wearisome from repetition; but the subject is an important one, and demand our serious attention.

When treating of barley just now, we forget to mention that one of the signs by which a maltster judges of the suitability of a sample of that grain to his purpose is the nature of the skin. If this is smooth, he will not buy it: he likes a wrinkled or *crenulated* skin. Is not the underlined word called in botany *crenate*?

The truth is, an English maltster knows at a glance whether a certain lot of barley will answer his purpose, but it is very doubtful if in all cases he can give a reason for his decision *pour ou contre*.

Teaching agriculture in schools.—M. Buckmaster, the English lecturer on agriculture, complains of the difficulty found in his county in finding men to deliver addresses on farming to whom the practice of that art is familiar. Plenty of men well skilled in lecturing on the theory of agriculture, but, then, they know next to nothing about the actual working of it. People's opinion on this subject has very much altered in England during the last twenty years: in 1870, the farm men of the North would not listen for a moment to the lecturer; now, they are among the most intelligent and attentive hearers in the land. Whether the young of both sexes in our schools will listen to the voice of their teachers, talking about an art of which they know nothing practically, is doubtful. But, if a small piece of land, say, half an acre, were attached to every country school, on which experimental crops might be grown, under the occasional inspection of the nearest skilled agriculturist, deep interest would, we doubt not, be soon taken by the older lads and lasses in their progress to maturity, and such "object lessons," sinking imperceptibly into their minds, would eventually bring forth fruits that would be of large benefit to the country. Dry, text-book lectures would, we feel assured, be productive of no advantage; but objects in their growing state, spread out before the pupils, would indubitably prove the best means of exciting their interest and attention.

Shooting horses.—A good deal of trouble was taken by some amiable policeman to put a poor horse, that had broken its leg on some of our agreeable permanent streets, out of his misery. According to the Montreal paper, five or six bullets from a revolver were required to kill the poor brute. Now, as a "sporting man," in the old country, it has been several times my lot to see horses executed in the field, after falling at a fence; and our gamekeepers had plenty of experience, and so had the "kennel-huntmen" in dealing with worn-out hacks, &c. Invariably, this was the mode of execution pursued by these practised hands: the horse was blind-folded, and tied by the halter pretty closely to a post; the keeper, standing about five

feet off fired a charge of shot at the spot where, as a correspondent of the Montreal Witness observes, "the hair curls," and death, as I well remember in more than one case, was instantaneous. The keeper, or other executioner, did not place his gun's muzzle close to the animals head, but at the distance we should say of about 4 feet, not without a reason: at that distance an ordinary charge of shot from a No. 12 bore has, before it reaches the object aimed at, had time to expand perceptibly, and the hole in the horse's forehead was, if we remember, quite four times as great in diameter as a hole made by a bullet from a revolver of the largest calibre. As for the proportions of powder and shot in the charge, that signifies very little, but about 3½ drachms of powder and 1½ ounce of No. 3 shot would answer well. We always liked a big charge for sorts of shooting, though men who shot as well as we did preferred a light load.

Price of Jerseys in England.—The pedigreed Jerseys, that were offered for sale at Birmingham on the first Thursday in Dec., fetched \$90, \$80, and \$75 a piece. Rather different these prices to the absurd sums that were realised by some bold breeders here six or eight years ago.

Manitoba wheat.—The average crop of wheat this year in Manitoba is officially returned as about 16 bushels an acre. The price, at country points of delivery, is some fifty cents a bushel = \$8.00 an acre. Is there a living profit, considering the high wages demanded by agricultural labourers in that province, in such small returns?

The Flock.

Dorset Horn Sheep.

The first volume of the Dorset Horn Flock Book is published by the Dorset Horn Flock Book Society, which numbers 168 members, 138 of whom have entered about 75,000 ewes, and 1,100 rams *en bloc*, and 277 single rams. The book contains four well-written historical accounts of the breed by Mr. J. T. Ensor, Dorchester; Mr. Thomas Chick, Stratton; Mr. S. Kidner, Bickley; and Mr. F. V. Ensor, Dorchester, the secretary. From the essay by the first-named we give the following extract:—

The general management of the breed in Dorset is as follows:—About one to one and a-half ewes are kept to the acre, according to the quality of the land and the amount of water meadow and pasture attached to it. They require plenty of room, and are generally allowed to roam the pasture in the daytime, being brought on the arable land at night. They take the ram fully two months earlier than any other breed, and the general lambing time for the flock ewes is about Christmas and up to the middle of January. The off-going ewes are sold in-lamb in the months of September and October, and drop their lambs in October and November, the lambs being fattened for the London market.

The flock ewes generally lamb down on the grass; they are then sent on to roots, the lambs being allowed to

run forward. The lambs remain with the ewes till some time in May, when they are weaned, and then go on to good sound grass till the fodder crops—rye, vetches, or trifolium—are fit to feed. They remain on vetches till about the end of June. As most of the lambs are fattened, they receive as much cake and corn as they will eat, the object being to fat them off as quickly as possible. They receive about $\frac{1}{2}$ lb. to $\frac{3}{4}$ lb. of cake or grain per head per day, with some peas. With such keep they would in a good season be fit to turn out about the first week in April. The lambs born in October and November receive good feeding, and are generally ready for the butcher when from ten to twelve weeks old, when they average from 10 lbs. to 14 lbs. per quarter, and go to the London market. They then make from 40s. to 50s. each.

The off-going ewes are fattened off as well as the lambs, and, when they have been highly kept, are ready for market at the same time. They then average from 22 lbs. to 23 lbs. per quarter. It is not uncommon—especially when the lambs have been dropped early—for the ewes to bear a second crop of lambs in the same year; but this is not a good or general practice. (2) Dorset ewe lambs have been bred from under twelve months old, the rams being put with them in November and December, and their produce being fit for the butcher in the following midsummer, realising from 28s. to 35s. each.

These sheep do well on most lands. They do better on high sour farms than Down sheep, there being little risk in lambing them. On account of this, together with their hardiness, they have supplanted most Down flocks in those chalk districts where water meadows abound. This is especially the case on those farms bordering on the River Frome. Shearing generally takes place in June, when both the lambs and ewes are shorn; the lambs yield from 2 $\frac{1}{2}$ lbs. to 3 lbs. of (washed on the sheep's back) wool, the ewes from 5 lbs. to 7 lbs., and yearling rams from 10 lbs. to 14 lbs. The wool of the Horn lamb is much prized on account of its whiteness and the fine point it possesses, whilst the fleeces command better prices than those of most other English breeds. The principal fair for the sale of Dorset Horn sheep, especially early lambing ewes, was formerly Weyhill, to which place they used to be driven a distance of fifty or sixty miles, and it was not an uncommon thing for lambs to be born on the road there. (3) They do not now to such a large extent undertake this journey, nearly the whole of them being brought on the last Thursday in September to Dorchester Poundbury Fair, which was established in 1848, at which fair a number of prizes are given for the best ewes shown, and where may be seen from twelve to sixteen thousand sheep, this being the only fair where they are to be seen in such great numbers, drafted from the principal flocks in the county, many of them have lambs at their sides, and realise from 48s. to 75s. per couple. Sales of ewes, wethers, and lambs take place at Dorchester, Toller Down, and Beaminster, when large numbers of wethers and wether lambs are bought, chiefly by Somersetshire graziers, as they find that Dorset Horn sheep are

well adapted to their requirements. A large annual sale of ewes, rams, and ram lambs is held at Dorchester in the month of May. On these occasions the ram lambs fetch from 5 gs. to 20 gs. each, and the best rams from 15 s. to 40 gs. each.

Owing to the careful breeding, the shape of the Dorset horn sheep can now favourably compare with that of any of the Down breeds. The rams have good heads and countenances, with a bright eye and splendidly curved horn, constituting one of the grandest heads of any breed of sheep in the world. They have good necks and shoulders, straight backs, wide loins, and are as fine in the bone, compared with the weight of mutton they carry, as the best Downs.

The chief home of the leading Horn flocks is now in the southern and western parts of the county, with Dorchester as the centre, and in the Isle of Purbeck, where very old established and extensive flocks are kept.

Dorset Horn sheep have been crossed with but few breeds, but amongst those that have been tried, none have answered so well as that between a Horn ewe and a good Hampshire-down ram, producing, as it does, a sheep well adapted for grazing, and much prized by butchers, as it carries a large amount of lean flesh, with fine quality, and weighing from grass from 20 lbs. to 25 lbs. per quarter at eighteen months old. *Cultivator.*

Manures.

An Important piece of Advice.

In buying commercial manures, always deal with the most respectable houses: no goods have been so tampered with as these chemical fertilisers.

The best plan is to deal through the intermediary of a sound Agricultural Syndicate (1)

Bulletin No. 114 of the Connecticut Experiment Station says that the average cost (that is dealer's price) of the nitrogenous superphosphates, analyzed is \$35.28. The average valuation made by the station is \$25.66, and the percentage difference 27.8. During 1891 the corresponding figures were: Average cost \$33.93, average valuation \$28.13, percentage difference 20.6. The average cost per ton of special manures was, for 1892, \$38.23, the average valuation, \$30.70 and the percentage difference 25.0, a little higher than in case of the nitrogenous superphosphates. For 1891 the corresponding figures were: Average cost \$38.84, average valuation \$31.64, percentage difference 22.8. A judicious enterprise on the part of fertilizer dealers is not indicated by the above figures R. V. Y.

Green-manuring

What Mr Wiggan says in the annexed article on green-manuring will handily apply to our English practice of feeding off crops with sheep on the spot where they grow. If, and may it soon come, the time ever arrive when all Canadian farmers grow, and feed off *in situ*, so many acres of rape, they will find, as their English brothers found long ago, that he is wrong in saying that "the chances are that not one third of the crop is returned to the right place."

Notwithstanding the much mooted question of the economy of green fall-

lowing, I believe it still remains true that it should form the main resource of the farmer—it certainly must to some extent. The loss animal industries enter into one's operations the more important is it. Specialists in animal and vegetable production have their own methods drawn from their peculiar surroundings which they have mastered thoroughly. They can toll to a neatly the best disposition to make of any productions in their line. They belong to a higher order of beings. Whether or not any given crop will serve their ends better by being plowed in, depends upon their outside resources. Be assured that such men do not suffer their acres to lack vegetable humus from some source. The general farmer is always safe on the side of green manuring; for if he harvests his crop under the pretext of feeding it out and of returning the products to the soil, the chances are that his appliances for saving excrement are so inadequate that not one third of the crop is returned to the right place.

In lower latitudes, where the seasons are so long, green manuring is specially applicable. One or two crops can be harvested, and the second or third turned under to maintain fertility. I am experimenting on a field of corn. Last spring I plowed an old field covered with broom straw. I found three loads of manure on the place, which I managed, by dint of much bossing of a colored man, to get over a whole acre. The corn was drilled with 200 pounds of guano. As nearly as I can estimate at present, that acre has 70 to 80 bushels of ears. The first week of September I sowed 10 pounds of crimson clover in the corn. Next April I expect that clover to stand in full blossom 12 to 18 inches high. This will be plowed under and planted to corn without additional fertilizer. Can this be kept up indefinitely? I think so. I shall try it, and I believe the result will be an annual maximum crop of corn at the simple cost of tillage and 10 pounds of clover seed." OLIVER C. WIGGAN, *Country Gentleman.*

Nitrate of soda.—The price of nitrate of soda, in England, has fallen 15s. a ton—\$3.21 per 2,000 lbs. It is very much to be hoped that some sensible dealer in such stuffs will import a moderate quantity of this most valuable manure, and sell it out here at a fair price. In our short summers, a fertilizer so soluble as this is more likely to turn out successful than other forms of nitrogen which, though equally useful in the long run, are slow to become available as plant-food.

It was rather amusing to see, in a United-States agricultural paper, the statement that, "without going into minutiae, we may mention practically that nitrate of soda should be well pulverised before applying, spread broadcast in spring at the rate of from 200 to 300 to 400 pounds to the acre; and that superphosphate in rather large quantities may be applied, either in autumn or spring, and well intermixed with the soil." The vaguest advice we ever met with. What is "a rather large quantity" of superphosphate? That depends entirely upon the percentage of phosphoric acid contained, of course. And why apply a very soluble fertilizer in autumn? Carolina-rock, coprolites, and other forms of phosphate undissolved, may very wisely be employed in the fall, since their refractory nature demands that considerable time elapse before the phosphoric acid they contain is set free. The same with kainit and other potassic manures. But superphosphate should always be applied in spring.

And as to those extravagant quantities of nitrate of soda; not a word about the crop that is to be treated! Not a word about the previous crops grown on the field to which they are to be applied! And the cost is left on tirely out of the question!

At present prices, the expense of treating an acre of land, as advised by the writer of the above, would be something like eighteen dollars: 400 lbs. of nitrate of soda at \$3.00 = \$12.00, and, say 500 lbs. of superphosphate at \$1.25 = \$6.25; and, allowing that this dressing is applied to the wheat-crop, with a possible increase—an increase very seldom realised—of 3 bushels an acre, \$2.28 cents a bushel of extra expenditure is hardly likely to be made by anybody but an idiot.

Farming with Chemical-Manures, BY A YOUNG PLOUGHMAN.

(Continued.)

We must remember that the elements that are most frequently wanting in the soil are: first, nitrogen, then phosphoric acid, lime, and sometimes magnesia or iron.

That mixture, then, that contain these different elements in due proportions we shall call a *complete manure*.

Now, what are the materials that can furnish us with these elements at the cheapest rate?

NITROGENOUS MANURES.

Four-fifths of the air we breathe is nitrogen gas. Plants in general, cannot, unfortunately, absorb much of this gas by means of their leaves and roots. It is on this partial absorption of nitrogen by their leaves and roots by certain plants that the practice of ploughing in green-crops depends. On this subject we shall enlarge here after.

Nitrogen, moreover, exists in nature in combination with hydrogen in the form of *ammonia*, and with oxygen in the form of *nitric acid*. Ammonia combined with *sulphuric acid*, forms *sulphate of ammonia*, and nitric acid with potash or with soda, forms *nitrate of potash* or *nitrate of soda*.

These two last are the chief forms in which nitrogen is utilised in agriculture.

In every 100 lbs., sulphate of ammonia contains about 20 $\frac{1}{2}$ lbs. of nitrogen, nitrate of soda about 15 $\frac{1}{2}$ lbs., and nitrate of potash, 13 lbs.

Besides these materials which are salts, purely mineral, the market affords the following organic matter containing nitrogen:

Dried blood, finely ground, containing 10% to 14% of nitrogen, *dried meat*, 8% to 13%, *dried and ground horns*, 10% to 14%, *disintegrated leather*, 8% to 9%, *woollen rags*, 5% to 8%, according to the treatment they have received, *guanoes*, 3 $\frac{1}{2}$ % to 9%.

Again, there are the different oil-cakes, in which the nitrogen varies from 2% to 7%. These are less used as fertilisers than as food for cattle.

PHOSPHATIC MANURES.

Phosphoric acid is a combination of phosphorus and oxygen. It is never found alone in nature, but always in combination, especially with lime; it then constitutes phosphate of lime. Of this, half the bones of animals are composed. Bone-dust and animal black (*burnt-bones*) form excellent phosphatic manures.

But the principal source of phosphoric acid is the natural phosphate works, of which many are found in almost every country: in France, in Ardennes, Vaucluse, &c.; in England,

(1) I. e. through the *creeps*, or holes in the hurdles. Ed.

(2) This is worth notice, as some breeders in the U. S. have been trying to make people believe that the double crop of lambs is the rule and not the exception. Ed.

(3) A cart always accompanied the flock to receive the newly born lambs. Ed.

(1) A Syndicate, for this and other agricultural purposes, will shortly be established in Montreal, for Central Canada. Trans.

in the form of coprolites in the green-sand formation, in Estremadura, Spain; in the Carolines, U. S.; and, richest of all, the *apatite* of Canada, which often contains 82% of phosphate nearly 40% of phosphoric acid, but which, being in the crystalline form, is useless until it has been ground and dissolved in sulphuric acid (1).

Many of the richest of the French phosphate-rocks contain as much as 30% of phosphoric acid, which though more lasting in its effects is not so easily assimilable by plants as the manufactured article, superphosphate; good samples of this contain from 9% to 16% of phosphoric acid, soluble in water, and one or two per cent of what is called *reverted* phosphoric acid, i. e., acid that has returned to its original state.

Besides these, there is the *precipitated* phosphate; this has undergone a chemical preparation, it contains from 35% to 50% of phosphoric acid, the assimilability of which is half-way between the acid in raw phosphate and that in superphosphate.

Lastly, beside these animal and mineral phosphates, we have the *phosphatic slag* of the steel furnaces, which contain from 11% to 18% of phosphoric acid, almost as assimilable as the acid of superphosphate if the land to which it is applied be rich in humus or vegetable matter, besides a great percentage of caustic lime, which makes it valuable for land that is poor in that substance.

POTASH.

Of this, commerce supplies the farmer with the following forms:

Chloride of potash, 50% of potash,
Nitrate of potash - 1% of nitrogen
and 45% of potash.
Sulphate of potash, 42% to 58% of
potash,
Kainit 23% of potash.

Potash is very useful on calcareous soils, which are generally poor in this stuff but granitic and clay soils are full of it.

LIME.

The utility, almost the necessity, of liming land particularly granitic soils is known to every one (*in Europe, Ed.*) We shall not at present dilate on this. In the mixed chemical manures, *plaster*, or sulphate of lime is the form in which lime is usually employed.

Unburnt plaster contain 32% of lime.

Burnt plaster contains 41% of it.

IRON AND MAGNESIA.

Iron is only required on white soils (*terres blanches*). On a great many crops the application of green-vitriol—*sulphate of iron*—in powder has proved a great benefit.

Magnesia, especially on calcareous soils, has recently been recommended. It is used in the form of *sulphate*, or rather as burnt dolomite. *Dolomite* is a rock like limestone, only in it magnesia replaces lime. There are mines of it in the Pas-de-Calais, and in Saône-et-Loire. (Some magnificent rocks of it in the North of Italy. *Ed.*)

If kainit—metallic potash—be used as the form of potash, plenty of magnesia will be found in it.

THE PURCHASE OF CHEMICAL MANURES.

As the composition of chemical manures varies, as their contents of the useful elements differ, their *ket-prico* varies in accordance with the quantity of these they contain and with their degree of assimilability.

