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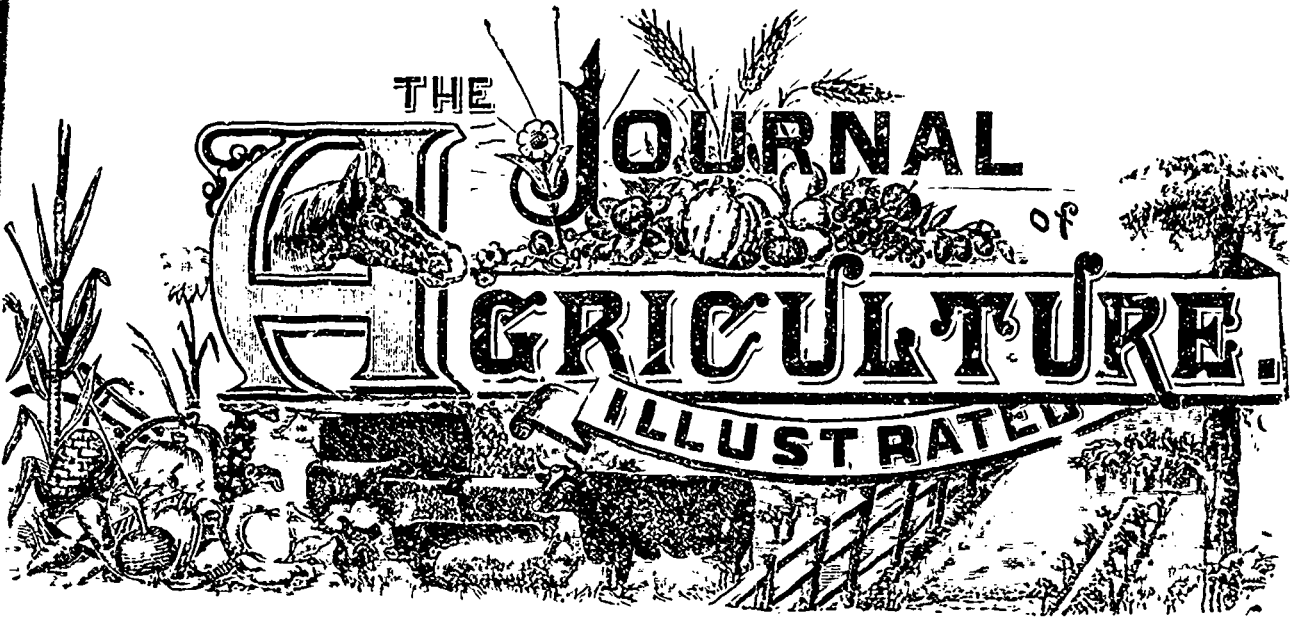
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## OFFICIAL PART.

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### Deliberations of the Council of Agriculture May 26th, 1891.

The Council met at 10 A. M., M. Joly de Lotbinière in the chair.

Present the Hon. M.M. Joly de Lotbinière and Sylvestre, MM. Pilon, Vice-president, N. S. Blackwood, Ant. Rochelleau, Aug. Guilbeault, Jérémie Descarries, L. J. R. Marsan, Eugène and Aug. Casgrain, R. Marier, and S. A. Fisher. Dr. Couture, D. M. V., the veterinary surgeon to the Council, was also present.

Col the Hon. W. Rhodes was detained at Montreal, Mr. Nest was in Europe, and the Hon. G. Ouimet was unable to be present on account of a severe attack of illness.

The president introduced to his colleagues of the Council of Agriculture Mr. Sydney A. Fisher, of Knowlton, Brome, whose nomination by decree of the Council (dated 8th April, 1891,) was laid on the table.

The proceedings of the last meeting, 11th and 12th of last March, were read and approved.

The president expressed the regret he felt at the death of Mr. Hiram Douglas Moore, which took place on the 15th of May, 1891. The Council unanimously offered its sincere sympathy to Mr. Moore's family, and the secretary was enjoined to communicate to Mrs. Moore a copy of this resolution.

M. Pilon, seconded by Mr. Blackwood, moved that the following report of the president on the request of Dr. McEachran be adopted :

The undersigned, having been requested to report on the request of Dr. McEachran to be placed on the same footing as Dr. Couture, as regards salary, has the honour to report :

That in virtue of an Order-in-Council, dated December 11th, 1886, a copy of which is annexed to the present report, Dr. Couture was specially entrusted with several onerous duties which demanded considerable sacrifices of time on his part, as a compensation for which, a salary of \$500 a year was granted him.

That Mr. McEachran had not the same duties to fulfil as those for which Dr. Couture receives the above salary, and, consequently, is not considered by your committee to be entitled to a similar salary; but, the committee recommends that every time Dr. McEachran visits Quebec for the purpose of attending the meetings of this Council, he shall be allowed a fee of \$20.00, in addition to his travelling and other expenses.

(Signed) H. G. JOLY DE LOTBINIÈRE,  
President of the Council of Agriculture.

Copy of the report of a committee of the Hon. Executive Council, dated December 11th, 1886; approved by the Lieutenant-Governor, 11th December, 1886.

No. 501. On the appointment of a veterinary-surgeon.

The Hon. Commissioner of Agriculture and Public-works, in a memorandum, dated 11th December, 1886, recommends that Dr. J. A. Couture, professor of veterinary-surgery at Laval University, be attached to the department of agriculture and public-works as veterinary-surgeon, entrusted with the duty:

1. Of watching over, for the department, the operations of the farm assisted by a government grant for the production and distribution of vaccine lymph;

2. Of inspecting the herds of cattle at the agricultural exhibitions, and at the farms of private persons, and of giving one or more lectures at each of his visits of inspection, in accordance with the instructions of the department of Agriculture;

3. Of keeping, for the department, the herd-book and golden register of Canadian cattle, which is to be established in conformity with the Act. 48, Vict., ch. 7;

4. Of replying, in the *Illustrated Journal of Agriculture*, to questions in connection with veterinary matters that shall be propounded to him through the department;

5. Of fulfilling such other duties connected with veterinary-science as shall, from time to time, be assigned to him by the commissioner of agriculture and public-works.

That the salary of Dr. Couture, as veterinary-surgeon to the said department, be five hundred dollars (\$500) a year, independently of his travelling expenses, and that, until further legislative arrangements be made, this salary be paid to him out of the disposable balances of articles 72 and 77 of the budget.—Certified.

(Signed) JOSEPH A. DEFOY,  
Clerk of the Executive Council.

This report was adopted.

A letter was read, from Mr. George Moore, horticulturist and lecturer on agriculture, submitting to the Council a work on the cultivation of orchards, small fruit, and ornamental shrubs, fit for our climate, and advising farmers to beware of the numerous varieties of fruit and other trees, offered them for sale by pedlars, which are too tender for our climate. This letter was accompanied by recommendations from the Hon. MM. Rhodes and Joly de Lotbinière, MM. Auguste Dupuis, St. Roch des Aulnaies, and Hiram D. Moore.

The Council approved, unanimously, of this work, and expressed the hope that the Hon. commissioner of agriculture would be good enough to purchase it and have it printed, in both languages, for distribution in the province.

Another letter from Mr. George Moore was read, drawing the attention of the Council to the importance of the cultivation of the potato, and on the utility of holding a competition and offering prizes of value sufficient to induce our best farmers to show how great a profit can be derived from the best and most economical methods of cultivating that crop.

Proposed by M. Marsan, supported by Mr. Fisher, and carried unanimously; That the Council request the Hon. commissioner of agriculture to have the goodness to institute a competition, next year, for the best and most economically grown crops of potatoes, the competitors being held to make to the department of agriculture a report in detail of their methods of cultivating the crop that may serve as instruction to the farmers of this province.

The following report on the subject of the agricultural schools was read.

Proposed by Mr. Blackwood, seconded by M. Rocheleau:

That the third resolution adopted at the session of the Council of the 12 March, 1891, be amended as follows:

That the Council now open books of pedigree for thorough bred sheep and pigs:

That Col. the Hon. T. Rhodes, MM. Eugène Casgrain, and Robert Ness, be the committee charged to carry on the books of pedigrees;

That Dr. Couture, M. V., be the secretary of the committee;

That the fee payable for each animal registered be 25 cents;

That these fees be used for the payment of the secretary, and that the seal of the Council of Agriculture be affixed to each of the certificates or pedigrees.

Report of the visit paid to the agricultural schools of Ste. Anne de la Pocatière and l'Assomption by the Hon. G. Ouimet, MM. Pilon, Blackwood, and Tarte, members of the committee on schools, and M. Joly de Lotbinière, president of the Council of Agriculture, on March 31st, and April 1st and 2nd, 1891.

While adopting the report of the committee on schools of November 1890, the Council of agriculture, by its resolution of the 11th March last, instructed the committee to visit the schools anew, in the first week of April, to see if it were possible to come to an understanding with the directors for the purpose of carrying out the recommendation of the committee.

The committee did not lose sight of the end proposed by the Council in ordering this second visit. It took great pains to discover the means of making the best possible use of the schools, and it has returned under the impression that it is, perhaps, possible to find those means, and that there is no need to renounce completely all hopes of improvement.

The working-stock is not of course so complete as in the agricultural colleges created and maintained at great cost by the State in other countries; but, such as it is, a certain benefit may be derived from it were it used as it should be for the instruction of the pupils.

The great difficulty there, does not lie in this direction. What is chiefly required is to modify, if possible, the relation existing between the institutions entrusted with the management of our agricultural schools and the schools themselves. It is the duty of the committee to give its opinion on this point frankly, since it is of vital importance to the solution of the problem.

At the latter visit, as well as at the previous one in November last, the committee was much better pleased with the examination of the pupils at l'Assomption than at Ste. Anne's; but, at neither of these schools did it find that any earnest effort had been made to fulfil the first condition of thorough agricultural teaching, which is the instruction of the pupils in the art of combining theory with practice. The only exception seemed to be in the working of the creamery at l'Assomption.