(1) We were sorry to hear yesterday that the Florida phosphate is arresting the *apatite* mining in Canada. *Ed.*

Thus, sulphate of ammonia, which contains 20% to 21% of nitrogen, is of course sold at a higher price than nitrate of soda, which only contains 15%.

The phosphoric acid of superphosphate being more soluble than that of natural phosphates, is also higher priced.

Chemical manures, then, are not sold simply by weight, but by the *unit*, that is, by the pound of the useful element they contain.

Thus (*to cut a long story short, Ed.*), sulphate of ammonia contains, say, 20% of nitrogen, the price in England to day of nitrogen is 12 cents a pound; therefore 20 x 12 = \$2.40 the 100 lbs. or \$48.00 a ton of 2,000 lbs. Here, in Montreal, nitrate of soda is sold at \$3.00 a 100 lbs. Supposing it is guaranteed to contain 15% of nitrogen, what is the cost of that element a pound? 300 divided by 15 = 20; therefore the cost is 20 cents a pound.

(Here, follows in the original, a list of prices of manures in France; this we think it hardly worth while to reproduce.) (*From the French.*)

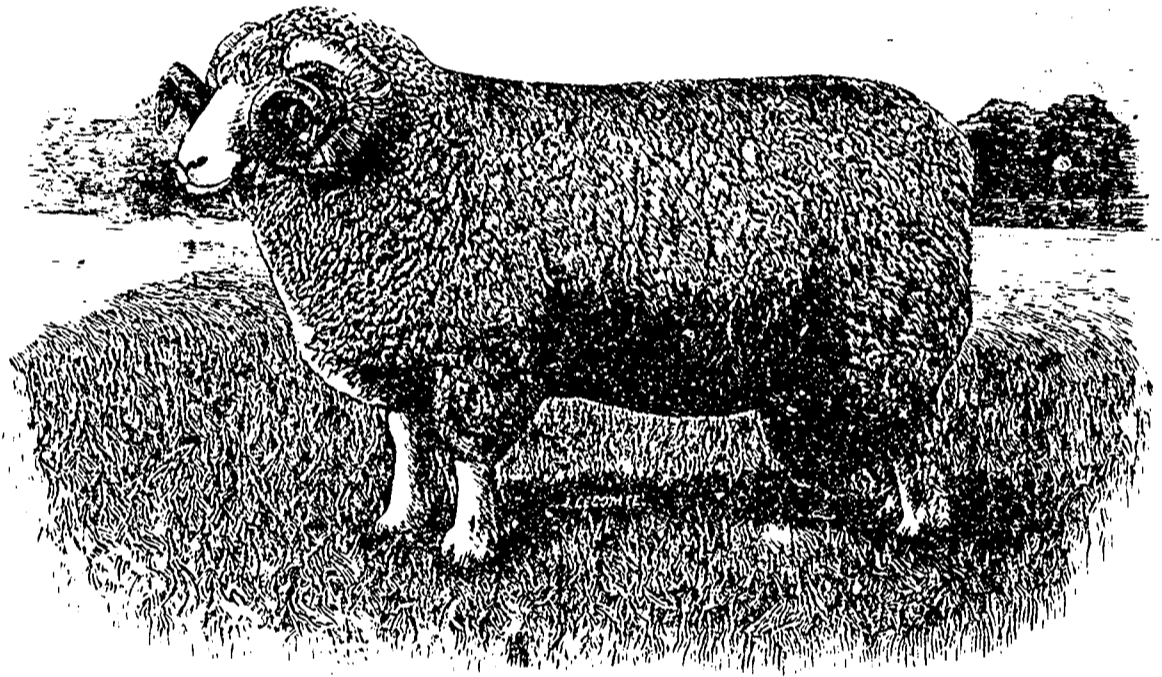
12 lbs., vegetables and grain, quantities varying from 0.2 to 1 lb. These figures vary a little, but will serve to give a general idea of the subject.

Clover absorbs quantities relatively considerable. It was proved long ago that lime, and all manures that contain it in large proportions, such as plaster (sulphate of lime) favour its growth, and that it is particularly fond of a good calcareous-clay soil with a deep subsoil.

But the effect of lime is most sensibly displayed in its chemical action. It hastens the decomposition of animal, vegetable and mineral matters. Organic nitrogen is transformed by it into nitrates which are directly assimilable by plants; or, in other words, it favours nitrification, provided the soil contains humus, is permeable to the air, and is free from excess of moisture. It attacks and facilitates the decomposition of several mineral compounds. By forcing it to separate from its combinations, it makes potash soluble; and by disengaging itself from the phosphoric acid—its invariable companion in the phosphate—it

be addressed to all those heroic means employed by modern agriculture to increase the yield of crops by forcing the land to produce to its utmost power: fallows, rotations, thorough cultivation, drainage, *écobuage*, (?) and even the ploughing in of green-crops. All these expedients aim at the same end as liming; that is, to start into active life the elements of fertility that the soil holds in reserve. The selection of these means is only a question of necessity, of circumstances, of custom, of economy. These all differ according to time and situation.

Every thing, even the best things, may be abused in the world. Lime, well employed, is only an additional aid to intensive cultivation; but, in itself, it is neither more nor less dangerous than the means of which we spoke just now, all of which are intended to increase our crops, and, consequently, to put in circulation the nutritive principles necessary to the well being of plants. All these means are liable to be abused: ploughings as well as liming land. Lime will not "impoverish the son" if the law of



DORSET HORN RAM.—BRED BY MR THOMAS CHICK, STRATTON, DORCHESTER.

LIME.

Chemically speaking, limestone is a salt, resulting from the combination of lime with carbonic acid, and chemists, therefore, call it *carbonate of lime*. In the kiln, limestone decomposes, the gas, carbonic acid, is driven off by the heat, and *quick lime*, remains. This is very greedy of moisture, and, combining with water, falls into powder, becoming *hydrated* or *slaked* lime. In this form it is applied to the land, either alone, mixed with earth, or made into compost.

In farming, fat (*grasse*) lime should be preferred.

Lime possesses qualities very different, both physically and chemically, from the carbonate of lime whence it is derived. While the carbonate is slow in action and insoluble in pure water, lime is soluble in water, though in a trifling quantity, and is a powerful agent of decomposition.

In arable soil, lime plays a very complex part. All plants absorb it as a food, for it is found in the ashes of all vegetation. Thus, 1,000 lbs. of the following products, when *air-dried*, contain the annexed quantities of lime:

Clover, 20 lbs.; hay, 8 lbs.; pease,

places it at the service of plants. In a word, it accelerates the useful action of nutritious matters.

Thus, its chief part is to bring about the circulation of those fertile ingredients of the soil that seem to be *asleep*, and which more or less resist the other agents of decomposition.

A soil analysed by the *chemist* may contain abundance of nitrogen, phosphoric acid, and potash; analysed by the *plants*, it may give results that by no means agree with its theoretical richness. (1) Why? Because these elements are found in combinations whence the plants cannot extract them. Now, lime is one of the most powerful means of compelling the soil to yield up its wealth to the plants that grow on it.

Hence, we conclude that its action is exhaustive, and that if it is applied without consideration and without compensation, the land will be ruined. This is just what the old-time farmer did: hence, the saying, that, "lime enriches the father, and ruins the son." Only, this must not be taken in its strict sense. The same reproach may

(1) But if the chemist finds nitrogen, phosphoric acid, and potash in a state of solubility in water! How then? *Ed.*

restitution be observed: to restore to the land what we take from it. What harm can ensue from freeing the nutritive principles which are lying dormant in the soil if we restore, in the form of manure, the riches carried off in the crops? But it is precisely in the economical carrying out of these two conditions that consists the secret of successful farming, at least so far as regards the production of plants.

Lime is in general use in all countries where agriculture is in an improved state. To reach the elevated standard of England and Belgium, in this point, we should have to apply to the soil of this province at least 5,000,000 bushels of lime annually. Liming would certainly be advantageous to three-fourths of our cultivated soils (1).

(1) In the *chalk* districts of England, that form of lime is applied raw to the land at the rate of about 12 or 15 tons to the acre. In Norfolk and Suffolk, large quantities of *marl* are used. In the western counties, and in Wales, liming is practised extensively still, though, in S. Wales, the farmers nearly ruined their land by it, the consistency of the soil being destroyed by its too frequent use, so that no plant found a firm foothold. The notorious "Rebecca-riots," culminating in the destruction of the turnpike-gates, arose from this: the farmers took their

This merits the attention both of the farmer and the government. Observe, what an important industry may arise from the use of lime. It would give employment to hundreds of persons, while the public wealth would be increased. I know of no industry that demands less capital, less expenditure in its conduct, less special knowledge. Our province is particularly suited to the development of it. Limestone of good quality occurs almost everywhere, and this diminishes the cost of freight. If its use were to become general, it could be produced, as in Europe, on a large scale, the mode of burning it perfected, and the cost greatly reduced. The use of it would, then, greatly repay the expense of making it, and our agriculture would by its means make another forward step in the march of progress.

I shall be asked, perhaps, if our land is as susceptible of improvement by lime as the soils of England and Belgium; I do not hesitate to answer in the affirmative that it is, and more so. In fact, great part of our soils is derived from the primitive rocks, granite and schistose, which are generally poor in lime. (1)

For the destruction of acidity in marshy places, lime is highly useful, provided they are sufficiently drained. In such soil it may be used in large quantities. (2) In ordinary soils 20 to 40 bushels of quick lime are enough for an acre if applied every 6 or 8 years. The stronger and the wetter the land, the larger should be the dose. I do not give these figures as an absolute rule; I may be permitted to say that in England and Belgium they are much more liberal.

Several ways of applying lime are practised. The simplest is to spread the lime in powder on the ploughed land by means of a broadcast machine and harrow it well into the land. Common machines will not spread fat lime. The general rule in Flanders is to drop the stone-lime in little heaps on the ploughed land, to cover them with mould until the lime is slaked, and then to spread and harrow it in. (Just as in England and Scotland. Ed.) Sometimes, composts are made of it with ditch cleanings and vegetable refuse. All these methods are good.

I met the other day, a Scotch farmer from Portneuf, who had used the sowing-machine to spread his lime for many years, and found it answer so well that many of his neighbours have imitated him.

Heather, fern or brakes, marsh-plants and specially all acid plants, like wild sorrel, indicate a soil poor in lime. And lime destroys them. It will also get rid of slugs and other injurious little beasts.

Some fertilisers contain a notable proportion of lime, so that their use is a sort of indirect liming. Such are:

— Unleached wood ashes, which, per cent, contain, on an average, 30 of lime, 10 of potash, and 3.5 of phosphoric acid;

Leached ashes 20 of lime, 1.5 of potash and 1.5 of phosphoric acid,

Phosphates 20 to 50 of lime, and very variable quantities of phosphoric acid. Lastly, plaster and marl.

One great reason in favour of the

grain, &c., up to the works at Methuen, Lyden, &c., and loaded back with lime. The turnpike-keepers demanded a second toll as the load was a fresh one, the Welsh being Celtic, got hot over it, and two or three toll-takers were killed. This was in 1816 or 17. Ed.

(1) All granitic soils demand lime with a loud voice. Hence, its use is universal in Cornwall. Ed.

(2) In Scotland, sometimes as many as 400 bushels are applied, at the beginning of a 19 years' lease. Ed.

use of lime from time to time in soils that contain but little of it is its instant lixiviation by water. The analysis of well water, as well as that of brooks and streams, shows that the lime held in solution, as bi-carbonate, exceeds in quantity all the other salts together, and this lime is derived from the soil through which the water flows.

Carbonate of lime among arable soil is insoluble in pure water, but is not so if the water contains more or less carbonic acid; in this case, the carbonate of lime forms a fresh combination with the carbonic acid, and is converted into bi-carbonate of lime, a very soluble salt which dissolves in water and makes it hard. Every one knows that hard water encrusts kettles, makes soap lather badly, and spoils all vegetables that are cooked in it (and though it makes bad porter, makes the best pale ales. Ed.)

An addition of quick lime softens water, and decomposes the bi-carbonate by restoring it to the original state of carbonate, when it forms a precipitate and settles.

Lime is liable to return to its primitive state of carbonate, as we observe in mortar, which hardens by absorbing the carbonic acid of the air with which it combines.

Lime-water becomes turbid and milky when breathed into through a tube, the carbonic acid exhaled from the lungs combines with the lime held in solution by the water, and converts it into carbonate of lime.

(From the French.) B. LIPPENS.

The Poultry-Yard.

The Dorking Fowl.

WHAT IT HAS BEEN AND WHAT IT NOW IS.

Before proceeding to speak of the different colors of the Dorking fowl, we must deal with the question of color, for this will have important reference thereto. It has already been shown that those regarded as purest in strain were white. In the days of Columella, white feathered fowls were known, for he states: "Let the white ones be avoided, for they are generally both tender and less vivacious, and also are not so prolific." The idea here

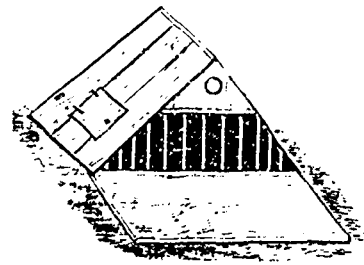


Fig. 1.

enunciated as to the greater delicacy of white fowls has been held until recent years, and was supported by Darwin. But in face of such breeds as the White Leghorn, and the White Wyandotte, it cannot be accepted any longer. All the later writers who mention the Dorking speak of it as white, but refer to others as offshoots.

The account of different colors known 40 years ago, as given in the revised Moubray (1854) has already been quoted, and is identical with that in Wingfield and Johnson's work published a year before. In the Poultry Yard (1850) are the following interesting particulars: "The Dorking fowl is a short-legged, plump, round-bodied fowl, remarkable for having five toes—that is, a supernumerary hind toe. We have indeed seen some with one or two more supplemental toes, in a rudimentary condition, and which ap-

peared anything but ornamental. The pure Dorking fowl is of good size, and of a white color, but such are now seldom seen. During a recent visit of some weeks to Dorking, though we visited the market regularly, and explored the country round, on one or two occasions only did we meet with pure white birds. In all however, more or less white prevailed; but the cloudings and markings of the plumage were unlimited. Many were, as we observed, marked with bands or bars of ashy-grey, running into each other at their paler margins. Some had the hackles of the neck white, with a tinge of yellow, and the body of a darker or brownish-red color, intermixed irregularly with white; yet in all were the five claws present. Neither in form nor coloring is the Dorking breed attractive; it is too rounded on the body, and too low on the limbs to be graceful; but its flesh is in high repute, and vast numbers of these fowls are sent to the London market."

Evidently, breeding Dorkings was in an unsatisfactory condition forty years ago. Capt. Hornby, a very successful breeder and exhibitor, lamented his

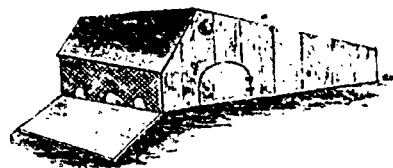


Fig. 2.

inability to get chickens true to the color of their parents, and stated that he had four spangled hens, but got scarcely any spangled chickens, and of these half were double-combed, though the parents were single-combed. This is emphasized by "Plastic," already referred to, who says (1) that in 1853 he wanted to recover the old brown-spangled sort, and paid Capt. Hornby four guineas for a sitting of eggs, from which he had "grey spangled, and at least two with four claws."

As throwing light from an impartial source as to the Dorking of forty years ago, I may be permitted to quote from a letter by M. A. B. Allen of New-York, (2) who says:

"I first visited England in 1841, and in looking over the poultry there this bird (the Dorking) struck me as being the Shorthorn of barn door fowls—that is, the best for general purposes—and I resolved to take some of them back to America with me. I accordingly selected two cocks and half a dozen pullets, and got them safely to my farm in the State of New-York. They were of brilliant variegated plumage, chiefly brown spangled, and partridge colors of the darker shades, and the cocks black-breasted. They had shortish white legs, five toes, and both single and double combs; the bodies were pleasant-shaped, long,

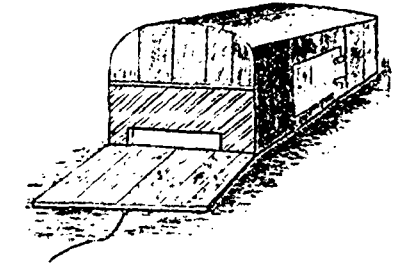


Fig. 3.

round, and full, with a deep breast, like a Shorthorn ox; the head was fine, well set on to a small, clean, graceful neck; they were thickly feathered, hardy and thrifty, excellent

(1) The Field, 1881.

(2) Live-Stock Journal, 1881.

layers, stony sitters and careful nurses. Well fattened, the hens weighed six to seven pounds each, the cocks nine to ten pounds; when caponised, they came up to twelve pounds. They were the best table fowls I ever ate. They had white skins and flesh, with little offal. (1)

"So far as I have been able to ascertain, I was the first importer of the Dorking fowl into America. Subsequently many other importations followed. Some of these were of larger

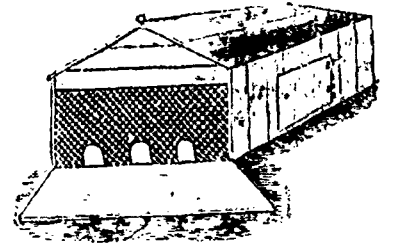


Fig. 4.

size than mine, but possessed the same characteristics. They varied in plumage from light or silver to dark grey, partridge colors to brown-spangled and almost black. Pure white Dorkings were also imported; but instead of being small, like Bantams (as suggested by a correspondent), they were nearly as large as the colored, but not quite so hardy."

From what we have now seen it may be taken as a fact, that by the middle of the present century the white Dorking, having been neglected by reason of its smaller size, was becoming scarce, and its place was being taken by others which bore more resemblance to the ordinary Sussex variety in which color was of no moment, and all colors to be met with. That there had been other crosses than this is undoubted. Malays, Spanish, and even Polish, with Cochins more recently, were all named as having been used for the purpose.

Let us see if we can trace back the

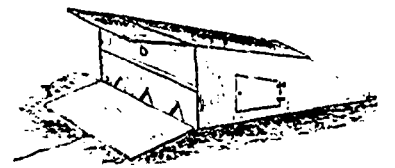


Fig. 5.

four breeds now known, namely, Whites, Colored, Silver-Greys and Cuckoos, to their original source,

WHITE DORKINGS.

This variety of the Dorking need not delay us very long, from the fact that we accept it as confirmed that it is the "Simon Pure" of the Dorking family, and we have no need to describe its descent. There are no means of telling when it was first known, but from Moubray and others we know that in his day it was so recognised.

The writer just named says that "The white is probably not so pure as that of certain of the Dunghill fowls, nor is the color of the flesh, that inclining to yellow, or ivory shade" Here we may venture on a suggestion as to the reason why the white Dorking began to lose ground. In England and Europe generally, white fleshed fowls command the highest prices, and as breeding for table was then, as it is now, an important industry in Surrey and Sussex, it is more than likely that the other kinds which had whiter flesh were preferred. Mr John Bailey, as quoted in Wingfield and Johnson's Poultry Book, observes that, "though it may appear anomalous, it is not less

(1) A good description of the best table-fowl in existence. Ed.

TURKEYS.

true, that white-feathered poultry has a tendency to yellowness in the flesh and fat." So experienced a poulterer (1) ought to know as to a point like this, which does not affect any question of breed, and it is certainly true that white-plumaged fowls now known, are to a large extent yellowish in flesh. The point is one worthy the attention of naturalists.

The rapid advance of Colored Dorkings, and to a lesser extent of the Silver Greys, for many years completely over shadowed the Whites, and it was not until about ten years ago that they were taken up by several ardent fanciers. Much though these have done, we can not but acknowledge that they are by no means so popular as the other two colors, and it is equally true that they do not equal them in respect to size. Perhaps careful breeding may in time overcome this deficiency. They have proved a hardy, useful fowl, and no one can question their handsomeness. The rose comb has been fixed, and while they are somewhat lighter in build than are Colored Dorkings, they have the shape which is characteristic of the breed. I should not like to advocate them as first favorites for those who breed for market, believing that the Colored and Silver Greys are both better, but where beauty as well as utility are sought for, and there are many who have both these objects in view, the White can be confidently recommended.

STEPHEN BEALE: *Cultivator.*

Get your Coops Ready

Before spring time arrives, the work for the poultryman is ample to keep him continually busy. It is in the spare moments that so much can be accomplished if you will but do it. Repairing and constructing needful articles for spring breeding is, or should always be, a part of the winter's work; if put off until you actually need them, other duties of importance will come in the way, and press you for time; the consequence is, you will do the work quickly, and something will suffer from the neglect.

I show in the sketches five brooder coops. None is expensive to construct; a dollar will pay for any one of them, and half this amount will build them if you are economical. Fig. 1 is about the plainest of all. Each coop should be raised from the ground about two inches, resting upon two pieces of boards, to avoid dampness, which will sometimes cause sickness among your flock. You will have a perfectly dry coop if you construct it properly, covering the top with oilcloth, tarpaper or shingles. The front board is made to work up and down on hinges, so that on rainy days the board can be raised up and fastened by means of a string.

Nos. 2, 3, 4 and 5 will be as easily constructed as No. 1, from the illustrations. Each coop is provided with a door, either on the side or at the rear, to enable you to clean out the litter, feed old hens and provide fresh water, as well as clean hay or straw. Each coop has a small ventilator at or near the top.

I think these coops very useful about a farm, and several of them should be kept for emergencies. These will answer for ducks, but for geese or turkeys I should prefer larger coops, to give both old bird and brood ample room.

J. W. CAUGHEY.

The Country Gentleman

(1) We bought our first lot of Colored Dorkings from Mr. Bailey, of Mount St. Cross, Grosvenor Square, London, in 1850. The cock cost us, we are almost ashamed to say, \$250.

Amongst domesticated poultry, turkeys are acknowledged to hold a premier position as table birds. A Christmas feast without its turkey looks poor. There are several varieties of these birds in our islands. We have got lately the magnificent North American wild breed, which has now become thoroughly domesticated in the Western States, and nothing can exceed their beauty. Their plumage is magnificent, their bearing graceful whilst their hardiness is all that can be wished. We have got the noble Bronze variety also recently from America. The wild blood has been poured into the Bronze birds without stint. The Bronze are similar to the Wild in colour, except that the white brown-edging of the tail feathers and wing pencilling of the Bronze are of a chestnut hue in the Wild variety. In size the Wild breed is considerably smaller than the Bronze; for whilst Wild cocks when at their best may attain 35 lb., the Bronze have attained 50 lb. In style and bearing the Wild is to the Bronze what a game chicken is to a Brahma. The wild breed are particularly hard and close in feather, and upon the scales prove to be much heavier than they looked. There can not be a hardier turkey than the wild breed. If pure, they will do well where any other turkey will thrive; and, though less in size than the Bronze and bringing lower prices, they are a most profitable and useful breed. Some first-class American breeders use wild cocks for crossing with large hens, and they consider this to be the best way to breed for market. Other noted American breeders assert that the Wild reduces the size of the Bronze. Our own experience has not been large, but we believe the cross to be an excellent one, infusing hardiness and improving the colour of the Bronze. Moreover, when the Wild cock is used with high-class Bronze hens, the size is almost as good as it is in the pure Bronze. However, we prefer to breed from a first-rate half-bred Wild cock, owing to his superior size and the greater certainty with which he transmits his size. If we were breeding for market only, we should consider a Wild cock, of good size, capable of producing as profitable a flock as a fairly good Bronze.

The Bronze turkey should have great size and look big. The neck, back, and breast should be black, shaded with rich bronze, which glistens like gold in the sunlight. Each feather should end in a glossy black bar which extends across the entire width. The under parts of the bird are of a dull black. The wing bar is of brilliant black, shaded with green or brown. The wing primaries are black, pencilled slightly with white. The wing coverts are rich bronze, each feather ending in a glossy black bar. The tail is black, pencilled closely with dark chestnut, ending in a greyish-brown band. American Bronze turkeys were first imported into England in 1870. Since that time several importations have been received, and at present most of our Cambridge turkeys have more or less American Bronze blood in them, which has greatly improved their colour, hardiness, and size. One of the best Bronze turkeys ever imported was Garfield, which won first prize, Birmingham, 1886, and weighed 45 lbs. He was an exceedingly good stock bird. In 1888 we bred from him the pullet which won first prize at Brussels. One of the cockerels at ten months old scaled 33 lb., and defeated a two-year-old cock which had previously been considered the

best show bird of his day. From Garfield's portrait it will be seen that he was a very stylish, upstanding bird. He had immense breadth of shoulder and great depth. We received the first prize pair of young birds from the Cincinnati Show, December, 1888, where they scored 95½ and 95 points out of a possible total of 100. The cockerel named Royal Tom is much like Garfield, but larger. He scales 48 lb., and the hen 26 lb. They were bred from a noted winner in the States, which scaled 50 lb.

Cambridge turkeys differ from American Bronze in being less lustrous in colour, less hardy, and smaller in size. The best Cambridge cocks, if purely bred, rarely attain 36 lb., but with an American cross a few have reached 40 lb. The only other variety of turkey which we have of any note is the Black Norfolk, which is now confined to a few breeders, and owes its continuance to its reputation for delicacy of flesh. It is not so large as the Cambridge, but has a splendid breast and very white flesh.

There are several varieties of turkeys in America. There are three wild breeds—1. The Honduras of Central America, which is as brilliant in colour as the peacock; 2. The Mexican, which resembles the American Bronze in plumage, and is said to be progenitor of the common English tame turkeys, and 3. The North American wild breed. Then of domesticated strains there are the Bronze, the Bourbon Butternut, the Narragansett, the White Holland, the Buff, and the Slate or Lavender.

Breeding.—Both cocks and hens should be as large as possible. Some breeders go in for large cocks and moderate hens, but we have always failed to breed large pullets from small hens. The sexes largely follow their parents in size. From a large cock first-rate cockerels may be expected, and from large hens large pullets will be bred, and *vice versa*. We prefer the cock to be two or three years old and the hen to be under four years old. A cockerel of his first year, will do very well if he weighs 30 lb. or over when ten months old, but he will be a better stock bird in his second and third seasons. Cocks over three years old are risky. Occasionally they have been reliable for over five years, but when they pass three years old they generally disappoint the owner. The number of hens mated with a cock should not exceed ten (the best American breeders say four hens). If we allowed the male bird full liberty, we should not allow more than six, but there is so much danger in allowing a large bird to walk with his mates that we prefer to keep him in a separate pen during the breeding season. Some recommend starving the male bird prior to the breeding season in order to reduce his weight and save it for his purpose. When hens do not pass 10 lb. they may be allowed to sit, but if over this weight, they are likely to break the eggs. Turkeys are excellent sitters and mothers. Hens are not nearly so good nurses for young turkeys, because they leave their broods too soon.

When the young birds come out of the shell they should not be disturbed till fully twenty-four hours old. Their first feed should be hard-boiled egg and bread-crumbs. (2) If the weather be fine, when two days old they may be

(1) The great breeder at Duxford, whose name I forget, Cambridge-shire, Eng., told us in 1877, that he always had two or three cocks that weighed upwards of 40 lbs. Ed.

(1) We say: hard-boiled egg alone. No food like bread-crumbs to cause diarrhoea. Ed.

put out in a sunny sheltered spot. There is nothing more important for the broods than sun. When three days old some dandelion may be mixed with the egg and crumbs, and this may be continued till eight days old. We never give any green food, except nettles, for the first six weeks, and we have frequently observed that turkeys in the fields are very fond of eating growing nettles, which they appear greatly to prefer to dandelion. We discontinue the egg when the chicks are eight days old and feed on boiled nettles, oatmeal boiled, and a little ground bones. When the broods are six weeks old we give lettuce or cabbages for green food, and a grain supper. (1) For the first month we feed every two hours, afterwards four times a day.

Young turkeys must not be allowed out of doors during rain or when the dew is on the grass till they get the red heads, after which stage they become perfectly hardy.

The American Bronze turkeys are very easily reared—almost as easily as chickens—if they do not get much rain. Cambridge birds are also easily reared, and grow fast. The Norfolk is rather tender.

We do not like to allow young turkeys to roost till fully three months old, and when they are allowed perches they should be broad and not more than 1 ft. high. If allowed to roost too soon, the cockerels' breast bones will be deformed. Turkeys should be allowed a wide range. They will gather grasshoppers and other insects all day. There is no more profitable fowl. They will half support themselves, when they have been well started, with what insects and green food they pick up in the fields.

Fattening.—If turkeys be well fed from the first they will be fat enough without confinement or cramming. They thrive quite as well at liberty as when shut up. The chief point to be observed in preparing them for table is to feed early every morning on warm food of fattening quality. (2) During the day the birds may have as much grain as they will eat. They are great feeders, and never require to be crammed. F. C. SMITH.

Agricultural Gazette,

Hens and Horse-Feed.

While my neighbors have been complaining of the laziness of their hens in producing eggs this winter, our hens have been remarkably prolific. About the second week in December our boys began to give them what they called "horse feed" every morning for breakfast. The stuff is warmed and flavored with a small quantity of cayenne pepper. Table scraps are also given them, and they eat all with a good appetite.

Now for the result. We have nine laying hens, but up to the time when we began to give the "horse-feed" we got only an egg now and then. Since that time our success has been wonderful. During the last three weeks of December, by the daily record, we gathered eighty-six eggs, all of good size. The hens still continue their laudable work, and yesterday one of my boys brought from the coop six eggs. Some of my friends keep from ten to twenty hens each, but they don't get a single egg and have not for a long time.—R. N. Yorker.

(1) And no onions?

Ed.

Cramming pellets: 1 lb. corn-meal, ½ lb. oatmeal, ¼ lb. sugar and a little fat. Ed.

The Dairy.

On the best Rotation for a Dairy-Farm.

(Written, in French, for the St. Thérèse meeting of the D. Ass.)

We are attacked on all sides. If we look to the South, we see the progress of our barley into the United States hindered, if not absolutely prohibited, by the McKinley tariff. The production of beef and mutton is so cheaply carried on by the great rancho-proprietors of the North-West that it has become almost impossible to rear bullocks or sheep with any profit in this province; while the wheat of Manitoba, now selling at some 0 cents a bushel at the elevators, makes the cultivation here of that cereal almost hopeless.

But we need not absolutely despair. If grain and meat will not bring us in much profit, if their production is carried on as it usually has been up to the present time by most of our farmers, the dairy industry still remains to us, and, in connection with that pursuit, it does not seem to me to be impossible, if a well studied rotation be followed, to still make some fair profit out of the production of meat and cereals on most of our farms.

For, where there is no stock, there is no manure; where there is no manure, there is no crop; and neither stock, manure, nor crop can be profitably produced, unless the land be subjected to a proper rotation, a rotation not empirically selected, but one that is, suited, practically, to the soil we are working, and theoretically adapted to the various demands for food the plants we cultivate make upon that soil.

You all know, that every genus of plants asks for special kinds of food. Wheat does not insist upon being supplied with the same special food as clover, neither does barley need the same special food as pease. And it is upon this difference in the requirements of special foods that, though utterly ignorant of the theoretical reason for their practice, the farmers of my own country have, for some 90 or 100 years, been accustomed to separate the white-straw crops they grew by the interposition of some other crops of an unlike nature.

Hence, arose the Norfolk or 4-course system; in which barley or wheat was grown every alternate year, but separated by intermediate crops of roots and clover. It stood thus:

- 1st year... Roots, turnips, mangel, &c
- 2nd..... Barley.
- 3rd..... Clover, standing only one year.
- 4th..... Wheat.

Now, the practical English farmer was not quite such an unthinking creature as he seems to be considered by some people. He worked away at this rotation for many years, until, time bringing changes, he found that there were certain defects in the yield of certain of his crops, the reasons for which had to be discovered. For instance: the clover crop, all of a sudden began to refuse to grow: a sad thing indeed: for a good plant of clover, mown two or three times, according to the season, hardly ever failed to produce a good crop of wheat. He soon found out—more than 50 years ago—that if the clover,—and by clover I mean the *trifolium pratense*, or common red-clover, were sown so often, either the condition of the land, or its mechanical state, rendered that plant unsuitable to it. Some other crop, then, must take its place: what shall it be? Too many grain-crops

would clearly not answer, even if the terms of their agreements—leases were very rare in those days—would admit of their succeeding one another, which they did not. They tried pease on light and beans on heavy land, in place of half the clover—both being leguminous or pod-plants—and though the following wheat-crop was not so good as heretofore, it was very little inferior, and the pease being both hand- and horse-hoed, the land benefited considerably by the extra cultivation it received.

Thus, the 4-course system was converted into an 8-course one, and things went on as well as ever.

Another difficulty arose, some 20 years later. Malting barley always sold well, but in time, the very high state of cultivation to which our best farms had been brought by the year 1850 made the growth of a good sample of malting barley—and there was always, or almost always, a difference of at least 50 to 60 cents a bushel between grinding and malting barleys—almost impossible, if that grain were sown after a heavily manured crop of roots fed off, as was and is the custom, by sheep eating additional food: cake or grain, or pease, or all three.

What was to be done? The remedy was simple: wheat was sown after roots, followed by barley and clover seed, and the wheat as usual completed the course. This could only be done on very well farmed land, but there the sample of barley was as bright as ever, and this is the form in which the original Norfolk course or rotation now stands in all but the most backward districts of England, viz.

- 1st year Roots
- 2nd " " Wheat
- 3rd " " Barley
- 4th " " Clover, half-pease or beans half
- 5th " " Wheat.

There being as above, in reality, ten limbs to the rotation instead of the original four. And there things remain, the produce of the land having increased in acre-yield, for whereas the average yield of wheat 50 years ago was only 26 bushels an acre, it is now, as nearly as possible, 30 bushels, taking all sorts of land together. (1)

Thus, I think you will see that a sensible attention to the advantages and a sensible amendment of the defects of the common rotation of crops in England, have resulted in a marked improvement in the average yield of the most important crop of that country.

In presenting you to-day with my ideas as to the rotation best adapted to a dairy-farm in the province of Quebec, I must beg you to observe that I speak in general terms. Silo-corn will not mature sufficiently at Métis, but their swedes are superb and the Belgian carrots too, and vetches do well; so, in the districts below Quebec, those who desire to employ ensilage for the winter supply of their dairy-cows, must substitute vetches for corn.

The number of years that land should lie out in grass, again, is another point to be determined by the situation of your farms. Those who are fortunate enough to be within reach of an unlimited supply of dung, can break up their pastures sooner than those who are entirely dependant on the home-production of that description of fertiliser. But, I may state positively, the addition of a moderate ration of extra food, such as cottonseed-meal, pease-meal, crushed oats, &c., to the scanty food afforded by your pastures in July and August,

(1) It must not be forgotten that, in England, both barley and wheat are horse-hoed. *Ed.*

will prove, in all cases, highly remunerative.

You will not, of course, neglect giving your milch cows a portion of green meat mown for them every day. No better use can be made of the early cut of clover. For, I need not tell you that if once a cow begins to fall off in her yield of milk, it is a mighty difficult thing to restore the original flow.

Two or three years ago, I had the honour to contribute to the Report of your Association an article on the best provision of green-meat for dairy cattle, so I shall not go over that matter again, but will lay before you the rotation that, generally speaking, I think you will find suitable to the farms of, at all events, the Western part of the province.

The rotation I propose is calculated for a farm consisting of 100 acres of land under cultivation. The first limb is, of course, a hoed or green one, comprising roots, part of which may be sugar-beets, if things go well with the factories as I hope they may, green-meat, such as vetches, early rye to be cut very green; fodder corn; my own mixture of two bushels of oats, one of tares, one of pease, and 2 lbs. of rape, the last of which will be found very useful for your sheep to pick over after the crop is cut.

This will be followed, in the 2nd year, by barley or wheat, sown down with grass-seeds. Of what mixture you ought to use for this purpose I say nothing: soil and situation must be your guides; but Mr. Evans, the seedsman at Montreal, is fully informed of my ideas on this subject, and, if you ask him, will give you a list of such seeds as will be found suitable to your farms. These seeds, I propose to let lie out for 4 years, so the rotation will be 10 years in extent. In it there will be no cramming of two grain crops on one another, and in the middle, that is, in the 6th year, provision is made for a partial cleaning of the land; for, in such a long rotation, unless something of the sort is done, the land will become frightfully foul before the course is finished:

	Acres
First year, a cleansing or hoed-crop—roots, corn, pease, or beans, with oats, tares and rape.	10
Second year, grain	10
7 in barley or wheat, 3 flax with grass-seeds.	
Third year, meadow	10
Fourth " " "	10
Fifth " pasture	10
Sixth " " "	10
To be broken up for bastard fallow 1st July, and	
Seventh year, grain	10
oats with 14 lbs. red-clover.	
Eighth year, clover	10
to be mown for hay, for silage, or for green-meat.	
Ninth year, grain	10
oats.	
Tenth year, pulse	10
pease on light and horse-beans on heavy land	
	100

Thus, you will have 40 acres in grass, 10 acres in pulse, 10 acres in clover, 10 acres in hoed-crop, 27 acres in grain, and 3 in flax.