The committee is of opinion that with the present system, the great majority of the pupils on leaving our schools of agriculture have never learned how to direct the operations of a farm in a profitable manner. If, before their entrance into the schools at Ste. Anne or l'Assomption, they did not already know how to plough, sow, drain, &c, they certainly would not learn how to perform these operations there; they would not learn how to use the improved agricultural implements, whose employment has now become indispensable.

As to the care of cattle, especially of mares and cows at parturition, before and after that epoch; as to the rearing of their offspring, the preparation of their food, the milking of cows, &c., the pupils of our agricultural schools obtain in them no practical knowledge of such things.

The committee tried to find out the reason for such a state

of things. It questioned these who are at the head of these schools. The replies never varied: "why don't you make your pupils plough?" "They would plough our land badly." "Why don't you make them sow your crops with the sowing machine, mow with your mowing machine, reap with your harvesters? They would break our tools, and make bad work." "Why don't you entrust your elder pupils, each in his turn, with the care of the cattle and the cowsheds, under the inspection of the bailiff (*steward, grievé*), of the director, or of one of the professors." "No dependance can be placed upon them (*the lads* ?); after all, they are only learners; they would neglect the most important part of their work."

In short, every operation which would tend to develop the intelligence of the pupil, to ripen his judgment, to give a feeling of responsibility, in a word to cause him to make genuine progress, is forbidden him, lest his *inexperience be productive of loss to the college to which the school is attached*. If the lads are put to work at all, it is only at some simple job: to clean out the cowsheds; carry away the dung, curry the cattle, give them their hay, drive the dung-cart, &c. It is only fair that the pupils should do all this work, and, above all, do it well, without omitting the least detail—a point on which we cannot be too particular—but are we to confine thoroughly practical agricultural instruction within such narrow limits as these?

The object of the committee is, not to find fault with the colleges of Ste-Anne and l'Assomption, which are now entrusted with the care of our agricultural schools, but to improve the present system.

It must not be forgotten that these institutions manifested much devotion in undertaking this charge, assuming thereby a responsibility that, of right, belonged to the government.

How far can the government insist that these farms, these buildings and stock, to the purchase of which it contributed nothing, shall be devoted to use of agricultural schools?

Is it not the duty of the colleges of Ste-Anne and l'Assomption to try to win from their property, a property worth a good deal of money, as much revenue as possible for their own support, as well as to enable them to fulfil the purpose for which they were established, a purpose which by no means included the teaching of agriculture?

It will be said that these colleges receive from the public considerable grants for their schools of agriculture: let us see in what these grants consist:

1. \$2,000, a year, to be expended in conformity with the instructions of the Council of Agriculture, to pay the professors and the directors, as well as for the heating, lighting, &c., of the building, but no part of which is intended to compensate the colleges for the use of its property, except as regards the rent and insurance of the school-house. The amount paid as salary to the farm-steward, out of the \$2,000, is utterly insufficient for the remuneration of a man well qualified for his position; one who would devote the necessary time to the pupils.

2. A certain number of bursaries, which are more to the advantage of the pupils than of the colleges.

What profit can the colleges make out of boarding and lodging pupils at \$6 00 a month each? The labour of the lads is the sole compensation offered to the colleges for the use of their working-stock, buildings, &c.

To this (*labour*) the colleges do not attach much value, though, under a better system, benefit could be derived from it; but up to what point would this compensation give the government the right to use the property of the colleges for the advantage of the schools of agriculture?

If a portion of the farm is devoted exclusively to the use of the agricultural pupils, to enable them to learn on the spot all the operations practised in farming, and to explain and

exhibit thereon all the necessary experiments, &c., it must be expected that the colleges will have to incur certain extra expenses, some diminution in the net revenue of the farms, as well as some inevitable losses resulting from the inexperience of the pupils.

This point deserves consideration.

Without in any way discussing (*soulever*) this delicate question, and especially without making any bargain for the future in the name of the government, the committee persuaded the directors to at once set about finding a good farm-steward; to introduce this summer certain improvements in their system of agricultural teaching, as, for instance, to drain at least an *arpent* of land with underground drains executed by the pupils themselves; to let the lads milk the cows during a space of time sufficient to teach them how to milk properly, &c.

It is not, perhaps, impossible to make an equitable arrangement which would give the government the right to insist upon the agricultural schools fulfilling the end for which they were created; still, the affair presents many difficulties, practical as well as theoretical.

The committee did not think itself justified in opening any negotiations with the directors of the colleges on this subject, but refers the question to the Council of Agriculture and the government.

At any rate, it is indispensable that it be insisted upon that the pupils be taught, not only theoretically, but above all, practically, in the fields, as well as in the cattle-sheds and in the class-room, all that a model-farmer ought to know, if it is intended that our schools render some service to the cause of agriculture, for which art there still remains so much to be done in our province.

GÉDÉON OUMET.

Quebec, May 26th 1891.

The above report was unanimously adopted.

The Council was informed by Mr. S. C. Stevenson, secretary of the Montreal Exhibition Company, that a provincial exhibition will be held at Montreal from Thursday, Sept. 17th, next, to Friday the 25th of the same month.

The president stated to the Council the action that had been taken in favour of ensilage and the building of silos. Two thousand four hundred dollars have been offered in prizes, or as special encouragement, to the members of the different agricultural societies of the province; the notices, with all necessary details, will appear in the *Journals of Agriculture*.

At the request of the Abbotsford Horticultural Society, permission was given to the horticultural societies to pass a rule by which the secretary shall have the right to receive an indemnity, not exceeding seven per cent, on all the moneys expended and paid by the society, in compensation for all the services rendered by the secretaries to the societies.

The Council of agriculture empowered the secretary to send to the societies, whose programmes of operations for the current year are not yet *en règle*, a formal and final notice that if, within the delay to be fixed by the Department of agriculture, these societies shall not have conformed to the law and to the regulations of Council as regards their programmes, their grant for this year will be suppressed, and devoted to the purposes of those agricultural improvements provided for by section 1671 of the law.

With a view of making the use of the different commercial fertilisers more general, the Council advises the societies to facilitate their purchase and distribution to their members, and permits the half of the members' subscriptions to be employed in such purchases, provided that this gift take the place of the gratuitous grant of timothy- and clover-seed

which the societies of agriculture have leave to distribute. Messrs. Blackwood and Barnard made a verbal report of their visit to the faculty of veterinary science at McGill University, Montreal, which report will be submitted in writing at the next meeting of the Council. After this report, M. Joly de Lotbinière informed the Council that several applications had been made to him from the Eastern-Townships for the reorganisation of the English agricultural school. A discussion followed, in which MM. Pilon, Rocheleau, Blackwood, Descaerries, and Marsan took prominent part.

The president related to the Council the arrangements he had made, with a view to facilitate the manufacture of drain pipes, and to encourage drainage in the district of Quebec, in reply to the pressing requests of many farmers in the above district. In future, drain-pipes will be for sale at "La Petite Rivière," near Quebec, at the following prices per thousand feet :

1½ inches, interior diameter.....	\$ 8.00
2 " " .....	10.00
3 " " .....	16.00
4 " " .....	24.00

and so on in proportion for pipes of 5 and 6 inches bore. The Council approved of these arrangements which promise to supply one of the most pressing needs of agriculture in this province.

M. Descaerries informed the Council that Mr. Chas. Shepard, 402 Parthenais St., Montreal, will keep this year on hand at his shop drain-pipes at the following prices :

2 inches, \$12 per 1000 ft, weight 2½ lbs F. O. B. on cars or at the kiln	
3 " 18 " 5½ "	"
4 " 27 " 6½ "	"
5 " 38 " 9 "	"

Length of pipe 12½ inches.

This notification was also received with satisfaction, and the Council trusts that the farmers of the district of Montreal will profit by this occasion of draining farms at a cheap rate.

The president reported that the Commission of the Provincial Competition of Agricultural Merit had met the previous day, and would meet again after the adjournment of the Council, in order to define the measures necessary to the inspection of the farms of the second agricultural region, which inspection will begin on or about the 15th of June next.

The Council then adjourned.

(Signed) ED. A. BARNARD,  
Secretary of the Council of Agriculture and  
Director of the Journal of Agriculture.

DE OMNIBUS REBUS.

*Plaster.*—As I have always had a doubt in my mind about the effect of dry plaster scattered over manure in the stable or cow-stall, as a fixer of ammonia, I wrote to Mr. Macfarlane, the chief analyst at Ottawa, on the subject. He kindly replied, by return of post, as follows :

There is no doubt that plaster will act as described with ordinary stable-manure including the urine. I know it from my own experience. As regards dung absolutely dry, I can only say that I think it would act.

*Sheep.*—It is a pleasure to me to see my views taken up by the papers of the United States. The readers of this periodical know well how often I have tried to show the advantages to be derived from sheep-farming on the worn-out lands of this province, as well as on the deserted farms of the New-England States. On this point, heard the *American Wool Reporter* :

The *American Wool Reporter* thinks that a man of some business sense and a little capital who could not take one of these abandoned Massachusetts, farms and make it pay ten per cent net by a judicious application of sheep-husbandry would be an exception. *Vermont Watchman.*

*Pigs and green-meat*—At the Ontario station, in an experiment in feeding swine on green-fodder, the conclusion was reached that "there was no profit in it except when given in very moderate quantities." I take it that the fact is with pigs, as it is with cattle, that green meat is a very good thing when growing animals are supplied with vetches, clover, and other leguminous plants, in an advanced state of growth—i. e. when in flower—and meal of some kind added to it ; but that green-meat in an immature condition, green-corn, for instance, will not help them much. In England, when the horses are fed in the yards with clover and vetches, the pigs of all ages run with them, and do very well on the green-meat that falls from the racks, supplemented by a little wash and pollard. Boars, with us, always have their tusks filed off, or else they are kept in the styces, as they soon "out up rough" if the horses disturb them, and then the femoral actery of the latter is just within easy reach of the boar's weapon of offence.

*Town-manure.*—The Corporation of Manchester, Eng., seems to make good use of the refuse of that town. The following is the analysis of the "Manchester Corporation Concentrated manure :

	per cent.
Nitrogen.....	3.00 = \$0.42
Potash.....	3.90 = 0.05
Phosphoric acid.....	4.00 = 0.24
Sulphate of lime (plaster).....	2.50 = 0.—

\$0.71

This makes the gross ton worth \$16.00. The selling price, delivered in Manchester, is \$14.60. Cannot our large towns, Montreal, Quebec, &c, go and do the same thing ?

*Waste of manure.*—A correspondent seems to have been surprised at a statement of mine, in one of the late numbers of the Journal, that "at least ½ of the elements of fertility in dung must, in spite of all the pains we may take to preserve it, infallibly be lost before they are appropriated by the crops." My authority for this statement is Sir John Lawes, as well as the practice of all the great valuers of farms in England. For instance : the estimated value of the manure from the consumption of one gross ton of cotton-seed cake is, according to Lawes' tables, \$31.59 (£6.10 stg.), but no valuer would allow more than \$21.00 for it when settling the account between an out-going and an in-coming tenant. Of course, when comparing the values of dung and artificials, it will easily be seen that the elements of fertility in the dung even if they were all intact on leaving the stable, an absurd supposition, would take some time—months probably—before they were made ready in the land to supply the crops with food, during which time, rain would lixiviate them and send part of them into the ditches, and the melting snow of spring would rob the soil still more severely ; whereas, the nitrogen and phosphoric acid of our nitrate of soda, sulphate of ammonia, and superphosphate are ready to go to work at once—in 24 hours even—as may be seen by scattering a handful of any nitrogenous artificial manure over a weakly crop of grain in showery weather ; and as their effect is immediate, so there is less time for the above causes, rain, &c., to carry off the valuable constituents of our chemical fertilisers. And, besides, dung-heaps must be made ; for it is not to be supposed that the farm-lands of our province are so free from

woods that there are none of their seeds left in the manure when it leaves the stable, and the only way we have of preventing them from procreating their species is to let the manure heat, and turn it over when heated: during this necessary exposure much of the valuable elements must be lost.

On this matter, Lawes' dictum is that "only half of the residue of the cake, &c., should be charged to the dung, the loss arising from its peculiar composition reducing its value to half the value of its constituents were they in dry powder." I have lost the reference, but I copied the passage into my note book at the time it appeared in the *English Agricultural Gazette*.

**Turkeys**—At the Sorel meeting of the Dairymen's Association, M. Herreboudt, a Belgian, who seemed anxious to cut as a middleman between Belgium and this province, asserted that our average turkeys would sell for three dollars a piece in the English market. The prices quoted in the London papers at that season were *cocks* from 7s to 9s each; *hens* from 5s to 7s; and the English turkeys are very much better fattened and far heavier than those brought to market here.

**Capons**.—I saw in a leading poultry-dealer's shop in Victoria Square, Montreal, some fine fat fowls labelled "SOREL CAPONS"! The shop-keeper promised to let me know the name of the feeder, but he has not yet done so.

**Barley**.—The best samples of barley in England, have been very scarce this season. The weight was satisfactory enough, but those indescribable qualities the maltster looks for were absent. Old maltster and brewer though I be, I cannot explain what these qualities are, but I can see at a glance whether a sample of barley will or will not make good malt.

**The provincial competition**.—On looking over the report of the Judges of the Provincial Competition of Agricultural Merit, I could not help being struck with one or two peculiarities: 1. in only one case is there any deduction made from the profits of the farm in the shape of rent; 2. the same omission occurs in respect to interest on capital invested in stock, implements, &c.

Some people will say, I suppose, that the farms are the property of the farmers, and therefore there is no rent to pay. Well, but the farms are worth some money, and their value invested in bank or other securities would bring in a certain sum of annual income. Take M. Champagne's farm for instance. The net profit on it—including maple syrup to the amount of \$1,363.92—is set down as \$3,406.23! Now, I do not, I think, exaggerate when I say that the farm in the condition it is now in would let for at least \$4 an acre = \$1160 a year. The stock and implements must be worth some \$4,000, which at 8% = \$320.00 and the two items together = \$1,480, which, added to the returns from maple syrup, that can hardly be called farm-profits, amounts to \$2,843, and deducting this from \$3,406, leaves the real farmer's profit of \$563 plus "purchases made for the family" = \$355.00, wrongly charged to the other side of the account, in all, \$918, or \$4.16 an acre, excluding the 70 acres of sugar bush, and a very fair return, too.

Again: my good friend Mr. James Drummond is credited with a profit from his farm of \$1,200. But his 290 acres of land, on the very threshold of "the great city of Montreal," with splendid buildings must be worth, one would think, at least \$6 an acre = \$1740 a year. Interest on stock, implements &c., say the same as M. Champagne's = \$320 a year = in all,

\$2,060! showing a loss of some \$800.00, instead of a profit of \$1,200!

M. Auger's farm, at New-Glasgow, is 127 arpents in extent: 107½ acres. Situated in the neighbourhood of Terrebonne, the land should be worth at least \$3 an acre = \$322 a year; and yet the profits are returned at \$257 net! In reality, there is a loss of \$65, to say nothing of the interest in the capital invested in the stock, implements, &c., which must certainly amount to at least \$70 a year.

Mr. John Nesbitt's farm, at Petite Côte, contains one arpent less than the farm just mentioned. His profit on the year is given as \$444.44. Here the Judges remark: "In his account of expenditure are items not found in other accounts, such as \$600.00 for the rent of the farm, \$100.00 for a manure distributor, \$92.00 for a potato-planter, \$100.00 for a buggy, \$882 in all, out of which, \$292 are not to be considered as annual expenditure, but have their place in the capital account," and very properly too, as regards the last sum. All the competitors should be treated alike, and no profits be recognised until a sufficient deduction from the gross return has been made to represent the interest on the capital invested on stock and implements and the annual rent the Judges consider the farm to be worth.

As far as my opportunities enable me to judge, not one farmer in ten, in this province, made any real profit out of his farm in the season of 1890.

FARM-ACCOUNTS.

The following may be taken as a fair way of arriving at the profit, or loss, of a year's farming.

FARM.	
Dr.	Cr.
To valuation, May 1st 1890.....	By grain sold.....
\$1560.00	\$300 00
To seeds, &c., bought....	By dairy-goods and poultry sold.....
55.00	560 00
To live-stock ".....	By hay, potatoes, &c., sold.....
120 00	340 00
To manure ".....	By live-stock sold.....
50 00	190.00
To bills, blacksmith, &c..	By valuation, May 1st,
40 50	1890.....
To interest on selling value of farm, i. e., rent at 6%.....	1690 00
240.00	\$3080 00
To rates, &c.....	
10 00	
To wages.....	
140 00	
To interest on capital in stock, and implements, depreciation, &c., at 10%.....	
156.00	
To balance—profit.....	
709 00	
	\$3080.00

The figures are, of course, arbitrary, and I have charged nothing for the labour of the farmer and his family.

Mr. James Drummond's farm at Petite Côte, Montreal is, I am told by those who ought to know, worth at least \$50,000, which at only 5% would make the rent he pays for amusing himself with farming, \$2,550! And so on for the rest. A. R. J. F.

**Nitrate of soda**, at Liverpool, is now worth £7 15 per gross ton = \$37.50 per 2,000 lbs. = \$1.87 per 100 lbs. This is 38 cents per 100 lbs. cheaper even than Mr. Evans charges, and I know he thought I was rather hard upon him when I made the bargain that he should sell his stock at \$2.25. Why nitrate of soda should be dearer here than in England I cannot conceive.

**Adulteration of milk**.—M. J. C. Chapais write me word that I "cannot be too severe on those farmers who either lower the milk they deliver at the factories, or skim off part of

the cream." Well, I am perfectly willing to "pitch into" the rogues, but, it seems to me, the remedy does not lie in my hands but in the hands of the magistrate. Of course, if the managers are not competent to test the milk, or too cowardly to prosecute the offender, things must remain as they are. One thing I know: the milk inspector's activity in Montreal has had an immense effect, and I cannot see why the cheese- and butter-makers in the country should not act together and put a stop to these nefarious transactions: transactions that are a disgrace to the country. No wonder the makers are helpless, since, as one of the lecturers at Sorel observed, some of them do not know how to read the indications of the thermometric scale!

M. Chapais visited some newly established creameries last year; listen to what the patrons told him: "Last spring, you said that we should probably get such or such a return from our milk, and what comes of it? We get much less than the patrons of the neighbouring creamery. That pays 60 cents for 100 lbs., and we only get 53 cents!" M. Chapais then asked the maker if he tested the milk. "Sometimes," replied the man. "And the result?" "Ah! very poor." Others said that no test was ever made. At all events, no prosecution was entered against the rogues.

I like the bold way in which the Assistant Dairy Commissioner speaks. "Without wanting to insult any body, I say that the man who waters his milk is a robber." I should think he was: nothing less. And he not only robs the proprietor of the factory but his brother farmers, too.

Well may M. Chapais say that "if this state of things goes on, the factories will be ruined. Shall we consent to lose the fruit of the last ten or twelve year's work. No! let us appeal to the conscience of our farmers, and if that remains deaf, let us appeal to the law. When the general interest is concerned, we ought not to be afraid of wounding the susceptibilities of certain persons, and we should strive with all our power against this habit, which is becoming a national pest." As Master Bailey (1) would say: "Blow their susceptibilities!" If every factory would prosecute one or two rascally patrons, the other rogues would soon cease from cheating; their "susceptibilities" cannot be very delicate, but the fines would wound them in their tenderest point, and it would not take long to work a cure. It used to be said that "no man can long meddle with horseflesh without becoming a cheat": shall the same be said of those who deal in the pure, innocent looking produce of our cows? *Proh pudor!*

*The weather.*—Spring may be said to have begun, in the Montreal district, about the 20th April. At Lachine, the sowing of the grain-crops on the Dawes' farms was completed by the 6th May, and some of the early potatoes were planted. (2) Snow fell on the 24th April, on which day there was ice on the sidewalks in Dorchester Street at noon! Splendid weather on the 27th, followed by snow and rain, and sharp frost on the 29th. May opened with hateful chilly weather, with frost, rain, snow, and hail on the 6th. Showers on the 9th, but warmer, and Sunday, 10th, 78° F. in the shade! Turned cold again on the 11th, warmer and fine up to the 10th, when it rained all day. On the 20th, 69° F. in the shade, and 71° F. on 21st, but on the 23rd, frost again, and cold nights always. Nothing grows, and I fear we are in for a late and bad harvest again. To day, May 27th, is fine enough, but very cool indeed. (3)

(1) See "Martin Chuzzlewit."