As regards the first limb of the rotation, the hoed or cleansing crop, the preparation of this ought to be begun in the previous fall, after the crop of grain or pulse is severed. Plough or grub shallow, harrow and horse-rake the rubbish, couch, &c., and burn it, before laying up the land for the winter. The roots and corn should be sown on the land that is the least clean, as the first lot of green-meat, vetches &c., must be sown as early as possible, and there will be no time to clean it; sowings should follow at intervals of, say,

a fortnight. Pray do not fancy that 4 bushels an acre of the mixed grain and pulse are too much; it should be cut when the vetches are just showing bloom.

I have taken 3 acres of the 2nd limb for flax. The crop may yield, if well treated 12 bushels an acre, and as the pulse crop of limb 10 ought to give at least 18 bushels, a very fair mixture can be made of the two in the proportion of 5 of pulse to 1 of linseed, which, for milch-cows or fattening beasts, will not be found out of the way.

As for the sixth limb, the fourth in grass, I propose to sacrifice the pasture from the 1st July, and make what we call in England a bastard fallow of it. The land should be ploughed shallow, cross ploughed, two weeks later, a little deeper, by which the grass, &c., will be brought to the surface and the weeds killed, after a good tearing about with the grubber and harrow, if the month of August is as hot as usual: a fair dressing of dung lightly ploughed in will fit it for the following crop of grain.

Do not stint the clover-seed in the seventh limb: 14 lbs. an acre are not too much. The clover in the eighth limb may be mown for green-meat generally by the first week in June; it may be cut for hay; the first-cut may be hayed and the second-cut ensiled; or it may be done whatever you like with, except ploughed under. It is, believe me, far too valuable to be treated so contemptuously. If you must bury anything, take vetches, pease, any pulse crop, except clover. As for buckwheat, green-rye, mustard, &c., I do not believe that any good is derived from interring them, unless the trifling mechanical effect they have may be beneficial.

As to the pulse-crop in the tenth and last limb of the rotation, if you would only treat it as you treat a crop of potatoes, you would find it profitable. But I fear it will be a long time before I shall see here a field of pease or horse-beans drilled, hand hoed, and horse-hoed, as it is done at home. At all events you can harrow them once or twice after they have come up, particularly after a fall of rain on heavy land, if it be only to break the crust.

A propos of the horse bean: it will not answer on light land, and it must be sown early. Mr. Dawes of Lachine, whose recent appointment to a seat in the Council of Agriculture I beg leave to congratulate him upon, grew these beans this year successfully; they were drilled and horse-hoed and yielded 20 bushels an acre. No food like them for horses in cold weather, and they keep the flesh on heavy milking cows better than anything grown. I have seen them 8 feet high, on our low-lying Gloucestershire lands, and yielding 80 bushels, of 68 lbs., to the acre. Half a bushel of beans takes the place of a bushel of oats in our farm-horse rations, and hunters, stage-coach horses, and other hard workers have them all through the winter; only don't give them to an idle horse, as they are pretty sure to cause *farry*.

You see that we have got a pretty good lot of food together on our supposed 100 acre farm. Let us see:

	Tons
Ten acres of green-meat, roots, &c.	
at 15 tons an acre.	150
“ green clover at 12 tons	
acre	120

To say nothing of the 27 acres of straw from the grain-crop, 10 acres of most valuable pease straw, and the

two years hay of 20 acres, all of which may amount to some 110 tons of dry fodder, making in the whole about 380 tons of bulky food. To this add the grain, equal to at least 25 bushels an acre, or 675 bushels; 180 bushels of peas and 36 bushels of linseed (which you will reserve for the calves and down-calving cows), and if you cannot make butter in winter and plenty of cheese in summer, I have no means of showing you how to do it.

Lastly, do not stay at home so much. You may, and probably will, think I have exaggerated things, but if you would only look about you a little, if you would visit the farms of the best men to be found in the province, if you would inspect the cultivation of the Compton people, who showed forth in such glorious colours at the distribution of the "Order of Merit" this year, the farms of Mr Fisher and Mr Foster of Knowlton, of the Messrs Dawes of Lachine, and of various others too numerous to mention, if you would take a month or so "between haying and harvest," though the habit of late haymaking here brings those labours too near together I fear, to look over some of the farms I have mentioned, you would find that other men are doing better, far better than anything I have brought before you to day; and I need not remind you that, all other things being equal, what one man has done, another man can do.

ARTHUR R. JENNER FOSTER

The Dairymen's Convention at Howick

We here present the report of the *Star* of the twelfth Annual meeting of the Huntingdon Dairy Association which was held at Howick on the 20th January. It seems to have been as usual, a most successful convention, and the speakers, men from all parts of the country, appear to have treated the subjects entrusted to them in a thoroughly practical manner. What with this association and the Dairymen's Association of the province, it is a hard case if the dairy-goods of Quebec do not soon equal in quality the goods of the sister province of Ontario.

As will be observed both Mr Fisher and Professor Dean laid great stress on the immense value of the Babcock test. Silage and the best way to build the silo at the least cost; the best crops for soiling cattle in summer, the most suitable practical rations for dairy-cows, were all treated by men who evidently understood their business. Mr Fisher's excursus on the "factory cow" must have been amusing, though its truthfulness cannot be doubted for a moment by any one who knows that gentleman's grave earnestness.

"Mr Sydney Fisher

WAS THE FIRST SPEAKER.

At the outset he said that he was well aware the district of Huntingdon always led her neighbors in progressive, scientific farming. Much that he would say might, therefore, appear trite to some of those whom he addressed. Yet there was one subject, one reform, which still needed earnest advocacy—the system of estimating the value of milk by chemical and mechanical testing rather than by weight. For this he strongly advocated the Babcock test. It was a gross superstition to suppose that 100 pounds of one kind of milk was always as valuable as 100 pounds of any other kind. As a matter of fact, poor milk was heavy milk, while rich milk was light. "Therefore," said he, "you,

and not your dishonest neighbor, will be the gainer by the introduction of the testing system."

One of the great evils of the existing system was, he said, the terrible deterioration of the Canadian cow. Twenty years ago there was but little difference in the butter and cheese producing capacity of different herds. Now, however, the "factory cow" had been evolved.

The "factory cow" had become one of our institutions, standing in bad eminence in this land. What was she, this factory cow? She was the genius that watered the milk, producing the greatest quantities of lacteal fluid and caring nothing for quality. But she had done great evil by crowding out cows that were honest and successful butter-makers. To prove this he cited the fact that he could not sell the calves of his Channel Island cows because rich milk producers were not wanted. As to the practicability of

paring herd with herd the proportion of casein in the milk varied exactly with that of fat. Thus an estimate of the quantity of casein could always be deduced from that of fat. Therefore the Babcock test was equally applicable to cheese and to butter. It was an almost absolutely accurate test of cheese in milk. It was an absolutely accurate test of butter. This was proved by the fact that Dr Babcock operating in Michigan found identically the same proportion of casein to fat as did Mr. Vanslyke operating at the same time in New York. Each found that the casein was to the fat as 2 is to 13.

Prof. Dean followed. He spoke first of the matter then before the Convention. He said that it was the burning topic of discussion at all the Ontario conventions. The theory that milk was milk was a popular superstition. He had sampled milk at an hotel on his way down from Toronto, and he

suppose that only a scientist could do the work. Any farmer who could handle his milk under the present system could do it with the Babcock plan.

At the conclusion of this address some questions were put.

"What is the best method of keeping milk from Saturday night till Monday morning?" was the first.

Prof. Dean said that the necessary thing to do was to aerate the milk properly.

Mr. E. Hooker said that he had been very successful in this by surrounding his milk by ice in shallow pans.

Mr James McKell wished to know if icing did not diminish the product.

Prof. Dean said that little, if any, loss would ensue if the cooling did not go below 60°.

The evening session was opened by Mr. Tylee in a paper on "Silos on small farms." He deplored the fact that owners of small farms despaired of using silos. The silo need not be an expensive affair. He saw one this winter, that cost hardly anything, built in a mow, the walls of which constituted three walls of the silo. The corn had been put in long, well packed. After heating it was well tramped, then covered with straw and about four inches of earth. Some of this ensilage was shown at St. Thérèse and was as good as any exhibited. The owner intends doubling his silo next year. Even if a cutter were needed it would not cost much. An ordinary one-horse cutter would do. He verily believed that no matter the size of the farm the silo was the cheapest as well as the best way of saving fodder. Corn, in his opinion, made the best ensilage. He used no cutter but met with perfect success. Under the present system of saving fodder, one acre at least was necessary to feed one cow, whereas with a silo two could be fed on a single acre. In conclusion he invited all who heard him to attend the meeting of

THE ENSILAGE ASSOCIATION,

which would be held in Montreal about the 15th of February next.

M. Hooker asked if it were advisable to raise corn where clover could be raised.

M. Tylee said it was, because, though grain was needed with corn, so much more could be raised per acre that it would pay for the grain.

M. James Brodie asked how long a silo lasted.

M. Tylee said that he had one for five years as good as ever.

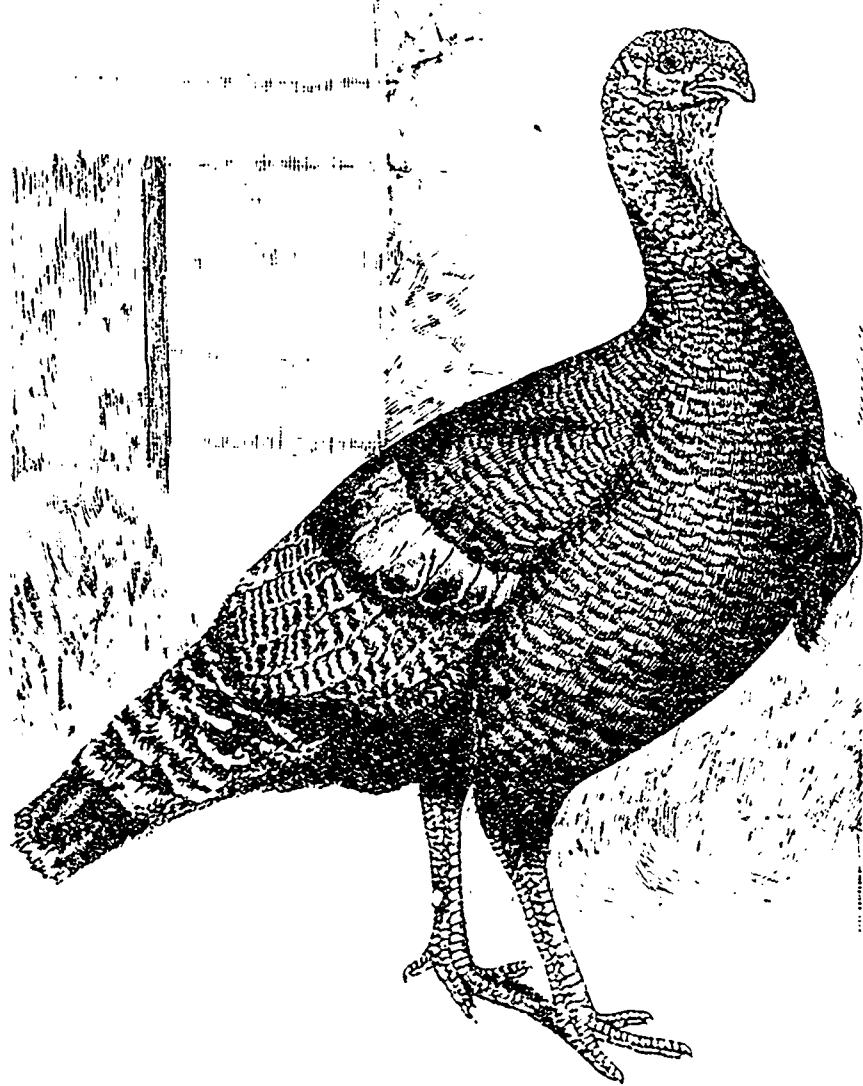
M. Fisher said that he had one ten years as good as ever.

To another querist M. Fisher said that the cost of cultivating corn and curing it was from 50 to 60 cents per ton.

Mr. Dean, to another questioner, said that clover was less exhaustive to the soil than corn. In fact, clover left the soil richer after cropping.

Prof. Dean was again called on. His evening subject was "Some Needs of the Dairy Industry." The greatest need, he held, was knowledge. The man upon whom the success of the business depended was not the butter or cheese maker so much as the dairyman himself, the man who fed and milked the cows. The next need was good cows. He instanced the case of an Ontario farmer who had five cows making \$55 a summer, while his neighbor had fourteen cows making only \$19 each. It certainly cost twice less to keep the five than the fourteen cows.

Good feed was another pressing need. Something cannot be taken from nothing. That something was food.



BRONZE TURKEY (GARFIELD).

the Babcock test, he said that it had been employed with absolute success in over one hundred factories in the United States. Especially in the progressive Western States had it proved a boon to dairymen. As to the practicability of the Babcock test he was sure that any one in that audience could operate it with success. The theory was that a measurement of the fat was a measurement of the butter, for 85 per cent. of butter was fat, the other 15 per cent. being water and salt. Cheese, however, was somewhat different.

CASEIN WAS A FACTOR

that had to be counted upon. But it was a mistake to suppose that good cheese contained more casein than fat. Moreover, it was true that com-

(1) Good cheese contains of fat, 75-20 % albumoids, 25-50 % Ed.

was quite sure that it had been first skimmed and then well watered. Pump milk should not be paid for. He dwelt especially on the justice of the Babcock system. Only dishonest patrons would oppose it. Under the existing system nothing but injustice could be expected. The man who reared good cows and cared properly for his milk should not be compelled to pay for the skim milk of his dishonest neighbors. Moreover, gross injustice had been done in the past by legal actions against and convictions of innocent persons, charged with skimming their milk. The Babcock test would abolish this evil forever; and in that alone it would more than pay for itself. It would injure no one but the pottifogging lawyers. (Hear, hear.)

As to the cost of this test, he quite agreed with Mr. Fisher, that it would be insignificant. It was a mistake to

Nature's food was grass, succulent, juicy grass. Now in August or September grass dries up. Therefore he advised that special green crops of oats and peas or corn should be provided for this season. Another advantage of these pasture corn crops was that they cleared the land of weeds and thistles. Of course, they should be sown in drills and thoroughly hoed. The better way was to feed this product in the stable. At Guelph they milked their cows in the stable in summer without the aid of dogs and whips, simply by feeding them indoors. For winter, silage was the proper fodder, with hay and bran—50 lbs. of ensilage, 5 pounds of hay and 2 pounds of bran.

The necessity of economising the by-products ought also to be apparent. Not a gallon of skim milk or whey ought to be lost. To-day millions of gallons of whey were lost. Whey, alone, was fit to keep hogs in good squealing condition. But with other food it was most valuable.

M. Sydney Fisher gave another interesting address. His subject was

ENTRAVAGANCE ON THE FARM,

not in dress, etc., but mental waste and loss of opportunities. It would not do to rail against the "scientific chap." Not that he was scientific, but that the most practical man was the most scientific man. It was a most deplorable fact that the farmers of Ontario profited so little by the experiments which they paid M. Deane to make. Even here it was apparent that thousands of men failed to attend such meetings as this. That was the waste of which farmers were guilty. What lawyer entered on his profession without going to college? How many farmers went to college before beginning their life work? There was another grievous waste—that of land. All over Quebec, less in Chateauguay than elsewhere, one tenth of the fields lay wholly idle or half idle. Little, if any, of the land was used to its fullest capacity.

Another great waste was entailed in the watering of cattle in water. There was no greater extravagance on the farm. Every time a cow was driven on a cold day to the creek there was an actual, positive loss of milk and therefore of money.

Indiscriminate feeding was also extravagance. One of the first things a dairyman should learn was the chemical elements of his cattle's food.

Mr. Barnard closed the meeting by a brief speech, in which he urged that more attention should be given to winter butter-making. And above all they should remember that dairying was the most profitable business of the eastern farm.

Meeting of the Ensilage Association of Central Canada

At the first annual business meeting of the Ensilage and Economic Stock Feeding Association of Central Canada, held on Friday 25th November 1892, in Montreal there was a fair attendance of members.

Wm. Ewing the President occupied the chair and called upon C. D. Tylee the Secretary to read the minutes of previous meetings and give a summary of the work done by the Association. Mr. Ewing then addressed the meeting and congratulated the members on the good work done, and urged upon them the necessity of getting Merchants and Manufacturers interested in their Association as well as practical farmers, as agriculture was in reality the mainstay of our prosperity.

Mr. S. A. Fisher and Mr. H. S. Foster followed in the same strain.

Mr. Ewing was re-elected President,

Mr. A. J. Dawes Vice-President, and Mr. C. D. Tylee Secretary-Treasurer. The directors of the coming year were then elected as follows:

- S. J. Doran, Lachine Rapids.
- Geo. Buchanan, Côte St. Michel.
- Frs. Dion, Ste. Therese.
- S. A. Fisher, Knowlton.
- J. A. Cochrane, Hillhurst.
- W. H. Walker, Huntingdon.
- D. M. McPherson, Lancaster.
- R. Bennie, Montreal.
- J. Johnston, Montreal.
- J. Beaubien, Montreal.
- T. A. Trenholme, Montreal Centre.
- Rev. M. Charest, Mile End.
- A. E. Garth, Ste. Thérèse.
- H. S. Foster, Knowlton.
- R. Robertson, Howick.
- Col. Gilmour, Stanbridge East.
- A. G. McBean, Lancaster.
- A. McCallum, Danville.
- A. G. Evans, Blue Bonnets.

It was moved by George Buchanan, Seconded by S. A. Fisher and carried.