(2) And, I regret to say, frozen on May 18th, on which day M. Séraphin Guévremont's early plants, set out on the 15th, were all cut off, except the tomatoes.

(3) A thunder-storm or two, since then, but the land is all parched up and the hay-crop is, I fear, done for. June 18th.

*Model-farms.*—I have often given my opinion with respect to the absurdity, as it seems to me, of expecting model- or experiment-farms to be conducted with a view to trade-profits. I remember Mr. Browning, of Longueuil, used to bother me a good deal on this matter, and I fear a good many practical farmers still harp on the same string. If in any future plan of establishing an extensive model-farm, the government of the province dream of making a profitable investment of capital, the sooner it awakes from that dream the better.

A very sensible remark on this subject I met with the other day in a French periodical entitled *Le Journal d'agriculture pratique*. The writer, the well known M. Lecouteur, in describing a visit to the celebrated agricultural school at Grignon, speaks thus of its present condition:

"Grignon is no longer, as it used to be, a domain devoted to extensive crops with a view to the profitable investment of capital. The estate has been confined to the old interior park, and specially dedicated to experimental researches. A breeding flock for the production of the best races and crosses—Leicester-merino—, and a herd of cattle, are kept. There is plenty of space, plenty of opportunities for the students to acquire all the scientific information that, after they leave the school, will aid them in completing their studies by a sojourn, more or less long, at a farm where the proprietor conducts his business, at his own risk and peril, solely with a view to the making of money. (1) Such is the view held at Grignon in its new arrangement. It does not aim at teaching, on a farm supported by the State, the art of making a profitable use of capital. But it does aim at occupying a middle position between the professional scientist and the practical farmer, thereby bringing the two into a more intimate connection, a connection which, in the end, will raise agriculture in public estimation, since science will have endowed it with the most energetic means of action."

*Effects of the spring frosts.*—Mr. Ewing tells me that the effects of the frosts of the month of May on the garden-crops of the neighbourhood of Montreal have been very serious. Many of the market-gardeners have had three successive plantings of tomatoes destroyed, and the potato-sprouts that were just through the ground were cut off. These were, of course, from sets that had been allowed to germinate before planting. No rain, to speak of, up to the 18th of June.

*Oats vs. bran for milk.*—Mr. Henry, director of the Wisconsin experiment-station, has been trying experiments on the relative value of bran and ground oats in the production of milk and butter, from which he draws the conclusion that:

"With a ration of 10 pounds a day per head, of ground oats or of bran, fed in connection with the same fundamental ration of corn meal, hay, and corn-silage or fodder-corn, there was a 10% greater yield of milk and butter-fat on oats than on bran."

Now, the usual price of oats is, in this province, taking one season with another, about a cent a pound = \$20.00 a ton, and bran can generally be bought for \$15.00. Therefore, according to the above experiments, oats are 33% dearer than bran, which is clearly the cheaper food, by 23% than oats. Besides, the oats have, in almost every case, to be carried to the mill, and the miller's "multure" is always an uncertain quantity.

*Corn-silage vs. dry fodder-corn for milk.*—At the same station, duplicate experiments were made on this subject, each with four cows and of six weeks' duration. In each experi-

(1) Precisely what I have so often advised as the only way of learning how to farm.

ment, in addition to the usual ration of hay, bran, and oats, two cows received as much silage, and the other two as much dry fodder-corn, from the same variety of corn cut at the same time as the silage-corn, as they would eat during three weeks. At the end of the time, the two cows on silage were changed to fodder-corn, and *vice-versa*. The results were as follows:

AVERAGE OF TWO EXPERIMENTS, CORN-SILAGE VS. FODDER CORN.

One pound of dry matter in—	Milk Pounds.	Milk-fat Pounds.	Fat churned out. Pounds.
Single-ration produced (average of 2 experiments, 8 cows).....	0.769	0.032	0.031
Fodder ration produced average .....	0.860	0.036	0.035
In favour of fodder-corn .....	0.091	0.004	0.004
(Or, percentage in favour of fodder-corn....	12	13	13

The cows on fodder-corn, seem to have eaten less but produced more milk and butter from each unit of food materials.

"In six experiments," says the experimenter, "corn-silage, with us, has proved sometimes superior to dry fodder corn, in nutritive value, sometimes inferior. Considering all the experiments conducted at this station, the conclusion will be that properly cured fodder-corn and corn-silage, of similar variety and maturity, are of equal value for milk and butter production."

Here, in Canada, the season of frost comes so soon that it is almost impossible to cure fodder-corn sufficiently to enable it to keep well, so the silo is a most valuable resource. But the above experiments confirm me in the idea I have always entertained that no additional food-value exists in silage over and above that contained in the corn before ensilement.

I see it is proposed to build a silo at the Exhibition grounds at Mile-End this autumn. It is to be filled with corn, grown by the manager of the Deaf and Dumb Asylum. It strikes me the corn will have hardly had time to mature before it is required, as the silo should be filled early, to allow the contents to ferment. Why not try a silo filled with clover?

Mr. Ewing, one of the directors of the Exhibition, expresses himself as strongly in favour of growing *sweet-corn* for silage. The quantity of seed used now to the acre is so small, he says, that the difference of cost is but trifling.

*Suedes*.—I suppose many of my readers have seen M. Séraphin Guévremont's description of his successful growing of roots—principally swedes—as contained in the report of the Sorel meeting—1890—of the Dairymen's Association. He, as well as others, finds that too early sowing, as practised by my good friend Mr. Tuck, on the farm of the Messrs. Dawes, at Lachine, though calculated to produce a large crop, almost invariably causes a loss of quality. The roots are big, rough, and too often unsound, and quickly rot if they get the slightest touch of frost before being got into the cellar. (1) M. Guévremont finds that the best quality of swedes is secured by sowing from the 10th to the 20th June, and this period is in my opinion the best that can be chosen. But one thing must be considered: the turnip fly never troubles the Sorel farms! Where this beast is numerous, it would be wise to begin sowing earlier—say the 1st of the month—so that, if the first-sown plants are eaten, it may not be too late to try

(1) Mr. Tuck tells me that his enormous swedes, many weighing 14 lbs a piece, were of the very finest quality, neither stringy nor hard, but cooked perfectly. But last summer was a dripping one.

again. I have had a fair crop from seed sown as late as July 1st, and the quality was superb.

I fancy every body who grows roots here will persist in sowing them on drills, though except in wet, foul land and in dripping seasons, like last year, flat-work I consider the more profitable way, though, if economy in manure be absolutely necessary, the drills certainly take less dung.

The dung should be covered in as soon as possible after it is carted out and the seed sown the same day right up to the plough.

The roller should be passed over the sown land at once. This is of the greatest importance.

On all soils free from stones, the horse-hoe with curved side hoes should be used. This implement will pare down the side of the drills, leaving only about 2 inches for the hand-hoe to do. A specimen of what I take to be the best form of horse-hoe for drill-work will be presented at the Provincial Exhibition, at Mile-End, in September.

In this number of the Journal p. 107, will be seen an engraving of a simple horse-hoe for root-crops sown at comparatively narrow intervals. It is an improvement on the old Smith's hoe, with which I have done 8 acres of wheat in a day. For carrots, parsnips, and other roots, sown on the flat at from 15 to 20 inches apart, it does its work well, and should be very useful to large growers. The ordinary horse-hoe will not do well unless the rows are at least 24 inches apart.

The number of swedes grown upon an acre of land, supposing there were no vacant spaces, would be as follows:—

Between the rows. Inches.	Between the plants in rows. Inches.	No. of plants per acre.
18 .....	15 .....	23,232
19 .....	15 .....	22,009
20 .....	15 .....	20,952
21 .....	15 .....	19,913
22 .....	15 .....	19,008
23 .....	15 .....	18,181
24 .....	15 .....	17,424
25 .....	14 .....	17,922
26 .....	14 .....	17,200
27 .....	13 .....	17,300

The number of swedes grown in a regular crop would therefore, vary from 17,000 to 23,000, according to the distances, and the degree of regularity of the crop. Assuming 20,000 as a fairly representative number, we should then obtain 20,000 lb, or 11 tons 7 cwt. 1 qr. 20 lb. per acre for every pound weight which the roots average. An average of 2 lb. per root would give a yield per acre of 22 tons 14 cwts, and an average of 3 lb. would yield 34 tons per acre. As swedes are capable of growing to a weight of 14 lb., and are very often 4 lb. to 6 lb., it is no matter of wonder that we should hear of extraordinary weights per acre grown under favourable circumstances. Making due allowance for blank spaces, for small roots which never arrive much beyond the size of radishes, and for a low average size, we must conclude that 12 tons per acre is not a satisfactory return. It is, in fact, the result of an average weight of 1 lb. per root over a fair number of roots per acre. And yet it is probably an estimate not differing widely from what is actually realised over large areas in southern England. Fifteen tons per acre are not considered a bad average, and 20 tons are more often talked about than actually grown. The above are gross tons.