That the Ensilage and Economic Stock Feeding Association do hereby tender their thanks to the Hon. the Commissioner of Agriculture for the Province of Quebec for his kind promise to our Secretary of a grant to aid us to print and distribute our report of the Coming Convention, and also for his offer to pay the travelling expenses of such delegates who may on request attend country meetings or conventions to speak on Ensilage or other Agriculture topics, and that the Secretary forward a copy of this resolution to the Hon. Louis Beaubien.

The following members were named to act as delegates when wanted to attend country meetings.

- D. M. McPherson,
- G. Buchanan,
- J. Beaubien,
- C. D. Tylee,
- S. A. Fisher,
- W. J. Brown,
- Rev. M. Charest,
- Thos. Irving,
- H. S. Foster,
- Col. Gilmour,
- T. A. Trenholme.

It was decided to hold the second annual convention in Montreal early in February next. The exact date and the subjects to be discussed were left for the directors to arrange.

All applications from Agricultural Societies, Farmers' Clubs and other Agricultural organisations, wanting speakers to address their meetings during the coming winter, should be sent to the Secretary C. D. Tylee at Ste. Thérèse de Blainville as soon as possible, so that he can make the necessary arrangements.

The meeting then adjourned.

Canadian Corn.

Mr. S. A. Fisher wrote on the 4th of September last:

"Just cutting my ensilage this week; rather early, but part at any rate of the corn is ready, ears glazed and I want to finish before the show. If it were not for them I would wait till next week.

My corn seed from Sorel has given me two ears, well glazed now, to every stalk. Not very tall and only about 10 tons to the acre. Is that as good as 16 tons of the tall Western with rudimentary ears on it?"

We hope M. Choquette, on the Experimental farm at Ottawa may answer exactly Mr. Fisher's query. We are decidedly of opinion that the 10 tons of glazed corn well cared are better in every way than 16 tons of Western corn with rudiments of ears only. D.

Small vs. Large Cows.

Anything can be proved by figures, if there are plenty of them at command. Who J. M., the writer of the following extract from the correspondence of the Agricultural Gazette, is, we do not know, but we conceive he will have some difficulty in persuading the farmers of England to exchange their dairy shorthorns for the little Kerry cow.

"In the commercial world shrewd business men make it a point to manufacture or purchase their goods at the lowest possible rate consistent with good quality. In the farming world this is not studied in the same way, farmers, as a rule, lacking in business capacity, and being slow to adapt themselves to altered circumstances. Keen competition, however, immense foreign imports, and consequent lower prices, are now causing us to bestow a little more thought on the important subject of intensive agriculture, and the cost of production. And we are beginning to find out that the man who produces the greatest quantity, at the lowest rate, has the best chance of holding his own.

At the recent milking trials at the London Dairy Show, the apparent great difference in the cost of one class of farm produce was so much impressed on our mind that the idea suggested itself of inquiring into the actual cost at which milk is produced, and we turn to the report of the Warwick meeting, in the Journal of the Royal Agricultural Society of England, where we observe it noted that at the last milking competition the little Kerry cow, Babraham Belle, gave 51 lbs. of milk in a single day, yielding an average of 4 per cent of butter-fat, her carcass weight being only 559 lbs. And that the first prize Shorthorn cow, Dowager, milked 40 lbs., containing 4.03 per cent butter-fat. The weight of this cow is not given, but we may take it at the average for a Shorthorn cow, which would be about 1,300 lbs. It will be here observed that for every 1 lb. of milk produced by the Kerry without going into fractions) only 17 lbs weight of the animal's body have to be maintained, while in the case of the Shorthorn 22½ lbs. require to be supported.

From this it would seem that Dowager's milk costs her owner nearly twice that which Babraham Belle's costs hers. Without going into very minute particulars, it may be calculated that every 100 lbs. of live weight will require per day, for the winter months, about 3 lbs. of mixed roots, mangels, grains of different kinds, and cakes, as well as 2 lbs. of hay and straw, to maintain the vital functions of a cow giving an average quantity of milk. The Kerry would, therefore, consume about 26 lbs. of the former and 18 lbs. of the latter; and a fair estimate for these, at present prices, would be 1s. 1d. per day, or about a ½d. per lb. of milk yielded. Now, the Shorthorn would require, at the same rate, 39 lbs. of roots, grains, and cake, and 26 lbs. of hay and straw, the cost being 1s. 5d., or a farthing and three-fourths per lb. of milk yield. The difference would even be greater on pasture, as it is said, with a good deal of truth, that "an ox eats as much with his hoofs as with his mouth." The greater weight, therefore, of the Shorthorn must tell in the amount of pasture damaged by treading.

Let us go a little further in illustrating this great difference between cost of Shorthorn and Kerry milk. We shall take it that each cow milks 125 days of the winter half-year, and this sum comes out as follows, viz.:

	£ s. d.
Shorthorn, 125 days at 40 lb.—5,000 lbs.; this at 7-16ths of a penny per lb. of milk, amounts to.....	9 2 3
Same quantity at ½d. per lb., at which the Kerry produces her milk.....	5 4 2
Difference between the two, and in favour of the Kerry.....	£3 18 1
But, seeing that in 125 days the Kerry gives 1,375 lbs. more milk than the larger cow, we have to add.....	1 8 8
Making the actual difference.....	£5 6 9

There are one or two items which we should mention in favour of the Shorthorn cow, she is a larger consumer of food, and, consequently, the manure being of much greater bulk, is of more value, and would have to be placed to her credit on a basis of food consumed; but we think this might fairly be put against the expense of preparing and handling the larger amount of food, the increased quantity of straw use for litter, the extra house accommodation required for the larger breed, and the difference in capital employed.

The comparison between the breeds would not however, be a fair one without considering the loss on the original cost of the respective animals which would be sustained in selling the strippers when milked out; and we do not believe the Kerry would here suffer, as it is well known that animals of this breed lay on flesh and fat as rapidly as those of any of the beef breeds, and butchers buy them freely, as there is always a good demand for small joints.

The notes, though incomplete, will, we have no doubt, serve the purpose which we have in view—viz., to induce those who are interested in the economical production of milk to ask themselves if they are following a wise course in keeping those large-bodied cows, which, according to these rough figures, are "eating their heads off." Many years ago we attended a trial of portable steam engines at a Royal show, when one of the main features in the test was the amount of power given out from a certain quantity of fuel and water. The cost of producing milk is just such another subject, and it resolves itself into the question of the animal which gives the greatest amount of milk of normal richness from a given quantity of food." J. M.

Eng. A. Gazette.

Canadian Dairy-products in England.

Professor Robertson, on his return from a trip to England, speak very hopefully of the prospects of the Canadian farmer as regards the sale of his dairy profits in that country. He seems to have been impressed with the difference in the colour of the butter that found favour in different parts of the island. The fact is, that when many private dairies exist, such as those that make only for the consumption of the owners' families, high coloured butter is not likely to be popular.

It will be observed that the professor speaks of the "fat cheeses from Quebec not being in favour in the Manchester district." Is not the word, fat, a misprint for flat?

Regarding the investigations into the newer preferences of British markets in the matter of butter and butter packages, and of cheese and cheese boxes, the report continues: "The demand in different centres of large populations calls for different qualities in color, body and flavor. All markets want a butter with the bloom of fresh made flavor still on it. We need refri-

gorator accommodation on the steamship lines from Canada. The Manchester and Glasgow markets want a rather pale colored butter. The London and Glasgow markets are running on square packages, after the New Zealand or Australian style. We shall have some of our winter made creamery butter from the Government experimental dairy stations packed in square packages this winter. All the buyers prefer the butter packages to be lined with grease-proof paper, which protects the butter from contact with the wood or tin, and gives it a bright, sparkling look when the packages are removed. I purchased a considerable quantity of the best quality of suitable paper from one of the large paper manufacturing firms in London. All who are interested may obtain small sample quantities at cost, as soon as it arrives at Ottawa. I looked into the trade in tinned butters for export to hot climates, and visited Paris, where neat and suitable boxes for that purpose are made and finished in excellent style. I think Canadians might now get possession of the West India trade in butter, and through the facilities of the C. P. Railway and Pacific steamships, we should get the major share of the trade in butter, bacon and cheese with Hong Kong, China and Japan. I had a conference in London on that subject with a gentleman who had spent many years in business in that trade. The outlook for our products in that direction is hopeful. I arranged for a supply of the tin boxes and was able to secure an offer of the particular machines which are used in closing the boxes, so that they shall be perfectly

AIR-TIGHT AFTER THEY ARE FILLED.

Many complaints were made to me of the poor quality of the boxes in which cheese has been sent, particularly from the province of Quebec. The cheese which was sent over from the Experimental Dairy Station at Perth in Lanark County, Ontario, had less than six per cent, of the boxes broken to any extent, when they reached the London and Liverpool warehouses. Good sound boxes give an additional value to the cheese of from 1s to 2s per cwt, and the extra cost of those strong boxes was only 3 cents each. I hope the cheese makers, patrons, salesmen and buyers together, will insist upon the use of only strong, close-fitting boxes, quite dry before they are put on the cheeses.

I found Canadian cheese still growing in favor with wholesale dealers and retailers. In the Manchester District the fat cheeses from Quebec have not met with particular favor. The irregularity in shape and size, the unworkmanlike finish, or want of finish, and the wretchedly bad boxes were the worst features of some cheese from that Province. These defects could all be remedied in one season by a little more care and taste. The French race have the reputation of putting up goods of all sorts in the daintiest and most attractive form. The French speaking dairymen of Quebec should try to maintain the good name of their people in that regard. The fact that it would pay them handsomely to do so, should not be a deterrent.

"I saw (with Mr. John Dyke in Liverpool) one shipment of Canadian turkeys in particularly excellent condition. The birds had been fasted before they were killed; feathers were left on; they came out of the cases looking bright and fresh, and with a sweet clean odour."

The Air-Churn

At the Ste Thérèse meeting of the Dairymen's Association, the Rev. abbé Côté stated that, although he

found the new churn work beautifully, he had never been able to extract more than $\frac{1}{3}$ of the butter fat from the milk operated on! Monsieur Nagant is, I believe, making experiments on this wonderfully clever invention of an Italian man of science, and will no doubt discover in what part of the process loss is likely to occur when the implement is in the hands of unskilled workmen. The principle of the invention is simple enough, and no one that has had experience of the gentlemen who are at the head of affairs in the St. Hyacinthe Dairy-school can hesitate to place confidence in any machine bearing their approval with it. We expect great things from this establishment. Already the general make of cheese in the province has been nothing less than marvelously improved by the judicious enterprise of the late secretary, M. J. de L. Taché, and his energetic assistants MM. Côté, Archambault, &c., and we trust that, before long the general make of butter will be as much amended as the cheese has been.

Our people must not lose sight of the fact that the exportation of butter from the farm carries with it not manorial loss of matter; whereas, cheese walks off with a vast quantity of the most costly fertilisers the land secretes in her bosom: nitrogen and the phosphates. In short, the export of cheese, *per se*, impoverishes land, the export of butter leaves land just as it found it. Take this as an example: the export of cheese from Cheshire nearly ruined the farmers of that county; Epping and the Vale of Aylesbury have exported butter for centuries and the grass continues to flourish as well as or better than ever.

We do not care to repeat the same thing more frequently than necessary; but, as the great Roman bothered all his hearers with his reiterated assertion that "Carthage must be destroyed," so our constant cry should be "More Syndicates." The leaders of public opinion who do not impress this demand on all who listen to them, fail in their duty as regards one of the most important subjects ever submitted to the public.

Beans and Linseed.

Experiments in the Rational feeding of Milch-cows

As will be seen by the following letters, the Rev. Ladies of the Ursuline convent at Roberval have given their cows in milk since November, a pint of dwarf-beans and a half-pound of linseed boiled as if for linseed tea. The result was immediate and most satisfactory. This experiment is to be repeated in the agricultural schools at Ste-Anne and L'Assomption. We shall keep our readers informed as to the results obtained:

Department of Agriculture and Colonisation.

Quebec, Nov. 15th, 1892.

TO THE DIRECTOR OF THE SCHOOL OF AGRICULTURE.

Dear Sir,

I beg to draw your attention to the interesting news Mr. Barnard sends me in the annexed letter.

I should be greatly obliged if you would repeat as soon as possible the experiment made at Roberval. To this end, it seems to me that a dozen cows, say, should be selected, giving each, as nearly as can be managed, the same weight of milk, and divided into two distinct lots. The whole should be fed as previously for about a week, but a

strict account must be kept of the yield of milk and butter by each of the two lots. After the first week, the first lot should receive three quarts of beans made into soup, and three pounds of linseed previously well boiled—this to be mixed with their ordinary ration. The other lot is to be fed as before, and that for a fortnight. You should show exactly the results obtained, in butter and milk, from each lot; then, you should feed in the same manner, but the lots should be reversed, that is, the lot that received the soup for a fortnight, should then receive the ordinary ration, *vice versa*.

It would also be very useful to ascertain, as carefully as possible, the species and entire weight of the ordinary rations consumed by each of the lots experimented upon.

This, Mr. Director, seems to me to be a very useful experiment; first, for the instruction of your pupils, and also for the information of the public. I trust you will be good enough to undertake it, and to give me the results as soon as possible.

J. A. GIGAUET,

Assistant-Commissioner.

(From the French.)

Quebec, Nov. 15th, 1892.

TO MR. J. A. GIGAUET,
Assistant-Commissioner of
Agriculture, etc., Quebec,

Dear Sir,

Your devotion to the improvement of agriculture encourages me to relate to you the results obtained, after a simple piece of advice, given in a hurry when I was at Roberval. The Rev. Ladies of the Ursuline convent, as you already know, never lose any chance of gaining information about profitable agriculture. I advised them to add to the daily winter ration of their cows a pint of dwarf-beans and a half-pound of boiled linseed for each head. The beans to be made into soup with water, or, if there is any to spare with skim-milk.

Now, in the middle of November the cows that have calved in April hardly ever increase their flow of milk. Any farmer will agree with this statement. But the six cows at Roberval, two of which had calved ten months and more previously, and two others were young heifers with their first calf, increased their yield of milk by about 10%. But, and this is still more encouraging, the milk is 10% richer than it was in the fall.

Here, then, is a positive return of 20% additional yield, obtained in winter quarters, instead of the decrease that farmers generally find in almost every part of the province. And more; the manure is considerably enriched by the food provided. It is observable that by giving a trifling quantity of very rich food, the consumption of coarse fodder itself is very much diminished. Numerous, and very careful experiments have proved that this economy in coarse fodder is of such importance that we are able to feed three cows with the same quantity that two would have consumed before the addition of food that produces rich milk in abundance.

I thought you would like to know these excellent results obtained in the extreme north of the province.

Your obedient servant,

ED. A. BARNARD.

(From the French.)

20 COWS AND 100 SHEEP—I have a farm in the valley of Lake St. John, near a station on the railroad. I intend to live there in the spring. Being desirous to carrying on a practical and

profitable system of farming and aiming at the putting into a good arable condition of 125 acres between the present time and two years hence, would you be good enough to answer the following questions in your paper:

In the first place, I wish to keep 20 good cows and 100 ewes within two years of the present date. Can I do this on my extent of land?

W. S. DRUMMONDVILLE.

Reply.—Yes, if you feed them in accordance with the known principles of the art. See my letter on the subject of Lake St. John, D.

Agriculture.

The Day of an English Tenant-Farmer.

Many years ago, in 1852, not feeling quite satisfied with the knowledge of sheep-farming we possessed, it struck us that, as we had a whole summer of leisure before us, the best thing we could do to perfect our acquaintance with that branch of agriculture was to pass six months in the house of one of the most noted breeders of South-down sheep in the south of England, always provided we could persuade such an one to endure the invasion of his family by a perfect stranger.

A near relation having at various times bought rams from Mr William Rigden, of Hove, near Brighton, Sussex, he was persuaded to ask the latter to meet us at dinner one day in the month of February. A very pleasant evening was spent, we found the visitor a very agreeable, intelligent man, and, after a good deal of conversation on farming matters, Mr Rigden listened attentively to our proposal, and finally it was agreed that the following week his house should be open to us for six months.

A description of the farm and stock of this thriving agriculturist will be found at p 153 of the vol 14 of the first series of this periodical, so our readers shall be spared a repetition of the story, if they will kindly remember that the farm consisted of 650 acres, the part next the sea being of fine quality, the middle fair soil, and the upper part a loose soil, very long broken up out of the chalk-downs. No pasture, the whole being under the plough, and the 20 milch cows (dairy-short-horns) with the bull, then, a pure "Bates shorthorn" Notary, from the herd of Jonas Webb, were all *souled* throughout the year. The milk was sent into Brighton, twice a day, at one shilling a gallon—10 lbs.—wholesale price. The cows averaged 10 quarts a day for 11 months in the year—800 gallons each, worth \$200, or, for the whole herd, \$4,000. That paid: no doubt about it. The sales of wheat averaged about 1,000 quarters—8,000 bushels, which, in 1853, 54 fetched 10s. a bushel—\$20,000; barley about 1,000 quarters at 40s. = \$12,000; and the flock, what with the letting of rams, the sales of ram-lambs, and of full-mouthed ewes, brought in about \$4,000. Besides these items, there were sales of green meat, mangels, potatoes, &c. to an unknown amount. Probably not less than \$45,000 were received that year from the disposal of farm-crops, and this would give a gross sum of \$66,000 an acre over the whole farm. The capital invested in stock, implements, payments to outgoing tenant, &c., was £16 an acre = \$80.00; rent, tithes, taxes, &c., = \$2,200 = \$11,000 a year, labour cost about 42s. an acre, say, \$7,000. Large outgoings, but large incomings too. The payments to outgoing tenants

consist of what are called. "Acts of husbandry," such as ploughings, manurings, &c., and for seed on clover leys, hay, straw, &c. In the home counties such as Surrey, Kent, &c., they usually amount to from £3.5 to £3 10 - \$16.00 to \$18.00 an acre, and form a terrible charge on the incoming tenant's capital. A folding of sheep, alone, on an acre of fallow, a common practice in the above counties, is charged \$18.00 an acre, but, this folding—at the rate of 4840 sheep for one night on an acre—is supposed to be sufficient dressing for 1. a wheat crop; 2. clover, cut twice for hay; 3. a wheat crop, and perhaps a crop of oats or pease as well. Still, with all these outgoings, Rigden made large profits out of his occupation; more than ever will be made out of that land again by farming, seeing that it is now all covered by houses of the most charming description. But let us return to our subject: the way in which the farmer, and his pupil, spent the day.