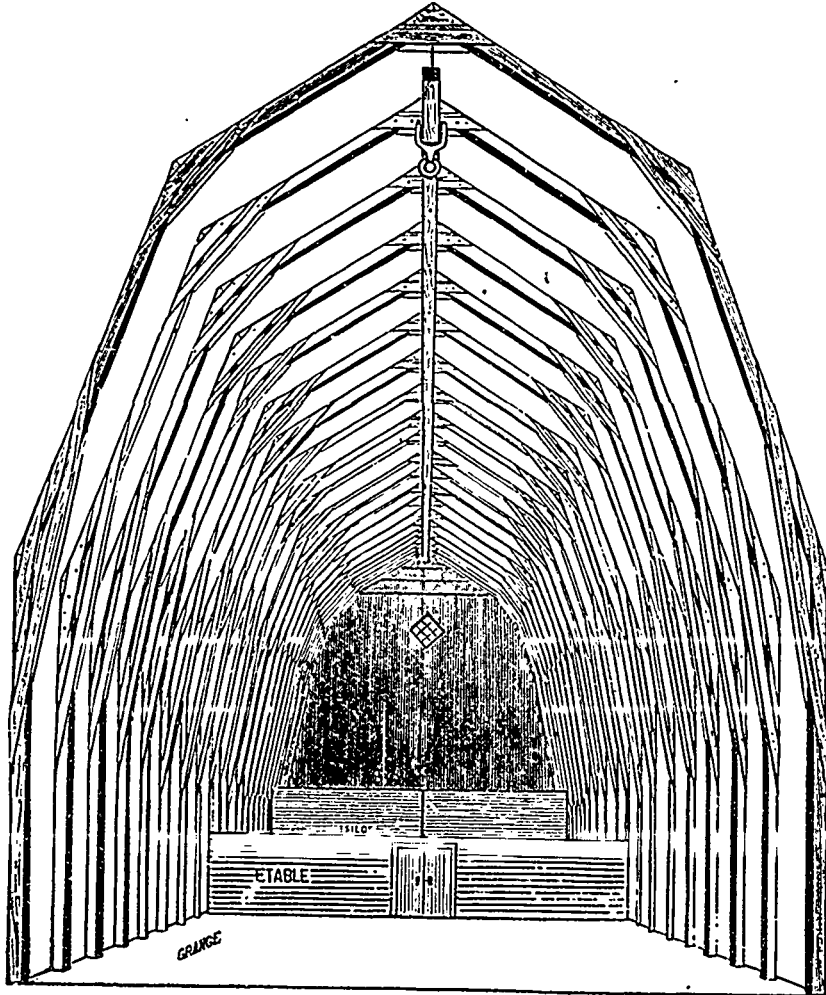
Lastly, keep both hand- and horse-hoes going as long as you do not injure the tops. Not only will the swede crop itself be the better for constant stirring, but the following crop of grain will share in the benefit.



*Lachine farms.*—Tuesday, June 2nd, being a fine, cool day, after a regular scorcher on the 1st, I went over to Lachine to see how my friends there were getting on. As I expected, the severe wind and heat combined of the preceding two days had played the very mischief with the grain and young clovers on the uplands, while some of the grass on swampy soil on the flat was more promising than usual, and a piece of oats on part of M. Daignault's farm, that last year was a pool of stagnant water, had borne the drought with great equanimity. On the whole, things looked very back-

troys couch-grass by sowing buckwheat. I passed over the field, now in oats and, as I suspected, found that there was not only plenty of couch left, but that the buckwheat was disputing the ground with the oats. The wet harvest of last year had caused the buckwheat to shed a great part of its grain,—it had to be turned three or four times—and I fear it will be some time before a clean sample of any cereal will be reaped from the piece.

One thing on the Maple-wood farm delighted me : some of my readers will perhaps, remember that I sowed, in the spring



BARN-COWHOUSE—VIEW OF THE FRAME IN PERSPECTIVE.

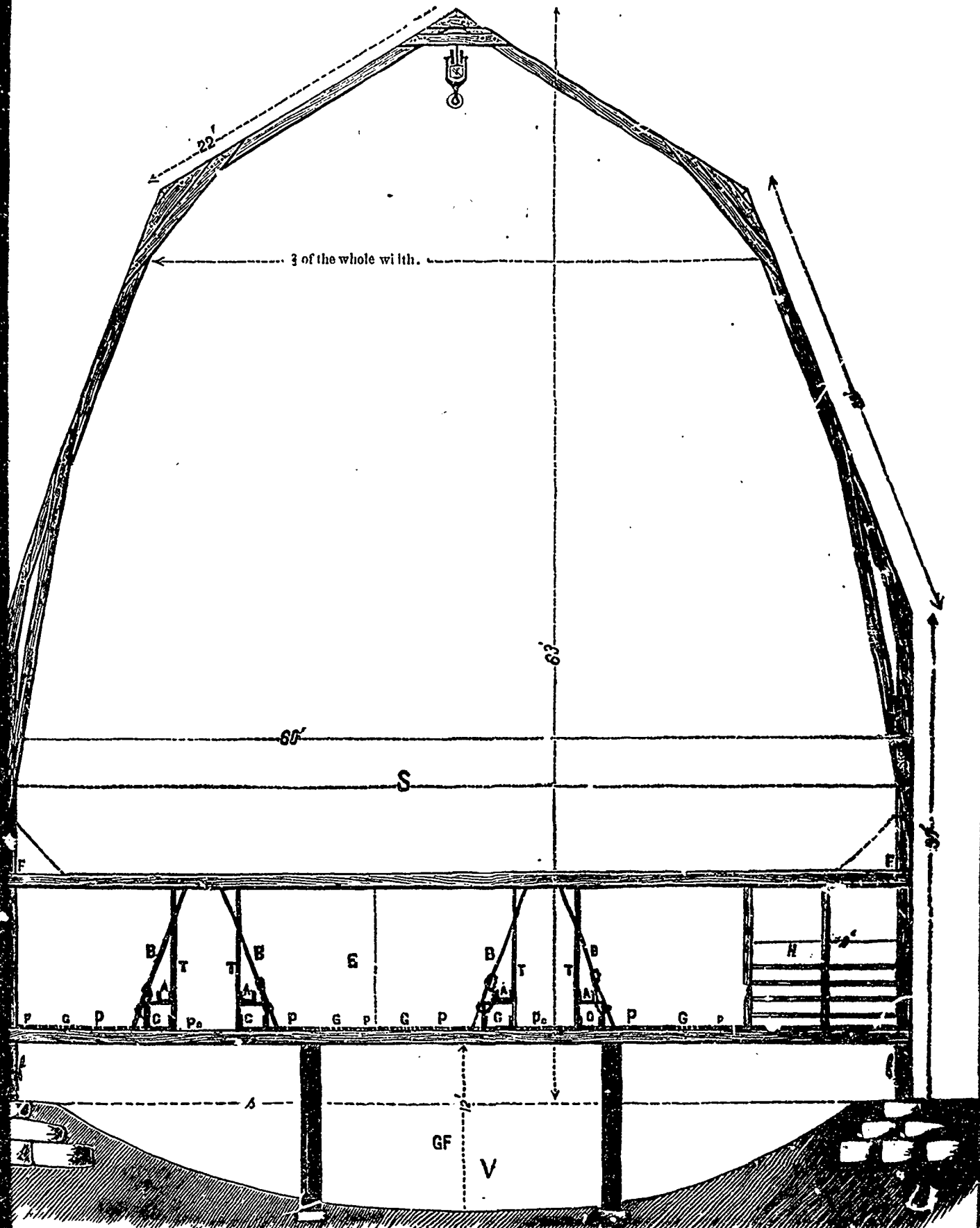
ward, and even the heavy dressings of dung administered to the crops on the Dawes' farms had not produced their usual effect, the crops looked poverty stricken, as well they might after the cold nights and morning frosts of the month of May. The hay will be late and, unless a great change comes soon, not much more than half a crop. (1)

An attempt was made last year on the Cross-farm to des-

(1) A fine piece of new grass up by the race course is an exception. Barley, after roots, and the single corn looked well, considering, this morning—June 18th.

of 1889 a small piece of land at Lachine with *sainfoin*. The seed went in badly ; the plot was in very poor condition ; the land very uneven and full of low places that held water, and the winter of 1889, 1890 was, all through, full of thaws, frosts, and rain ; consequently in the spring of 1890, the *sainfoin* did not look very gay. But, one of the peculiarities of this plant is its tillering powers, wherein it exceeds anything I know, except couch grass. Thus, this spring, the land I found well covered with plants of *sainfoin*, in places where the rain and frost had apparently destroyed it, there

BARN-COWHOUSE—FIG. II.—NEW STYLE OF FRAME—ARRANGEMENT OF ONE OF THE TRUSSES OF THE FRAME.



EXPLANATORY DETAILS.

Central passage 4'.  
 Flooring 4'.  
 Manger 2'.  
 Grating 2'.  
 Passage 3'.  
 Rough.

B. Tie-post for the cattle.  
 T. Bearers of the cowhouse floor.  
 E. Cowhouse.  
 C. F. Dung-pit.  
 V. Wide passage for the carts into the dung-pit.  
 F. Window 5'.

f. Small window in the dung-pit.  
 H. Hospital for calves, foals, &c.  
 M. Hay loft.  
 S. Top of the siloes.  
 s. Bottom of do.

Frame 3" x 9".  
 Bonds 1 1/4" x 9".  
 Joints 3" x 11".  
 " of the dung-pit 10" x 9".  
 Pilasters of the dung-pit 12".

was a fair show, and now comes the wonderful part of it. Common red-clover sown with barley after a *heavily* manured root-crop, along side the sainfoin, was only 5 inches high, whereas the sainfoin was 17 inches high and coming into bloom. (1) In fact it will be in the best state for conversion into hay by about the 12th of this month (June)! And this after such a cold May! On a very dry hillside too! No rain to speak of, either! And it will be thicker in plant next year!

The *perennial red-clover* the *true cow-grass* (t. pratense perenne,) sown at the same time, in 1889, is looking very well and the plant is perfect. ARTHUR R. JENNER FUST.

### Siloes and Ensilage.

The following circular is addressed to the officers and directors of Agricultural Societies. It is a summary of the questions connected with siloes and ensilage, containing, moreover, all that is necessary to perfect success in essaying to put in practice this new method of preserving green-feeding crops.

#### DEPARTMENT OF AGRICULTURE AND COLONISATION.

Sir,—The Hon. H. G. Joly de Lotbinière begs me to inform all those who seek for information about siloes and ensilage, in connection with the agricultural societies, that it is part of the duty of each society to determine by a resolution of the board of directors, whether it will distribute a certain number of prizes for siloes and ensilage as mentioned in the circular of the Department of Agriculture, dated April 10th, 1891, or grant the whole amount given by the government as prizes for siloes and ensilage to one single farmer, selected with care and residing near the centre of the county.

For the keep of twelve cows during the winter, I advise you to build a silo 12 x 12 x 12 feet, exterior measure. This will give you 10½ x 10½ x 12, or about 1320 cubic feet of ensilage—say, 1200 cubic feet, on account of the sinking after the silo is filled.

Now, a cubic foot of corn silage, well made, will, on an average, weigh 40 lbs. Twenty pounds of silage a day, added to hay and straw, are sufficient to make a cow yield as much milk in winter as in summer, provided she receives about 3 lbs. of some kind of meal daily during her season of giving milk. The above dimensions would contain at 20 lbs per day, ensilage for 2400 days, or for 12 cows during 200 days.

An arpent of good silage-corn ought to give at least 15 tons, if it is well cultivated. About 2 arpents would then give 60,000 lbs., or 12,000 lbs. more than your silo will hold, and this surplus will be found very useful to your herd before the cows go into winter-quarters.

Good Canadian maize, sown at 27 inches between the rows and 6 inches from seed to seed, will, if the land is warm and well manured, give you all the silage you need, and this silage will be worth twice as much as that made with the horse-tooth Western corn. Three gallons an arpent are enough.

The frame of the silo should be made of 3 inch planks, 8 or 9 inches wide, and placed on end at two feet apart. You may, if you choose, use tongue and grooved boards on each side, but I prefer common boards, not tongue-and-grooved: the hollow space must be filled up with common earth. I always add a little coal-tar up to two feet or the height, at the bottom, to keep out the rats, &c. I also mix coal-tar with the earth at the bottom of the silo, and beat it down firmly. This

(1) To-day, June 18th the sainfoin is 37 inches high, the red clover only 15 inches. The former, a sample of which I sent to the Department of Agriculture, was fit to cut for hay on the 10th inst. The l. p. is 18 inches high.

mixture of earth and coal-tar makes the best and most economical bottom possible. The drainage must be perfect.

It is not necessary to say that your silo of 12 x 12 x 12 feet will take 28 planks of 3 x 8 (or 9) for the frame, supposing it to be entirely new built, and 1152 feet of planks to go round it. There will be the ground-plate and the wall-plate besides, which may be made of wood 3 x 8 or 9.

The covering of the silage when the silo is filled remains to be considered. This may be of ends of old boards, two layers one upon the other; but the joints must be covered lengthways.

Unnecessary to say that if you build your silo in your barn, you will need fewer boards, since the walls of the barn will be used. I have given you the principles that are to be followed to ensure the silo being strong enough to resist the pressure, as well as the way of preventing the air from entering.

I advise you to earth-up carefully the bottom of the silo inside, and to beat the earthing-up well, so that no air can get in either through the sides or from underneath.

To prevent the rotting of the wood, which will be more or less under the surface of the ground, I recommend a good coat of white-wash, and when that has dried, I think the best thing is to saturate the wood with a good dressing of coal-tar. Wood, treated in this way, will last a long time. Treat the inside of the silo in the same way. But in this case it would be better to mix the coal-tar with crude petroleum, and to dress the boards with it some time before filling the silo, that the dressing may have time to dry thoroughly. If the silo is to be filled as soon as built, the inside must be left undressed until the following spring, in order to allow time for the coal-tar to expend its smell before the silage runs the risk of absorbing it.

If the silo is built separately outside the buildings on a farm, it will need a good roof to keep out rain and snow.

I have also to tell you that maize is not the only plant fit for ensiling. Clover, cut when the flower begins to expand, allowed to dry for only two hours before carrying, and put 4 feet deep in the silo without tramping, will heat enough within the next 24 hours.

It must then be carefully spread in the silo and thoroughly tramped especially round the sides, and in the corners. When this is done, another layer 4 feet high is added, which must be tramped as before 24 hours afterwards, and so on, layer after layer, until the silo is full.

Timothy and clover may be treated in the same way, and seeds of all sorts in new or foul meadows; tares and oats, sown for green-meat, as well as "herbe à lien," (*rough grass for the shores of rivers*. Trans.) and rushes, flags, &c.; but always under the proviso that these plants be cut before maturity, especially before their stems have got hard, and that the silage be allowed time to heat up to 125° F. or 130° F., before it be tramped and covered with another layer, or with the final covering of boards and earth which will preserve the whole from contact with the air.

As for rushes, flags, &c., I, of course, am only speaking of those kinds that animals eat freely in their natural condition. They will eat them all the better in the form of silage, as they will be tenderer, and the fermentation will have made them more highly flavoured.

That chaff cutters, moved by horse-power, will be very useful for cutting the maize, is self evident. From ½ to ¾ of an inch lengths will be short enough. Still, maize may be ensiled with perfect success, uncut, in armfuls carefully laid, provided a little vacuum as possible is left between them. The armfuls having been laid side by side and well trodden, all the spaces between them must be filled up with small bundles of stalks well pressed down, so that the foot cannot sink in

anywhere. Then, another layer may be laid, always in the same direction, but this time, putting the heads of the corn on the butt-ends of the former layer, and so on.

To get this sort of silage out of the silo, you have only to cut it with an axe by armfuls. The stock will do the rest, particularly if it is Canadian corn. As the U. S. corn is stouter, the butts will very likely be left uneaten.

The chaff-cutter is not so much needed when clover and other green-meats are ensiled, though one advantage of its use is that, when chaffed, more silage can be made in the same silo.

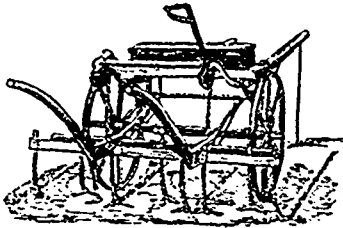
I believe I have answered all the questions that are likely to be put to me on this subject. However, if further information is required, I shall be happy to afford it.

Your obedient servant,

(Signed) ED. A. BARNARD,  
Sec. Council of Agriculture, and Director  
of the Journals of Agriculture.

(From the French.)

Vipan & Headly, Church Gate Works, Leicester, Manufacturers of the Royal Agricultural Society of England's prize general purpose Steerage Horse Hoe.



For Hoeing 6 rows of Corn... £10 0 0  
 " " 7 " " ... 10 10 0  
 " " 8 " " ... 11 0 0 (1)

Model Barns Cowhouses, &c.

Now that labor is so scarce and dear, and that building materials have become so costly, it is important to inquire thoroughly what are these models of farm-buildings that offer us the greatest advantages from an economical point of view.

GENERAL PRINCIPLES.—We shall gain time, and time is money, by getting under one and the same roof the greatest possible number of those things that occupy the attention of the farmer in the interior of his farm-buildings, so that he may be able to inspect all this most important part of his business without, if it be possible, setting his foot out of doors. It will, besides, be a great saving to get the greatest possible number of cubic feet under the same roof, provided it does not make the cost of the frame and walls much more expensive.

Of late years, the frames have been very much simplified in structure, yet their power of resisting the force even of hurricanes has not been diminished. The engraving of the erection, No. 1, will give an idea of the exterior appearance of a building *d'ensemble* uniting all the desiderata or requirements of a well managed farm. It may be larger or smaller, either as to length or breadth, according to the size or productiveness of the farm. We know that a circular building gives the greatest amount of covered space in proportion to any given roof and wall, but this sort of edifice leaves much to be desired in several ways, and the intended saving is more than lost by the quality of lumber that this form of construction requires. As to square buildings, which are more ad-

(1) The hoe is set here for working among root-crops.

vantageous, as regards economy in construction so long as they are of moderate breadth, it is difficult to be contented with them on the majority of farms, for, if the appearance of the barn is studied, the length ought to be about twice the breadth. It will shelter the horses, cattle, sheep and pigs, in fact, all the live-stock of the farm, including the poultry. There will be a dung pit, siloes, root-cellars, and fruit cellars if necessary, besides stowage for fodder-crops and threshed or unthreshed grain.

This building may be so constructed as to take advantage of the formation of the ground, which will admit of the loaded wagons entering even above the hay-loft of the cowsheds. It will also answer on more level land, but in this case, it will be necessary to use the horse-fork for the raising and transporting of the crops to different parts of the building, in which case the bridge shown in the engraving will not be wanted.

It seems to us that, since the invention of the hay-fork, the old style of barn, with hardly more than 12 feet of height to the beams from the ground plate, is no longer required. The same roof can cover two or three times as much crop without greater expenditure. For this purpose, it is only requisite to raise the body of the building a little higher, bearing in mind that the higher the barn, the more the pressure on the fodder, and the greater the weight contained in the same number of cubic feet; so much so, that a barn 18 feet high in the clear will hold as much fodder as a barn only 12 feet high, but covering twice as much space as the former. As to the use of the horse-fork raising fodder or grain-crops, 10 or 12 feet of height, more or less, make but a slight difference. Raising the height of our buildings, then, is of immense advantage, and the more so, because it allows of our having the equivalent of a barn above the cowhouse and dung-pit, which, without much additional cost, enables us to feed our cattle with much less trouble.

As to the width of the building, you will easily see the advantage of having it very wide, provided it be well lighted and ventilated in the part in which the live-stock is kept, and that the style of building do not make the cost of the frame too heavy.