The morning after our arrival, after a short turn round the cowhouse, &c., our horses were brought to the door, just as we had finished breakfast, we mounted, rode round the farm, visited the flock, inquired what ewes had lambed during the past night, and gave the shepherd instructions for the treatment of the ewes and their progeny during the day. The bailiff, steward, or *grieve*, as the Scotch call him, met us close by the lambing-shed, on his horse, and, after some conversation, we rode on to visit the plough-teams, six of which were engaged in breaking up a piece of land, after sheep-fed turnips, in preparation for barley. A *drill-presser*, consisting of two cast-iron wheels, about 600 lbs. each, drawn by one horse, followed each pair of ploughs; the consolidation of this shabby land by the presser being of great importance when wheat or barley is to follow. At eleven, a glass of beer and a crust of bread and cheese refreshed us after our ride, and at 2 o'clock we dined. At 4, another turn round the farm, tea at 5.30, and supper at 9, followed, after one glass of brandy and water, by bed at 10.

It will be observed that neither the farmer nor his bailiff put their hands to any implement throughout the day. The farmer, or his bailiff, — a most invaluable servant — attended Brighton market twice a week; the farmer kept books of some sort, and did the business at the bank, which latter work must have been an easy job enough, but he did no work of any kind, and, I have no doubt, would not have been able to plough half an acre of land in a day, had his life depended upon it.

But this easy style of life was not universal in England in the days of which we are writing. The great grain-growing tenants of the lighter lands lived like the man whose habits we have described; but change the scene to the dairy-district, to Gloucestershire, for instance, and an entire change of scene confronts us. Up at dawn, with their wives and daughters, the cows are milked and the laborious work of cheese-making carried on by the tenant farmer and his family, in most cases without hired assistants. The farmer or his sons plough the trifling extent of arable land on their holding—about 4% of the whole—; they cart out and spread the dung; knock about the droppings of the cows in the pastures; mow, make and carry the hay and grain; do the odd jobs about the buildings, and, in fact, execute every operation required on the farm. The wages paid by these men is certainly not more than ten shillings an acre per annum. They live pretty much

the same as our Township farmers live. And what is the consequence of these two so very different ways of conducting a business? We have all heard the cries of "ruined agriculture" that are now resounding throughout England. From what class of farmers do these complaints come? From the hardworking dairymen? By no means. Only last week, the writer received a letter from a Gloucestershire land owner stating that his rents had been paid in full on the day appointed, which rents, by the bye, are just the same as they were in the year 1852, when the present proprietor succeeded to the estate.

No; the cry comes from the grain-growers, the graziers, the flock-masters, who have been so long accustomed to do nothing but superintend, that, now the real crash has come, they can do no earthly thing to help themselves, but run bawling to government to implore its aid at no matter what detriment to their industrious fellow-countrymen, the working men and women of England. Landlords in the above districts have lowered rents until what remains to them barely represents, in many cases, the interest of the money expended by them on their predecessors in the erection of buildings and in other permanent improvements; tithes, as a Bishop of the Anglican communion wrote to us the other day, have fallen at least 25%. No help can be looked for from these sources. What, then, can the grain-grower and the others do? Well, they can go to work as the dairy-farmers, and as I believe their Northumberland, Westmoreland, and Cumberland brethren do. There is no other salvation for them, unless, and may Heaven forbid it, another war, like the Crimean war, disturb the peace of Europe, and, once more, runs the price of wheat and meat up the starvation level of 185. Curiously enough, just as we had written so far, the Montreal Star was dropped at our door by the boy, and in it we found the annexed extract from a speech by Mr. Goldwin Smith. Mr. Rigden was a great deal more than "half a gentleman," and Madame was as well bro't a woman as one often meets. They kept a governess for the education of their children, and if a labourer had sat down to dinner with them, we do not think he would have felt very comfortable, though they would have been quite at their ease.

"Mr. Goldwin Smith tells us that "the English farmer, as a rule, is not a man who works much with his own hands. He superintends the work of hired laborers, he is half a gentleman and his wife is half a lady. They do not eat with the laborers. No farmer could live here who did not work hard with his own hands." It is just as well to bear these facts in mind when reading the "blue ruin" articles in the Ministerial press on the sad condition of the English farmer, who, alas! has no high tariff to comfort him."

Reviews.

U S Ex Station Records

We have all practically known for many years that land well manured with farmyard dung was more retentive of moisture than land undressed with that material. It is always agreeable to find that theory confirms practice. At the California Station, samples of soil, extending to the water-table, were taken on 2 manured plots and on the intervening unmanured plot immediately after the corn-crop had been severed. The following was the result:

	Un-manured		Manured.		Difference
	Dry soil	Water	Dry soil	Water	
Surface to 2 ft.	116.39	13.11	116.39	18.10	0.99
2 feet to 4 feet	18.85	3.46	18.85	11.69	1.99
4 feet to 5 feet	106.00	18.77	106.00	17.74	0.26
Sums.....	71.3	67.55	3.85

The "water-table" represents that part of the subsoil that lies at a depth unaffected by evaporation. To lower this as far as possible is the great object of deep as distinguished from shallow drainage of heavy land.

At the Maine station, oats were sown after barley and after pease: the crop was no better in the latter than in the former case.

Happy Minnesota farmers! Their land is so rich, even after from ten to twenty successive crops of wheat without manure, that "neither nitrogen, potash, nor phosphoric acid will pay for grain-crops." In 1890, experiments were instituted to find out the cause of the falling off of the yield of grain in that State, and now the decision is that the diminished returns are due to climatic conditions, such as hot winds, hot sun, insects, foulness of land, and, as we should have expected the neglect of our favourite panacea the roller: in other words, as the report puts it, "to the too loose mechanical condition of the soil." We have no doubt that one of the chief causes of the inferior yields of the whole of this continent is, that people will not use the roller.

Here is a passage from the Minnesota report that gladdens the heart of the writer of this review:

Rape was successfully grown at the station. Shropshire sheep pastured on rape for thirty two days in the fall made a gain in live weight of 34 pounds, while the same number of sheep fed on timothy hay during the same period gained only 16 pounds.

People, then are really beginning to attend to those who, like ourselves, have been trying to show the farmers of the Northern part of this continent how valuable a crop the rape or cole-seed is for sheep. We hope the managers of this institution will publish an account of the crops that follow the sheep-fed rape. As an experiment, it was as well to try the relative effects of timothy and rape; but, if there is anything grown on the farm that should never be given to sheep, when any leguminous provision exists, it is timothy hay. Valuable it no doubt is for horses, but for cows and sheep it is an extravagant food, and the above experiment proves it.

Potato-sets, at the Louisiana station, were found to yield the greatest crop when the largest were planted, "but the economical results were different": in other words, planting large whole potatoes did not pay. The suggestion is, that when planting on a large scale, not less than two and not more than four eyes should be cut to a set.

The cost of growing sugar-beets at the Minnesota station, on weedy land, (1) was \$3.25 a ton; on clean land, \$2.09. About 20 lbs. of seed to the acre is recommended. Why 5 lbs. of mangel seed is sufficient and 20 lbs of the beet seed is required, does not appear. If the land is properly prepared and the seed deposited at a regular depth—which cannot be done on rough land—there can be no reason for using the above enormous quantity, even supposing that there are to be 3 more

plants of sugar-beets than of mangels on an acre.

Great loss seems to have been incurred in fodder corn exposed to the weather all the winter as compared with that ensiled. This, however, is not to be wondered at, seeing that "the fall was very wet and damp" at the Wisconsin station. The annexed table represents the average of the four years' experimenting on this point, and is conclusive in favour of the silo.

Average losses in ensiling and field-curing Indian corn, results of four years' work.

	In original fodder	As fed out and sampled	Difference	Loss
A.—Ensiling.	Pounds	Pounds	Pounds	Per cent
Total quantity of—				
Dry matter.....	68,031.3	67,410.7	10,233.6	15.0
Protein.....	5,490.8	4,669.5	921.3	16.8
B.—Field-curing.				
Total quantity of—				
Dry matter.....	72,163.6	64,937.6	17,226.0	23.8
Protein.....	5,706.4	4,317.5	1,388.9	24.1

Soja beans, a few which we grew in 1882, and which we mentioned at the time as being promising novelties, have been tried at the Kansas station and succeeded admirably. The only trouble here would be that they would not ripen their seed every year; but neither will sweet corn, and the quantity of seed required for one acre is so trifling, that, if the crop answers, it would pay to import the seed.

Like corn, the soja-bean should not be sown before the ground is warm, about the 21th to the 31st May in the Montreal district. The rows should be wide enough to admit the horse-hoe—say, 24 inches—and the beans may be dropped 2 inches apart in the rows. Our impression was they would shed their seed if it were allowed to ripen thoroughly before cutting; but, as the haulm is as good as pease-straw, the crop appears to be one peculiarly adapted to ensilement. Care should be taken in selecting the seed, as some kinds ripen much earlier than others.

At the Massachusetts station, under the superintendence of Prof. Goessmann, a comparison was instituted between fodder-corn and silage corn, the grain ration being the same in both cases. The fodder-corn proved to be the cheaper food. The gross cost of the daily ration was 19.15 and 20.32 cents with the silage, and 14.42 and 15.04 with the fodder-corn; the higher price in each case being where sweet corn was used.

Professor Woll, of the Wisconsin station, shows that whereas, in an experiment on corn silage and field-cured fodder corn, pound for pound of dry matter, the corn-fodder was slightly more effective, the calculated yield of milk per acre of land was in favour of silage.

The relative values of potatoes and sugar-beets as producers of butter formed an experiment of the Iowa station. The deductions made were, that the butter from the lot of cows receiving sugar beets was of better flavour and colour and kept better than the butter from the lot receiving potatoes; but the higher grades of butter cannot be made from heavy feeding of either raw sugar beets or raw potatoes.

Corn-silage beat sugar-beets at the Wisconsin station, as succulent food for in-lambd ewes. May we be allowed to say that, in our opinion clover-silage, for that purpose, would beat both? The effect of the food of breeding ewes cannot be fairly tested till the condition of the lamb and dam after the parturition of the ewe is

ascertained. A food containing a notable proportion of nitrogen is *absolutely necessary* to the health of both lamb and dam during the pregnancy of the latter. This we know from a somewhat costly experience with a flock of 270 Hampshire down ewes. Clover silage seems to have been tried at the above station, and is mentioned as "being good sheep food"—rather!—"Against it is the cost of making and the difficulty of preserving it. The cost, as compared with corn-silage, is not much higher, the corn-silage costs per ewe, per day $\frac{1}{100}$ of a cent, the clover-silage $\frac{1}{1000}$ a very trifling difference indeed.

At the same station, wethers shorn in winter (December 12th) before being put up to fatten, and wethers unshorn, were put in competition both being, of course, fed alike and kept under the same conditions as to shelter, &c. At the beginning of the experiment, Feb. 2nd, the unshorn lot weighed 302 lbs. and the shorn lot 296 lbs. The food of both lots, of three each, was the same; meadow hay, sugar-beets, and mixed grain—no pulse of any sort!—In the 11 weeks the trial lasted, the shorn lot gained 120 lbs. live weight, at a cost of 47 cents a pound, and the unshorn lot gained 127 lbs. live weight, at a cost of 41 cents a pound. Temperature of the feeding shed averaged 35° F. Of course, the difference per head is trifling enough, but it confirms one's natural idea, that sheep should not be shorn in winter in such a climate as Wisconsin.

The feeding of ewes and lambs, before the weaning of the latter, is one of the subjects that is probably as thoroughly understood in England as any subject connected with the farm. Wherever a flock of ewes with their progeny is seen feeding off turnips, clover, tares or other green meat, there will be seen what are called "lamb hurdles" pitched. These are made with a passage in each large enough to admit of the easy thoroughfare of a lamb, with smooth rollers on the top and bottom bars to prevent any injury to the wool or skin of the lamb. Hardly necessary to say that the passage is too narrow to allow a ewe to follow the young one. Beyond the fold, the lambs skip about the field, and pick here and there the freshest bits of the herbage, and more; troughs are placed, in which they find peas, oats, linseed-cake broken up small, &c., on which they soon learn to feed, and hence are derived the marvellous growth and early maturity of the *tegs*, or weaned lambs, which often weigh, at the September and October fairs, from 72 lbs. to 80 lbs., the four quarters.

This being a universal practice in England—and we are supposed to know something about our business of sheep farming there—may we not be pardoned for saying that it was hardly worth while for the Wisconsin station to "experiment" in *feeding grain to lambs before weaning them!* However, they did take that trouble, and, as might have been expected, found the practice to be a directly profitable one.

The same absence of any description of pulse in the rations given to the lambs again strikes us. Peas or cracked horse beans, pulse in some shape or another, should invariably form part of the food of all young animals. In this case, the ration for the lambs was composed of:

Corn-meal..... 1 lb.
Bran..... 1 "
Oil-meal (linseed?).... 1 "

Lot 2. The ewes received the same ration as the above, and the lambs no grain.

Lot 3. Neither ewes nor lambs re-

ceived anything but the pasture, which was of a similar character in each case. The following conclusions are drawn from the experiment:

(1) It is good management to feed the lambs before weaning them all they will eat of such grain mixtures as that used in this experiment. The lot of three lambs so fed made an excess gain over the lot receiving no grain of 25 pounds during ten weeks at a cost of 36 cents.

(2) To feed the ewes the grain mixture instead of the lambs is not likely to give as good results as feeding it to the lambs direct, though it does seem that a combination of both practices would be the best. (*Quite right*, Ed.)

(3) To make the cheapest and the greatest gain for each pound of grain consumed, the lambs should be taught to eat grain as early in life as possible. (*Quite right*, Ed.)

The result of putting American Merino ewes to Shropshire rams was highly successful at the same station. The impressive power of the *Hampshire-down ram*—a pure Down breed, or rather *race*—would still more rapidly change the form and quality of the mutton of the progeny.

Entomology.

The Cauliflower grub

Having lost a considerable number of cauliflower plants, just as they were beginning to show signs of heading, and finding at the roots of each a lot of tiny grubs, about $\frac{1}{2}$ of an inch long, we wrote to Miss Ormerod, the referee of the English R. A. S., on the subject, and that lady very kindly sent us the following reply:

The white worm is the maggot of a two-winged fly. It is distinguishable from moth caterpillars by being legless, cylindrical, pointed towards the front end, which is not furnished with a distinct head or jaws, but with hooks.

The brown bodies accompanying are the chrysalids of the fly maggots.

The turnip stem, or rather young root, sent, also accompanying, is too dry to show method of attack, but I do not think that it is open to doubt that the infestation is of the maggots of one of the kinds of "cabbage and turnip root" flies.

There are three kinds of these grey, or grey-and-black, two-winged flies. Scientifically, they are different species of *anthomya*. Popularly, the three kinds are known respectively as the root, cabbage, and radish fly; but, as they are so similar in maggot and also in fly state as to be almost indistinguishable without minute investigation, and the method of injury of the three kinds is also similar, the names are not material.

The attack of fly has been found to be very often attracted by large supply of farm manure, especially when given in a new, rank state, but this year the attack has been troublesome in various places. The maggots do great injury by boring into the roots, besides the decay which they thus cause. When full fed, the maggots for the most part appear to leave the roots, and turn to brown chrysalids in the earth, from which during summer the flies may come out in a fortnight or three weeks, so that a constant succession of attacks may be kept up through the warm weather.

The most successful plan of checking (or doing something towards checking) attacks which has been reported is a good dressing with nitrate of soda, given when it can be washed down by rain.

Lime-water has been found very serviceable in garden use, so, presumably, a dressing of hot lime, thrown on before rain, might be of use in the field.

The great preventive of attack is dressing the ground (what is to be planted presently with cabbage or sown with turnips) with gas-lime—of course, given in safe proportion, and not immediately before planting.

ELEANOR A. ORMEROD.

Torrington House, St Albans, Aug 3rd

Exhibitions.

The Smithfield Club show, 1892

Hampshire-Downs.—The best judges of sheep declare that the pens of Hampshire-down lambs at the Smithfield Club show, held at Islington in December last, were about the best ever exhibited. The heaviest pen, of three, weighed 764 lbs., equal to 551 lbs. each. This lot only took the fourth prize, as their symmetry was not as perfect as some others. The whole class of 13 pens was highly commended throughout, and constituted the most important feature of this division of the show. They were principally from the flocks of Sir E. Hulse, Bart, W. Newton, T. F. Buxton, L. H. Baxendale, and Lord Howe.

The pretty little *southdowns*, of which there were 30 pens shown, were, as usual, hard to beat. Sir F. Montefiore's pen of wethers, about 20 months old, took the first prize, as well as the breed-crop and champion-plate for short-wools. This pen weighed 686 lbs., i. e. 70 lbs. less than the heaviest pen of Hampshire down lambs.

It is surprising that only two flock-masters exhibited in the Shropshire classes! Probably the reason is that so great a demand for these sheep as breeders makes it a non-paying affair to keep back ewes and make wethers for fattening. The heaviest pen of old (20 months, about) wethers weighed 733 lbs., about 30 lbs. less than the Hampshire down lambs. The best pen of Shropshire lambs only weighed 463 lbs., just 200 lbs. less than our favorites.

Lincoln ewes, always the heaviest sheep in the show, this year are said to have been very grand looking sheep indeed, the first prize pen scaling 1080 lbs., but the best lamb pen only weighed 592 lbs.

Cotswold lambs, as usual at this show, were very good indeed, running the Hampshire downs very near. The best pen weighed 723 lbs. But, a pound of Cotswold mutton would not fetch within a penny a pound, in London, of the price of a Hampshire down. Still, the flock-masters of our own county deserve great credit for the marvellous development of this breed of sheep. If we must breed long-wools here in Canada, the Cotswold is the sheep, and Mr Swanwick, of the Collegis-farm, Cirencester, Gloucestershire, or Mr Hulbert, of North Cerney, both on the what was called in Shakespeare's time "Cotsale," are the men to apply to for true bred ones.

The most remarkable animal in the cattle-classes was a 20 months old Polled-Angus heifer. This wonderful creature weighed 1474 lbs. live-weight, and would probably yield 900 lbs. of ca. case! No wonder the judges thought her worthy of the first-prize and the championship of her class.

The 100 guinea plate for the best beasts in the yards was decreed to Sir John Swinburne's Galloway-short-horn cross. The days of prizes for fat beast over 3 years old, at the Smithfield Club show are evidently num-

bered. Young cattle and young sheep will in future supply the English markets. The young Devon steers weighed on an average at this show 1,060 lbs. at 22 months; Herefords, at the same age, 1172 lbs., and the young Short-horns and cross breeds, 1284 lbs. If beasts can be brought to these weights at under two years old, we believe that, even in England, fattening cattle cannot be absolutely an unprofitable business. For, we must consider that if beef and mutton are cheaper now than they used to be, grain, cake, and linseed are cheaper too, and if feeding young beasts and young sheep for the butcher does not pay, feeding four year old cattle and sheep—old ewes and rams—will certainly not prove remunerative. Here, we cannot all make butter or cheese; beef and mutton must be fattened by some of us; throwing up the sponge because of the ranches of the North West will not help us; but, if we once consider that the farm cannot be carried on without live-stock, and that it will not pay to knock our calves on the head as we used to do, we shall come to the conclusion that whatever cattle we breed, to make them pay, they must be well-bred, well-fed, and carefully slaughtered.

But there is one thing that we should do our best to get altered. Even here, in Montreal, all kinds of beasts, all kinds of sheep, seem to retail at the same prices. We have often insisted on this point in domestic economy, that a good buyer should discriminate between the price he is willing to pay for a sirloin from a well-bred, well-fed bullock, and the same joint from a worn-out, country-bred cow. The butchers make plenty of difference when they go marketing. Only last week, good beasts, fit for Xmas, sold as high as \$5.00 a hundred pounds, while poor cows and heifers went as low as \$2.00. And the West-End butchers are charging 15 cents a pound for sirloins and round-steaks! As far as we can judge from personal observation, not one woman out of ten who go to our meat-markets knows the difference between a joint from a young, well fed beast, and the same piece from an old, stale cow that has been suddenly fattened up at the close of her lactation. And yet one is profitable, because the whole of the meat on it can be eaten, while a good deal of the meat of the other will be rejected on account of its toughness, it being largely composed of sinew and horniness, particularly along the upper cut of the sirloin. Besides, in all beasts that have been half-starved all their lives until a few weeks before being slaughtered, what fat they do carry is mostly put on the exterior parts, and unless the lean is what is called "marbled," that is unless the interstices between the tissues are filled up with fat, the whole will be tasteless, wanting in sapidity, and almost impossible of mastication. It seems almost a paradox, but it is perfectly true, that a beast may be very fat and yet be very badly fattened. Such is almost invariably the case with those great coarse brutes of working oxen, that have lived on what they could pick up in the bush, until they are taken up a few weeks before being sent to market. Butchers, who slaughter their own beasts like them, because they carry a lot of internal fat and their hides weigh well, both of which points tell well for their "fifth quarter"; but when a joint, or a steak, from one of these animals comes to table, the line of horny matter along the back and the almost impossible toughness of the flank, render the eater's task a penalty instead of a gratification.

Correspondence.

Preservation of Potatoes—Remedy against their rotting

SIR,

At present, the potatoes are rotting terribly. Do you know of any means of stopping the rot, either before or after their being put into the cellar?

A friend told me lately that, once, seeing all his potatoes attacked, and fearing that he could not keep them for seed, he had cut them into sets, dried them thoroughly during the winter, and that, in the following May and June, he planted them, and that all these dried sets grow. His crop, that year, was as good as if the sets had been in their natural condition. This I can hardly believe; but the experiment ought to be tried. If you can give me any information on this point, I should be glad to relate it to our farmers' club, of which I am the president. A. E. G., Témiscamingue.

REPLY.—Sir,—Pack your potatoes in newly slaked lime, so that each potato may be completely surrounded by it.

The partly spoilt potatoes may be cut into sets as an experiment, and preserved in lime as above. E. A. B.

(From the French)

Thoroughpins and Bog-spavins.

What do you think of the following treatment?

Operation for the removal of bog spavins.—The four feet of the horse are bound together, he is cast, and laid on litter. The interior (*evidement*) of the hock is then carefully shaven, care being taken to cut off all the hair, not only of the part affected, but also off the entire skin for some distance all round it.

This having been done a cross cut is to be made on the bog-spavin, and the sides of this artificial wound are to be raised carefully, so as to allow the matter contained to escape. This matter is yellowish in colour, and mixed with a little blood.

When the tumour has vanished, the incision is to be rubbed with mutton-suet, mixed with a pinch or two of resin from the fir tree. Then the wound is to be cauterised with a round iron at a white heat; in this way, the resin, in melting, combines with the suet, and with it spreads over the cavities.

The iron must be round, to prevent the tissues with which it comes in contact being torn.

The horse is then to be placed on his feet, but he must be so tied up that he cannot gnaw or scratch the wounded parts, which are to be covered with a piece of a sheep's gall-bladder kept in place by a linen bandage. This is to be kept in until maggots attack the place, which generally happens in four or five days; after this the maggots are allowed to feed on all the clotted matter in the wound. They should be left at peace until it is certain they have got rid of all the synovial matter that was in the tumour and that the organic tissues that were injured by it have reverted to their natural condition: five or six days are usually sufficient to insure this. Then the wound is rubbed with tar, and the horse is pronounced cured.

The operation for bog-spavin should be carried out in cool weather, to avoid risk of gangrene, which might be fatal.

If the disease is that of the *thoroughpin* (*ressignons cherilles*) both sides of the hock are to be operated upon.

The Arabs think the horse ought to be kept on his legs during the operation, so that the matter may the more easily escape, without any risk of its entering inwards, which might happen if the horse were cast.

The above is from General Dumas' book: *The horses of the Saharas. Is ressignon* alone in English, bog spavin and *cherille* thoroughpin?

Could you answer the above in the next number of the *Journal d'Agriculture* provided the question may be admitted into the "questions and answers" of that publication?

I should be glad to know if you have ever tried this mode of cure barring of course the *sheep's gall* and the *maggots*—and if it succeeded, that is if the horse being a racer a hunter, or a hack the bog spavin or thoroughpin did not recur when the horse, supposing it was a racer, was put into hard training, or into the more moderate work of a hunter.

C. F. BOUTHILLIER.

Reply.—The only part of the above treatment that is rational, is the firing and the syringing (*junction*). The rest is at least *absurd*, if it be not dangerous, on account of the wound coming in contact with animal matter that is about to become decomposed.

There is something like the above treatment now used for these *ressignons* (as the English call them, *Bog-spavins* or *thoroughpins* :

The animal is cast, the *ressignon* is syringed with a sucking syringe, (to prevent air entering the wound) and either tincture of iodine, or of a solution of iodicine (?) or a weak solution of corrosive sublimate, is to be injected. Internal inflammation soon appears, which is kept within bounds by ice, &c., and at the end of two months the *ressignon* has generally vanished: *At least, if it has not become hard*, which is worse than the previous state.

I would not try the Arab treatment on any account.

J. A. COUTURE.

(From the French)

Central Experimental Farm,
Department of Agriculture,
(Copy) Ottawa, 30th Jan., 1893.

G. A. GIGALT, Esq.,
Assist. Commissioner of
Agriculture, Quebec.

Dear Mr. Gigault,

I returned to Ottawa on Thursday afternoon, leaving Quebec on the 10.30 P.M. train, not much the worse for my journey although somewhat tired.

When you wrote to me on the 18th of October last propounding a series of questions, I replied to you stating that I would answer this document as soon as I could get the time to consider the questions you refer to. I will now do the best I can to reply to your questions.

1. "What kinds of grain, oats, peas potatoes would you recommend the farmers of Quebec to sow this spring?" Of oats: Banner, Prize Cluster, Egyptian, Roseale; Peas: Multiplier, Mummy, Centennial and Crown; Potatoes: Lee's Favorite, Daisy, Sunrise, Early Ohio, Rural Blush and White Star. Besides these there is a large number of other sorts almost equally good in our experience.

2. "What kinds are most recommendable, not only on account of the yield, but also on account of their nutritive qualities?" The varieties named are among the largest croppers and are quite equal in nutritive properties to any other sorts.

3. "What kinds of fruit-trees would you recommend them to plant?"

After listening to the admirable papers presented at your meeting on Wednesday night by Mr. Dupuis and Mr. Shepherd, I think you have far more reliable information in these papers than I can give you from our experiments here, as they give the results of actual tests in the province of Quebec. This reply will also cover your 4th question on "what kinds of small fruits should they grow?"

With regard to questions 5, 6, 7 and 8, in reference to the question of canning, drying or evaporating fruits, on this subject I have had no experience. There are some very good canning establishments at Aylmer and Hamilton, Ont., but I do not know how the institutions are paying. I have no doubt if you were to inquire from Mr. L. Woolverton; Editor of the *Canadian Horticulturist* at Grimsby, Ont., he would be able to give you all the information you desire on this point, as he lives in the midst of the fruit industry of the Niagara Peninsula.

9. "Can agricultural societies and clubs buy from you some of those grains, oats, peas, potatoes, etc., and at what price?" I would say that our stock at the Experimental Farm is never quite sufficient to meet the requirements of those who apply for 3 lb. samples of those different grains, so that all we have is used up in this way, and we do not have any which we could sell by the bushel. I think it would be well if your Agricultural Societies when offering prizes for the best grain, would also purchase this grain and distribute it for seed, as such well grown samples in your own Province would be thoroughly acclimated and perhaps more useful than seed sent from other Provinces or countries. I do not think that the information I am able to communicate to you in reply to these questions is of sufficient value to make it worth while publishing in Bulletin form. It is intended merely as a guide to yourself in reaching conclusions on these points.

Yours very truly,
(Signed) Wm. SAUNDERS,
Director.

P. S.—I shall be glad at any time to give you any further information at my command. I shall shortly be able to send you some particulars as to the fruit trees we promised to supply you with.

(True copy.)

Quebec, Dec. 29th, 1892.

Dear Sir,

I happened to glance over a little book to day "La culture du blé," by M. Bernard Lippens, in which, at page 20, he says:

"Is it absolutely essential to change the seed from time to time? Is it true that any kind of wheat, grown on the same farm, loses strength every year, and that this enervation exists in the very essence of the plant? Many people believe this to be the case, but they are greatly deceived."

A little further, I read: "M. de Dombasle grow the same wheat during 20 years: it was finer the twentieth year than the first."

I also see in the "Report of the Special Committee on the Agriculture of Canada 1884," at page 13; in the evidence given by Mr. Brown of the Ontario Agricultural College:

"The fine old varieties, *Soule* and *Fife*, we have lost; not, however, because they were not suited to our soil and climate, but simply because, like every other plant grown in the same soil during a certain period, they required a change of seed. We have not allowed

them to revive their original fecundity by a change of soil and climate, which is the sole means of giving renewed health and vitality to all vegetation. Hence arise disappointment and serious losses, which too often are assigned to other causes."

Now, if M. Lippens had said that the same variety of wheat could be cultivated in the Province, in a county, or perhaps in a parish, and would retain its productiveness, it would have seemed to me that it was a correct statement; but to hear that a man can cultivate the same wheat on the same farm, which generally contains but one kind of soil (loam, or sand, or alluvium, etc.,) for a great number of years, seems queer.

And, the mention M. Lippens makes of M. Dombasle cultivating wheat for twenty years on the same land is by no means a good proof of what he (M. Lippens) says. M. Dombasle was no ordinary farmer; and besides, the land in which he sowed his wheat was perhaps not wheat soil when he commenced his experiments, and, by means of proper fertilisers, it became at the end of twenty years a soil that could produce perhaps three times more than the first year. I should like to know your opinion on the subject, as it is one of great importance to farmers who generally neglect this important (I think) yes, very important point.

I hope you will not think it too bad of me that I have sown a great many *ands, thats*, and *perhaps* in this too long epistle from.—

One of your Quebec readers.

Answer.—A considerable experience in the cultivation of wheat leads us to feel confident that a change of seed is absolutely necessary. In fact, we never heard its necessity doubted before. On the second rate soils of Kent, England, the finest Chidham wheat, a superb, almost translucent white kind, a great favorite with biscuit-bakers, degenerates into a wheat, almost as brown as the Lammas-red, or the Spalding, unless the seed is changed at least every third rotation. The change is usually sought for from the chalk-soils. Ed.

The Agricultural Societies.

We beg to draw the attention of our readers to the following article from our correspondent, *Agricole*; it will be found to be a very elaborate enquiry into a subject of the highest interest.

The *Courrier de St-Hyacinthe* has just published a '*communiqué*' on the Agricultural Societies. Very well expressed otherwise, this letter asserts that it is intended to abolish these societies and to replace them by Farmer's Clubs. The writer deceives himself, if he think that in the eloquent work lately omitted by M. Gigault, he can discover the condemnation to death of the Agricultural Societies in general. The farming public admits the usefulness of many of these societies which are well managed, but into most of the county-societies abuses have crept, the most outrageous of which at least must be extirpated, and means must be taken to insure that the farmers who dwell far from the centres in which these societies operate, be not deprived, as they now are, of the encouragement granted by the law, not only to some privileged places in each county, but to every part of the province.

Let us, first of all, see what should be the aim of the agricultural societies according to the laws that sanction their existence.

Clause 1646 of the Revised Statutes says, in substance: the aim of the county Agricultural Societies is to encourage the improvement of farming,

of horticulture, of forestry, of mechanics, etc. 1. By the holding of meetings for discussion, and by listening to lectures on subjects connected with the theory and practice of a perfected system of farming; 2. By encouraging the circulation of agricultural papers; 3. By offering prizes for essays on practical and theoretical agriculture; 4. By the purchase of breeding stock of fine breeds, new varieties of plants and seeds, and seed-grain of the best kinds; 5. By organising ploughing matches, competitions of the best standing crops and for the best cultivated farms, and 6. By holding exhibitions.

Now, it will be easily admitted that our societies in general seem to have no other aim but to hold exhibitions. Generally speaking, these shows have but little interest except for a few farmers who live near the selected place. Those who live far off, can neither take their stock nor their produce there, especially in autumn when the roads are bad, without running the risk of losing more than they can possibly gain.

As for lectures and discussions, farm-libraries and other means of instructing farmers in their business, most of the societies, as at present constituted, have never paid attention to them. Now, the main object of the law is, essentially, to instruct farmers in such a manner as to make their farming pay better. Wherefore, that which the friends of agricultural progress wish for, as to the future, is that the men of good sense among our farmers should manage to meet together, in their respective localities in order to ascertain by combined research what is to be done to ensure the improvement of agriculture. To arrive at this, the action of the agricultural societies must reach every part of the province. Now, it has been proved by public documents that, out of the 750 parishes of the province, 222 do not reckon one member of the agricultural societies, and 200 more reckon only an insignificant number. Therefore, it is clear that the greater number of our parishes are at present practically excluded from the advantages that the law offers to the entire province.

Is it right that such a state of things should continue? Cannot means be discovered to reconcile all these interests, and, at the same time, to arrange that the grants from government in favour of agricultural societies may, in future, bear fruits of general usefulness?

To prove the efficaciousness of the suggested remedy, I will bring forward one example alone, taken from among a good many agricultural societies that, only during the last three or four years, have been re-organised by means of parish farmers' clubs:

The county of Terrebonne is about 90 miles long at its greatest length. The parishes of Ste-Anne des Plaines, Terrebonne, Ste-Thérèse, St-Jérôme, St-Jacques and St-Sophie, are placed in the valley of the St. Lawrence, and are for the most part very rich. Now, in the last few years, there was only one county society, which had hardly 60 members, who belonged to, at most, only three parishes. The eight parishes situated among the mountains that form the rest of the county, had then never had a single member of the society. They then organised themselves, by permission of the Council of Agriculture, into a district society, known as society No. 2 of the same county. Each of these parishes has its club; the president of the club is the director of the agricultural society for his parish, and the different presidents meet together to arrange

the programme of operations of the society.

Every year there are two general meetings of the members of the society, at which the general interests of the society are studied. There is high mass at the summer meeting, an *occasional* sermon, and, in the afternoon, a meeting of the clubs. The curés of the different parishes all give their aid to the clubs, and make a point of being personally present at the meeting. This society has about 100 members this year, and the good it has done is really remarkable. Each club purchases one or more high class breeding animals, sends for and sows improved seed from the Ottawa farm, buys, in combination, the best grass-seeds, &c., and encourages the manufacture of the choicest butter, cheese, &c.

I have brought forward Terrebonne; I might equally bring forward the society of Lake St. John, that of Lake Nominougue, in the north of Ottawa county, and others that are conducted in accordance with the principles of the "Union of the Clubs."

I ask myself: Why cannot such fine results be secured in other counties of the province?

I trust that the question of the re-organisation of the societies of agriculture by means of the parish clubs, or of "Farmers' clubs" in the places inhabited by English-speaking men, will be speedily and deeply considered by all the friends of agriculture in this province. AGRICOLA

Colonisation.

We borrow the following passage from the report of a delegate sent to view the county round Lake St. John.

From St. Félicien, we had still 5 leagues to travel, through Africa, that is through a blue-berry "patch" (*plie*), where, I am told, 3 000 dollars' worth of this fruit has been gathered, then we reached Mr. Trottier's at Normandin. Here, I saw the finest possible panorama: the country is so level, that from one end of the hundred miles forming three parishes, Normandin, Tikouapé, and Albanel, were the powers of vision strong enough, one could distinguish a man at the other end of the last of these parishes. Here for four years has resided Mr. Trottier with his five well grown lads. He owns 700 acres, nearly the half of which is under cultivation. The soil is of the first class; the upper layer 15 inches deep; a kind of black earth, and below this a clay that enriches the top-soil, so that it may be cropped for 20 years without manure. (Don't trust to this but preserve your manure carefully. (E. A. B.)

The first range alongside Normandin was settled by 70 farmers, all of whom have land like that I have just described. All have good buildings, houses, barns, and cowhouses. I saw the grain harvested by some of them and found it excellent. I saw sheaves of wheat five feet high, with first class grain; the pease were incomparable and boiled splendidly; oats, buckwheat, and potatoes yielded abundantly. I helped to carry some superb oats on a "burning" of last winter. I saw a very fine farm, eight years from clearing, and the property of M. Dupuis, of Quebec; I was told he had refused last year, \$4,600 dollars for it!

Here, too, is a cheesery managed by M. Trottier. It receives plenty of milk. M. Trottier himself keeps 15 milch-cows, and he informed me that many of the farmers would, from the present time to four months hence, draw \$100.00 each from this factory.