But to insure the proper working of the horse-fork, there must be as little obstruction in the barn and the hay-lofts as possible. You will see in the engraving No. 2, that these advantages are to be found in the frame of the building we are about to describe. The horse-fork travels along the building from one end to the other without the least hindrance, except for about 12 feet at the ends, where the fork need not go, since the hay falling from so great a height will get up to the very gables of the barn.

The frame, though very strong is very simple. It is nailed in every part, and any one who can handle a saw and a hammer can make it properly.

Trusses—Each of the trusses is complete in itself and forms a compact body, bound together and strengthened on all sides. They may be made of planks 3 inches broad by 8 inches and more deep, according to the breadth of the building. They may be 3 to 4 feet from each other, but in a large barn, exposed to the wind, it would be wiser to place between each two trusses, 4 feet therefore apart, a false truss which will serve as a support and allow the casing and the roof which are the only bonds between the trusses, to be more firmly nailed on.

Bonds—Each truss is bound at each of its angles, on each side, with boards, 1 1/4 thick, nailed on very firmly.

Joists.—The joists unite the two sides at the base of the truss and thus make a perfectly solid whole. As the weight it has to bear in a large barn, is enormous, they should be 10 or 11 inches thick by 3 inches wide. They are to be firmly

nailed to the sides of the truss. Where they do not bear on the plates, as is the case under the cowhouse and in the other cellars, they are supported from below by wooden uprights that are firmly nailed to the trusses. In the cellars, they are also borne up by the joists and pilasters at proper distances. The joists of the trusses may be easily spliced by nailing firmly a piece of board 8 or 9 feet long on each side of the splice.

It will be understood that these trusses must be well nailed on all sides, and that the wood they are made of should be of equal strength throughout, so that there be no part weaker than the rest.

*Walls and roof.*—To simplify the construction of the frame, giving at the same time great strength to the building, it should be surrounded by 1½ inch planks tongue-and-grooved with the joints laid athwart. In this way the building will be perfectly tight, without other expense. A casing is now made which replaces the skew-sawn planks. The tongue is laid uppermost invariably, and the groove is so made that the rain can by no means reach the tongue.

The first part of the roof above the body of the barn is so steep that the tongue-and-grooved planks will answer without shingle or sheet-iron, at least for several years. The whole should be painted with coarse but staunch paint, which will preserve the wood and prevent its splitting. On the upper part of the roof, either shingles or sheet iron may be used, the latter being now so cheap, that, in important buildings, it is used in preference to the former.

In a future article, we shall describe, generally, the details of the arrangement of this barn, which have been several times treated in the Journal.

We beg to say that the plan of the truss represented in the engravings 2 and 3 is quite new and of our own invention. We have had a model of it made on a proper scale, which we have submitted to several engineers and architects, who all assure us that this style of frame affords perfect solidity with great economy of expenditure. We intend to exhibit the whole and to give all required information at the Dominion Exhibition at Sherbrooke, on the — of —, and the Provincial Exhibition, at Montreal, the 17th to the 25th September next.

(From the French)

ED. A. BARNARD.

## SUGAR BEETS.

Lachine, June 16th, 1891.

MR. JENNER FUST,

Dear Sir,—Yours of the 13th inst. was duly rec'd, in reference to the sugar beet I am not growing any this year as it didn't pay me last year. The crop was not remunerative enough to encourage me to raise them, although I only sowed an acre and a half. It yielded fifteen tons. There requires such a lot of labour to weed, pull, and cut them, that, unless a farmer had a large family to do the work, it would never pay at five dollars a ton. So far as the company were concerned, they paid me as soon as delivered. I have kept an accurate account of time and expenses of labour, I don't think there have been many who have kept such an exact account of every thing in farming as I have done since I began. Hoping this will meet with your approval,

I remain, yours truly, ALBERT F. DAWES.

I saw the crop Mr. Dawes mentions in the above letter, and spoke of it in a former number of the Journal.

A. R. J. F.

## Apples for cold regions.

We call particular attention to the very excellent article of our good friend Dr. Hoskins, of New Port Vermont which follows.

This article is taken from—Garden and Forest commendable publication from New-York. No better authority than Dr. Hoskins on the subject could be found in America.

This assertion we repeat from long experience and after hearing it from another eminent authority on the subject, the late, and most regretted, Charles Gibb of Abbotsford. The search for iron-clad fruit-trees of good quality, proposed by Dr. Hoskins, should be made without further loss of time especially in the Provinces of Quebec and of Ontario.

ED. A. BARNARD.

## Cultural Department.

### IRON-CLAD SEEDLINGS.

While there can be no question on the fact that the importation of varieties of fruit-trees from north-eastern Europe has been of advantage to the orchard-growers of the cold north, and has given them courage to persevere in their efforts to produce a supply of home-grown tree-fruits, it ought not to be forgotten that some of our most valuable iron-clads are native seedlings. Among these a certain number have sprung from these foreign varieties, and I have no doubt that many more valuable sorts will be thus produced. The Wealthy, for instance, is supposed to be a Siberian Crab seedling—perhaps, and even probably, crossed from the Fameuse. But the equally hardy Scott's Winter, which stands the cold and dry climate of Iowa and southern Minnesota rather better than the Wealthy, is unquestionably a pure product from our common apples on New-England, McMahon's White, from Wisconsin, Society of the Horticultural Department of the State Agricultural College.

Within the limits of a single town in northern Vermont I have in the last twenty-five years come upon three useful iron-clad seedling winter apples of the old strain, one of which (Scott's Winter) has become a standard sort, advertised by nearly all the great nurseries east and west.

But, with all this, I would not discourage the growing of seedlings. All of us can do a little in that way, and sometimes a great success comes with very little effort. The late Mr. Dudley, of Aroostook County, Maine, got from a few seeds of Oldenburg, planted in his garden, a large, handsome, productive and very good winter apple of the type of its parent. This experiment (as well as that of Mr. Gideon in producing the Wealthy, and of Mr. Cady in producing the Northfield Beauty of Vermont) has practically demonstrated the error of the position taken by some writers that we cannot expect to get winter varieties from seeds of summer and fall apples. Undoubtedly much the larger number of seedlings will yield early fruit. The proportion of early to long-keeping varieties of apples the world over is very great, and naturally so, since all the wild types are of that sort, and keeping apples are the product of human perseverance in growing seedlings.

What I particularly wish to urge, without discouraging the propagation by seed, is a careful examination of the millions of seedlings already in existence upon farms all over the continent. Unless one goes about among the farmers, especially in what are called the 'backtowns', he will get very little idea of the immense number of these seedling fruit-trees. Seedlings cost nothing, and many of our poorer farmers, discouraged by the costly and generally worthless trees sold them by peddlers, plant none but seedling trees. The women of our back farms are particularly noted for this. They find a spe-

cial interest in raising fruit-trees from seed, and thousands of them are quite proud of growing in this way apples that they fondly believe are "better than any of your grafts." It is true that they are not very good judges on this point, but sometimes they will really surprise one with the excellence of the fruit of some favorite tree, the child of their tender care and patience. Few of these 'fill the bill' entirely, yet we must remember that all of our best fruits were once obscure seedlings, many of them brought to notice only through what seemed a chapter of accidents.

The question is often asked whether butter made from sweet cream will keep as well as that from the ripened cream process. Heretofore the question has not been answered, for the reason that no one knew. An experiment to test the keeping quality of sweet and sour cream butter was begun at the Iowa Experiment Station in December, 1889, and was completed in August last. The two tubs were stored in a cellar at forty-six degrees without ice, and kept in the cellar until June 20, when the temperature rose to sixty-six degrees and they were packed on ice. At the end of four months, both tubs were found to be sweet. At the end of six months the sweet cream butter was in the better condition.

Vermont Watchman, April 22, 1891.

One of the heaviest taxes levied on the farmers of the country is imposed by poor roads. They double the cost of handling stuff to and from market because they double the number of loads; they take the life and energy out of the team by making it hard travelling, hard pulling and as everlasting jolting and jerking, well calculated to make a horse balk; they break the harness, cause extra wear of it and keep it soiled with sweat and mud; they strain, rack and break the wagon, necessitating the use of a heavier one than would be needed on a good road, and largely reduce the period of its usefulness; they cause a loss of time by slow travel and frequent breakdowns, and tax the patience as well as the purse. And are not the farmers themselves to blame?

Vermont Watchman, April 22, 1891.

I would place first as requisite to success in running an agricultural experiment station that it do the more immediate practical work required by the farmers whom it is intended to benefit. Very much of such work must be done which the man of genius might not think necessary. Agricultural investigation as a business need not await the advent of an original scientist like Liebig, but requires more a man of good executive ability to direct it. After this the station must do the higher scientific work which produces less immediate results, but results which are most enduring and add to our store of knowledge. The inspiration of the director and his working force must come from a love of science.

Professor S. W. JOHNSON.

Vermont Watchman, April 22, 1891.

"What is a good average of butter for a cow in a dairy?" Some do not make more than one hundred pounds. A dairyman should not be satisfied with less than two hundred pounds. The most butter can be had from cows which give milk the year round, the lasters. When cows go dry four or five months they will not average high, and this is the trouble with too many dairies.

Vermont Watchman, April 22, 1891.

A Farmer writes that one of the earliest recollections of his boyhood days was the destruction of sixty-nine sheep in a single night by a pack of good-for-nothing dogs. A slaughter of fifteen or twenty in a single night it has been his lot to

suffer at times, and lighter losses of three to ten have been quite frequent. Is it a wonder that so much wool has to be imported?

Vermont Watchman.

### THE CANADIAN PONY.

My readers will have seen in the April number of the Journal, two letters from M. Bouthillier on the subject of the Canadian pony and its possible resuscitation. Mr. Archie Campbell, of St. Hilaire, attacks the same subject, and M. Couture's lament of the disappearance, more or less complete, of the stout little beast, I have translated for the present number. By the bye, the title of the Monarch of Muscat, who sent the two stallions to William IV, as mentioned in a note of mine to M. Bouthillier's letter, was the *Imaun*, not the *Fmaun*, as the printer had it: my handwriting is far from being as clear as it ought to be.