The next day, we went to Tikouapé and Albanel. Everywhere we found the same fertile, level black earth.

Only one thing is needed by the three parishes: a market for their grain. Government ought to make up its mind to aid the extension of the railroad, if not so far as Normandin, at least as far as St. Félicien. This, if promises are to be believed, will be done shortly. The extension of the line would save the three parishes from 5 to 6 leagues of driving, and would greatly aid their development. I returned to Quebec enchanted with my trip, and I cannot do better than advise all those who are inclined to devote themselves to farming to direct their steps towards the three parishes I have mentioned.

I conclude by thanking Mr. Scott for his kindness, and M. Trottier for his hospitality. The whole humbly submitted.

ELIZAR DEMERS.

(From the French.)

Colonisation aided by the Dairy-industry.

A maker of cheese has shown us certain lands on Lake St. John which, though covered with standing timber, are of excellent quality. He proposes to get up a company to clear these lands and establish as soon as possible dairies with cheeseries and creameries attached. After visiting the spot in company with several good judges, we give our opinion of the project as follows, of course pre-supposing that the management be intelligent, active, and perfectly honest:

1. Leaving aside, for the present, the highly interesting questions of social economy which belong to the rational settlement of our uncultivated lands, your plan of settling them by means of capitalists, men of business, utilising the facilities of communication offered by a railroad and the steam boats that complete it, and enable the future settlers to enter into the very interior of this fine settlement; your plan, I say, ought to afford sure and important profits, provided the management of your affairs be well conducted;

2. Seeing, that the site you have selected as the future centre of the settlement is of the first class; that intelligent settlers have been obtaining crops there for the last three years that would appear fabulous to those who do not know what new land well farmed can produce;

3. Seeing, the advantage that the dairy-industry offers by furnishing at once the best of markets for all future crops.

4. Seeing, especially, the fact that the public lands are being sold at the above spot for 20 cts an acre, and that after five years of good farming, of clearing, of *stumping*, easily conducted, which follow a good system of pasturage after *grubbing* (*piochage*), the lands will have acquired a considerable commercial value.

After all these considerations, I do not hesitate to affirm that each arpent of land cleared under such conditions by intelligent, active and competent men, will yield, on an average, a profit considerably exceeding all the expense of exploitation. And more; that seeing the facility of access, and the market opened by the dairy-industry that you propose to institute, these very lands, costing now 20 cts an acre, will be worth, in five years, \$25.00 for every cleared arpent, and from \$10.00 to \$15.00 an arpent for those remaining uncleared. Thus, in your proposal, there is a promise of profits more considerable and more sure than in the greater part of trade enterprises or of the

most seductive manufacturing establishments.

As the question is a very serious matter for those who embark their funds in it, and as my manner of regarding this affair may be naturally considered doubtful by some, I ought to inform you that I began my farming practice and the studies belonging to it, in 1856; that is, I have had 36 years of experience; that I, during the first twelve years, settled on a new-land farm at St. Maurice, of the same sort of land as that we visited last Sunday, but of much poorer quality, that the duties of my office for the last 22 years have obliged me to make a special study of the ruinous style of colonisation followed up to the present times and to seek to remedy the evils that lead to the depopulation of, especially, our new settlements.

This remedy I have shown in several official reports. It lies entirely in systematic settlement, by parishes, as much as possible, by means of facilities of intercommunication, which shall dispose with profit of all the goods produced by the settlers, and will enable them to invest their funds with safety provided the management be sound, persistent, and experienced.

By this system, families will be grouped together, and will be able to assist one another from the beginning. They will be the sooner able to obtain the aid of the clergy and of professional men when urgent cases occur. The crops of an average season will bring in sufficient means to continue the clearing without fresh capital being required. The land will acquire an assured value from year to year, which will leave a considerable balance of profit on the capital employed.

I shall be happy to aid in the serious discussion of each of the preceding statements. I believe them to be accurate, and I hope to be able to offer, if an opportunity occurs, evident proof of their correctness.

E. A. B.

(From the French.)

The Northern Districts of Lake St. John

AN ADMIRABLE FIELD FOR COLONISATION.

In October last, thanks to the kindness of Mr. B. A. Scott, we had the pleasure of crossing Lake St. John, and of visiting some of those fine farms situated by steam boat—about 1½ hour from the terminus of the railroad at Roberval.

In order that our readers might be better informed as to the value of the land in these regions, we requested M. Boileau, Registrar of the Department of Agriculture and Colonisation, to inspect as thoroughly as possible the territory fit for colonisation, and we present to them the very interesting report he sent us:

May it not be said that Lake St. John is an interior sea, and that the title of *fleuve* is due to each of the numerous streams that flow into it from all sides? (1)

This vast mirror-like expanse almost semi-circular in form, its lovely banks, the fertile plains that surround it, the relative mildness of its climate, in a word, the entirety of this magnificent region, will never fail to strike the astonished traveler as a marvel, a generous gift of Nature.

To reach it, you must, it is true, traverse a rude, broken country, rough and wild, which remains in its primitive wildness in spite of the presence and

(1) *Fleuve* is untranslatable: a river that runs its own course into the sea. The St. Lawrence is a *fleuve*, the Ottawa, a *rivière*. Ed.

efforts of man. But, once arrived at Lake St. John, nothing wild, even in the solitary depths of the bush, appears; the aspect, always sweet, smiling and serene, of this singular country bears the signs of being predestinated for a happy lot.

The Canadian parishes are already more or less developed towards the south, the east, and the west of the little land locked ocean; the north, north-east, and the north-west await the colonist. This latter part is by far the finest, the land is better and more open.

The circumference of the lake would be a pretty regular circle, were it not for a great indentation towards the north-west, a sort of gulf, which, from Pointe Bleue, on one side, to Pointe à Lavanne, on the other, thrusting itself deeply and then curving lightly into the land, goes to meet the three majestic Ottawas that carry into it the waters of the north: the Chamouchouane, flowing from the north-west, the Mistassini from the north, and the Peribonka, from the north-east. It is at the mouth of the last that lies the land you asked me to explore.

II

At a few leagues from its mouth the course of the Peribonka, making a half-turn to the right, no longer directs itself, after leaving this bend, in any other direction but from east to west, running almost parallel to the north bank of the lake, so as to form a lovely peninsula, about 16 to 17 miles long, and, in breadth, from an arpent at its lower extremity, to 6 or 7 miles, at the other end. This peninsula now constitutes the *Canton Taillon*.

Then, at its very mouth, the Peribonka receives the waters of a lesser stream to which it gives its own name, it is called the little Peribonka. And as this younger branch flows also from the north, but in a straight course, it concurs, by its junction with its elder sister, in forming, in enclosing another piece of land, a more or less regular square, which it bounds on the west, while the right bank of the greater Peribonka bounds it on the east and the south. At this spot, opposite Taillon on the other bank, is the *canton Dalmas*, ten miles long by nine broad, the finest *canton* not only of the counties of Chicoutimi and Lake St. John, but of the whole province. Were it not for the forest with which it is covered, the eye, at a glance, could embrace its entire surface, so level and unbroken is its appearance. The richness of its mould cannot be exceeded; it is inexhaustible; here, a yellow clay, there, a loam; there, stronger soil, rarely sandy, but always friable and granular, fat and unctuous, easily kneaded into a lump by the hand. The arable soil every where rests, immediately or otherwise, on an unfathomable deposit of either blue clay or of clay-marl. All along the Greater Peribonka, the banks, usually 15 to 20 feet high, show this blue clay, this marl, whose sedimentary superposed layers sink into the water, and under the sandy shallows that cover the bed of the river.

With the same subsoil, the plough surface is of still finer quality on the banks of the little Peribonka, whose shores, though in some places low enough to be covered by the spring freshets, after the waters have fallen, yield abundant crops of an excellent wild-hay, much to be appreciated by the cattle of the future colonist.

La Morot, an affluent of the Little Peribonka, flows out of, as nearly out of, the division-line of the 2nd and 3rd range, after having cut aslant the 3rd, 4th, 5th, etc., ranges of this *canton*, which it completely drains, thanks to its forks, its arms, and its brooks,

which are almost infinite in number, and whose net work extends in all directions. It never floods. Its bed is a layer of stiff clay that the current has polished like a mirror, and whose sides crowned with a thick bed of loam mixed with alluvial detritus and humus rise from 5 to 10 or even 15 feet above the river. Nothing more lovely than the vegetation that covers them can be seen.

Our canoe managed to ascend this little river for about 3 miles, and then penetrated into the very heart of the *canton*. Here, are the trees we saw from afar: great, lofty white birch, black birch, elms, ash, spruce, fir, a few pines, cypress, etc. The under-wood is often impenetrable: trees, wild-cherries and gooseberries, sumacs, horn-beam (*aloué*), oak, wood-dwarf, box, perennially green, wild-hops, etc., a shrubbery of bushes. In the midst of all this grows the wild-hay.

Beside the *Morot* and its family of hydraulic collectors, little streams that assist in the drainage of Dalmas, it happens that this *canton* is so well drained that, in spite of its level surface, very few marshes or wet lands are met with, such as occupy the interior of the other *cantons* of the same region, that are almost as highly favoured as to their soil: as level as Dalmas, but not provided with as many natural conduits. The only two marshes of Dalmas extend, one towards lots 42 and 43 of the II^d range, the other, on lots or part of lots 7, 8, 9 and 16 of the VIIth range. They can be easily drained. Their soil consists of a couch of black earth over pretty strong soil resting on the immense bank of clay already mentioned.

In the IVth range, not far from the *Morot* between lots 26 and 33, extends a beaver-meadow, nearly 2 miles square, in which wild-hay as high as the shoulder is mown by armsful.

The Vth, VIth, VIIth and IXth ranges are probably those which will please the settler most. His plough will work there easily in a deep loamy soil, without meeting any impediments, and there is not a stone; not even the tiniest one.

Almost as much may be said of the other parts of this *canton*. The only rocks that there are in Dalmas, are met with in the south-east angle of the township, at the spot where the Great Peribonka, six miles from its mouth and navigable up to that point, crosses the last falls. The parts of the lots that enclose this angle are naturally sandy.

Four miles below the falls, the shores (*coûtes*) that are higher here, display another sandy spot, of slight extent, occupying a width of six or seven lots, behind which is situated the small marsh of the second range. Between the bed of sand and the great couch of clay on which it rests, burst forth tiny subterranean streams that can have their source in no other place than the marsh. Pray do not fancy that these two sandy lots in a sea of loamy soil are sterile. They are just as fit for cropping as the same kind of soil, which in this province often composes whole parishes. Are not the Belgian farms, so fertile because they are so well cultivated, in great part composed of sand, too?

So the *canton* of Dalmas comprises nearly 600 lots, all low-lying without exception, and nineteen-twentieths of them are of superior quality—extra good.

III.

As you are aware, only three of these lots are occupied by resident settlers. These are: in the south-west corner of the township, on the banks of the Peribonka, and near the mouth

of the Little Peribonka and not far from the side of the lake, lots 9 and 10 occupied by Mr. B. A. Scott's farmer, and lot 11, the residence of the enterprising M. Milot.

On the Scott farm, this season, the third of an arpent yielded 300 bushels of potatoes, all big ones, too! (1063 bushels, - 28 tons to the acre!!!) Last October, while the crop was being got in, Mr. Beemer went to see the farm, and when he saw this monstrous crop of tubers filling the drills, he fancied they were trying to play a trick on him. In order to convince him, and to prove that they had not previously poured pailsful of potatoes into a few drills, they were obliged to open other parts of the piece that were as yet undug, and make him prove for his own satisfaction how wonderful the fertility of the soil was.

Every crop sown by MM. Scott and Milot grew and ripened as in "the promised land", wheat, oats, and barley, maize, beans, beets, melons, cucumbers, &c. As for hay the north shore of Lake St. John may be said to be its mother country.

IV.

THE CLIMATE.—You saw yourself dear Mr. Barnard, that on 17th October last, cucumbers in the open air, at Mr. Milot's were still green. You are also aware that wheat and maize mature well all round the Lake.

After the 26th of that month, I, in my turn, observed there long stalks of clover, with the sap still fresh in them, and which Mr. Scott might have mown for a second crop. During the same week, I passed several nights in the bush, sleeping in the open air, and suffered no inconvenience from the exposure, though the season was so far advanced. My couch was composed of a few armsful of soft wild-hay, which had not been turned yellow by the frost.

Besides, it is now a recognised fact that the farmers' position is more secure in the temperature of Lake St. John than in that of Quebec or Three Rivers. Earnest observers have already likened it to the temperature of Montreal. That fearful N.-E. wind, the dire enemy of the banks of the St. Lawrence, is hardly ever felt here, and when it does blow, it is as soothing as an anodyne; there are no chilly granite rocks to attract the hoar-frost; the softening influence of the great lake, which is shallow and easily warmed, prolongs the season of autumn, and converts it into a kind of spring. Added to this, the country is only about 30 feet above tide-water, just the same as the citadel of Quebec.

V.

Canton Taillon—Opposite Dalmas, between the left bank of the Peribonka and the north-bank of the lake, nature has extended a township to which man has assigned the named of Taillon: a long peninsula running from east to west. Every spring, the lower part is overflowed, only about 400 arpents being exempt out of 3,000 or 4,000 acres. (1) which smaller tract then becomes a temporary island. The waters having subsided, part of these low lands become natural meadows, especially by the side of the lake. One of these I traversed that measured at least a thousand arpents. The bottom soil is a clay-loam of strong character. Beyond this point and the shore, the rest of the township is not subject to inundations, and contains land that need hardly fear comparison with that of Dalmas. The lots bordering on the river are even better than the corresponding ones on the other bank.

(1) Arpents and acres are not synonymous. 11 acres make 13 arpents, nearly. Ed

and they are situated at a less elevation. The banks of the lake seemed to me much inferior, the surface being light there, the timber feeble in growth, and the bed of sand which covers this clay perhaps rather too deep. The interior, thanks to the absolute level of this spot not being conveniently drainable, has on it neither timber nor hay, and looks like what the Russian call a "steppe," the people of Lake St. John call it the savanne, i. e., marsh. It is a large space covered with a soft, thick carpet of rudimentary plants, cryptogams, probably of the family of the *lycopodium*, actually hiding the soil, in which the foot sinks and gets so soaked, that it seems as if one were walking over sponges full of cool water. Its subsoil is sandy and firm. This, so called, marsh is at most two miles long, and full of scattered shrubberies that the people call *oasis*. The drainage of this marsh could be done easily and cheaply. But when done, would it pay the farmer? I cannot say.

After leaving the point where this sort of tundra ends towards the east, the land rises, becomes more rolling, and is well drained. There, begins the most important part of the township, which widening more and more, encloses in itself alone the assured future of two parishes; the one facing towards the Peribonka, the other towards the lake. No pioneer has yet settled on the former. The latter, under the name of St-Henri de Peribonka, is already inhabited by from 20 to 25 families which have been there for three or four years, on a space three miles long, and in the vicinity of the lake, from the river *la Pipe* as far as the river *les Cochons*.

The houses are full of children; a school board has just been established. Not far from the river *la Pipe*, a chapel has been erected, on lot 14 of the range, where the people go to mass and sermon twice a month. A new road unites the young settlement, to the establishments of the Saguenay and to Chicoutimi, as well as to Hébertville and Chambord, stations on the railroad. This road, which leaves the township of Déglise and abuts on the river *aux Cochons*, only goes three miles through Taillon, and is still the only road that this neglected township possesses in the world.

The land is strong and marvellously productive. Last August, a settler was showing me his splendid wheat-crop. To him I remarked: "In your country, not satisfied with ploughing the land badly, you do not even take the trouble to harrow it." I could have sworn the piece had never been harrowed. But it had been, and with a harrow with wooden teeth! Fancy: a wooden toothed harrow on strong clay-soil! But wherein served argument with my host, who had his reply ready? "Find, if you can, a finer crop of wheat in the whole province."

II

To conclude this short description of the district visited by me, I must be allowed to add that the township, of Dalmas, Taillon, as well as Dolbeau and Racine, west of the little Peribonka, are only a part of an immense plain that extends, till the eye can carry it no further, to the north of Lake St. John. It is supposed to be at least equal in area to the counties of Richelieu, Yamaska, Verchères, Bagot, St. Hyacinthe, Rouville, St. Jean, Napierreville, and Laprairie, collectively. Its surface is as level, and the soil equally fertile.

It remains for me to tell you about the great dairy in connection with the settlement of this district.

Yours, F. X. BOILEAU.
(From the French.)

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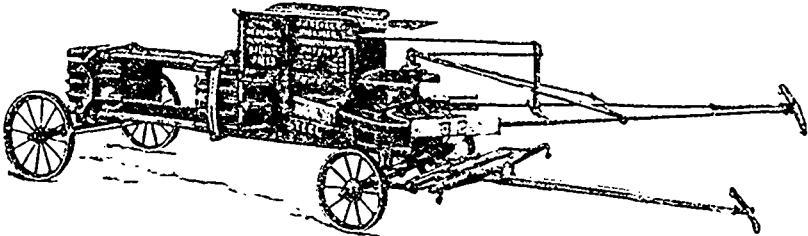
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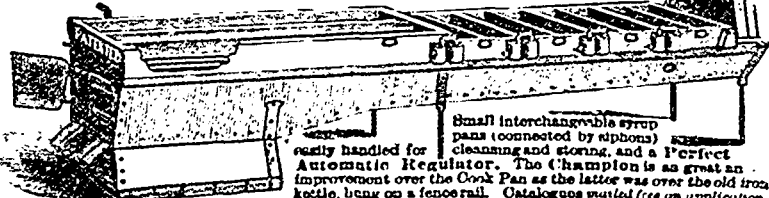
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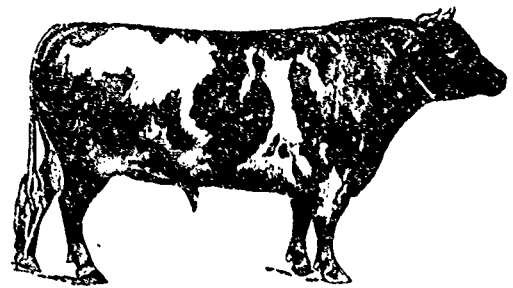
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 the public."

Z. LAROCHE, M. D.
Montreal, March 27th 1889.

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