In my opinion, the first thing to be looked at, in endeavouring to renew the Canadian pony, for saddle-work, is the forequarters. It does not signify so much in harness, whether the horse rises much or little on the withers but, under saddle, an immense difference is quickly felt. Very shortly after my arrival in Canada, my friend John Owen, of Chambly, put me on a pony, as nearly a pure Canadian as they made them in those days—1860,—and my impression was that, it might be possible for me for the first time in my life, to fall off without my horse falling with me!

As for the style of stallion to be preferred for the purpose indicated, all three of the gentlemen who write on the subject agree with me: it is the English thoroughbred. And yet, it is astonishing, when we come to think of it, how the style of that horse must have altered within the last 100 years. The noted horse *Eclipse*, the *facile princeps* of his day, had, so to speak, no withers at all, his croup being an inch higher than that part of his fore-quarter. He must have been a pretty rough horse to ride. (1)

And now let M. Couture speak:

Thirty years ago, our horses were sound, and good in every respect. The Canadian pony was a very different beast to what we see now-a-days. His only defect was that he was wanting in height; if that may be called a defect.

Broad in the forehead, wide in the lower jaw (points I also find in the Breton and Norman horses), fine as to the ears, with short, powerful loins, wide in the croup and counter, muscular in the haunch and shoulder, and with sturdy legs; large in the joints, feet like rocks, with such manes and tails as are no longer to be met with, so long and full of hair were they—such was the Canadian pony so far as his build was concerned. He possessed every point required to insure robust health and great muscular power.

And I can assert that the pony could draw heavier loads than horses much weightier than he.

It is incredible how much strength and energy this little creature possesses. Who has not seen, in the spring, when the state of the roads was abominable, a *habitant* driving along on the bare ground in a sleigh, with half a cord of wood in it, and only a thing the size of one's fist in the shafts?

Why, a Canadian pony would travel 60 miles a day for a week. Let him go his own pace, of about 6 miles an hour, and in ten hours he would have done his 60 miles, without having hardly stopped to bait. Next morning, he was fresh, and ready to do the same thing again; and so on, day after day.

Always in good fettle, always lively; a bundle of hay and 5 or 6 pounds of oats kept him in condition as well as double the ration would keep a horse of our present kinds.

(1) Fortunately for his jock, he never had to be "ridden" in any of his races, as he always won them "hands down." A. R. J. F.

And as for winter-work, there will never be anything like him. With him in the shafts, there was no reason to fear meeting other vehicles in bad roads. When he got into big snow drifts, he always managed to get clear again in some wonderful way or other. He went to work at them quietly, and got through without plunging or jolting—*swimming* through them,—and got back on to the beaten road without being blown.

And didn't this pony of ours trot! At that time, a horse that could trot his mile in 3 minutes was considered a wonder. Well, with a little training most of our horses could do that pace.

The fact is that, originally, the fastest trotters were Lower Canadian horses. In the States, there were no very celebrated trotters when, in 1858 or 1859, we had *L'Oiseau Rouge*, belonging to M. Gratton of St. Eustache, that did his mile in 2.45. I saw, myself, in 1886, M. Desjardins' horse trot his half-mile in 1.10.

What spirit, what power, what endurance, did these ponies display on the race-course! *L'Oiseau Rouge*, was sold to an American for what was then considered the exorbitant price of \$2,000! In a former article, I spoke of *Pilot*, another Canadian pony, sold to an American for a trifle; he became one of the most celebrated stallions for getting trotters the States ever had.

Very useful were this ponies under saddle. One of my old friends, a great rider and well acquainted with Canadian ponies, has often told me that he preferred them for riding to every description of horse, except, of course, those that inherited a share of the English thoroughbred blood.

Easy to break-in, both as regards mouth and action (*à la main et à la jambe*), light in hand, galloping with his hind-legs well under him (*raucourcues*), safe on every style of road or lane, the Canadian horse was a perfect treasure to his rider.

He was too good, was our pony, and they have robbed us of him. The American came and bought our best mares and stallions for a mere song. Prices were low in those days: 80 or 100 dollars for a horse was pretty fair; and so, when we were offered \$150 for a good mare, we fancied we did quite right in selling her.

For 20 years we kept on selling, or rather giving them away, until, one fine day, we awoke to the fact that our pony had disappeared. We still had left a few refuse mares, unsound things that the American had not cared to buy (always good enough to breed from, as people used to say); and then we set to work breeding from Clydes, inferior Percherons, Suffolks, all stallions too big for our mares, and the offspring were..... well, what we see now: unsound, loose-built screws.

And, so, we are 30 years behind hand. Through our fault, our own great fault.

Are any of these good horses still in existence?

We can only answer: No!

I only know one stallion that shows the characteristics of his breed, and a few mares, but they are unsound.

So that, practically speaking, the breed may be said to be extinct, for what are now a days called Canadian horses must not be so considered; they are a mongrel lot, made up of three or four other breeds.

Oh! If we had known what we were about at that time, what an admirable breed of horses we should now possess! In health, in muscular power, and in soundness of legs and feet, as well, as in spirit, endurance, and in capability for work of all kinds, the Canadian horse had no equal. As to height, quality, grandeur of carriage, and lofty style of action, I acknowledged just now that he was not perfect.

If we had infused a little English thoroughbred blood into his veins, to increase his height and add to his style, we

should, by this time, have had the handsomest and best horses in the world.

An Anglo-Canadian!

Heavens! what a horse that would have been!

J. A. COUTURE

Bravo, M. Couture! And if as Mr. Campbell seems to think, the first cross does not answer, try a second and even a third dose of the same blood; remembering that the more *in and in* bred the stallion is, the more likely he is to stamp his likeness on his progeny. If as, Mr. R. Booth held: "four crosses of really first-rate bulls of sterling blood upon a good market-cow of ordinary shorthorn breed, should suffice for the production of an animal with all the characteristics of the high-caste shorthorn," why should not the same rule hold good with the influence of the much longer pedigreed English thoroughbred: Bless him!

#### French-Canadian cattle and Jersey Canadians.

In my previous communications to *The New Dairy and Hoard's Dairymen*, as well as to our own *Illustrated Journal of Agriculture*, I have tried to make plain the following facts: There is no such breed as the *Canadian cows*. Canada being peopled by descendants of the French, and later on, of Great Britain, the United States and various continental nations, mostly all breeds of cattle have found an *habitat* here and are now seen both pure and in innumerable crosses nearly everywhere. But in the province of Quebec, which for more than a century was inhabited exclusively by descendants from France, and mainly from the Brittany and Normandy districts, a very distinct and now *unique* breed of stock has, from the first importations in the XVII century, made its way through all parts of the province and, by exception, was brought over to some districts of Ontario and the Canadian North West by the French Canadian *voyageurs* of days gone by. Later on a few of these French cows found their way into the Eastern States of Maine, Vermont and New Hampshire, being driven over through the Eastern Townships amongst the droves constantly moving on for commercial purposes. These French cows in several districts of Quebec were crossed with the various British breeds and are now more or less mongrel. But in the poorer regions and in remote parts, along the Laurentides and in the lower part of the St. Lawrence especially, north and south, the peasant or *habitant* was loath to cross his hardy little cows with the larger breeds, fearing, with good reason, that he could not feed sufficiently the larger animals to keep them alive, leaving aside profit, during our long winters, of over seven months in the year. And so the French breed of cattle has been preserved, for over two and a half centuries.

As explained before, and more or less by accident, it was demonstrated by the writer, over thirty years ago, that these little animals only required good feeding and proper care to become fully as profitable as those imported at great cost from the best dairy districts in the world.

This distinct breed has now been fully recognised by the Provincial Legislature of Quebec and has for some years past, been registered in a Provincial Register opened and controlled officially under the guidance of the Council of Agriculture of the Province, under the title of *Livre de généalogie du bétail canadien*, the translation of which could not be rendered fully except by the following. Register of the Pedigree of French Canadian cattle.

The French Canadian breed of cattle therefore exists, distinct from other breeds, and the special climatic and other influences of nearly three centuries have made these cattle even different from what is now found in the same districts from where they came from in France. Not only do they

exist, but thousands of them could be found after selection which, with a few months of intelligent, economic feeding could be pitted against an equal number of registered animals of noted dairy breeds, and prove their excellent quality, with this advantage, over all others, of less expenditure in cost of producing butter fats or milk.

This I state advisedly. It is only a very few days ago when professor Robertson, Canadian dairy Commissioner, and Mr J. C. Chapais, his French Canadian assistant, stated in our presence that a herd of pure French Canadian cattle, without any admixture of Jersey or other foreign blood,—had been purchased some months ago for the Dominion Experimental Farm at Ottawa. This herd came direct from the *habitants*, and was in a miserably poor condition last fall when it reached Ottawa. It was cared for in the same manner as for the various fashionable dairy breeds collected there for experimental purposes, with this result: All these French Canadian cows without exception, gave milk nearly up to the period of calving and gave more butter fat and normal milk for a given quantity of food than any of the others, which comprise the best Jersey blood—the best Holstein, Devons, milking Shorthorns, Ayrshires, &c.—that careful selection and abundance of capital could secure.

To make matters still plainer it should be stated here that the French Canadian cattle resemble in their general aspect the unimproved Jerseys and, sometimes, to a remarkable extent. This resemblance accounts for the name of Quebec Jerseys given to the breed by strangers to the province who have had occasion to see them here. This however is a misnomer which must lead to confusion and should be dropped by those who have a knowledge of a question.

Now for the history of the new breed which is also registered officially here in our Provincial herd book under the title of

#### THE JERSEY-CANADIAN CATTLE.

Starting in 1878 with a few carefully selected specimens of the French Canadian cows above described, all of which had proved excellent and persevering milkers, for 11 months out of 12 in the year, on common but well prepared appetizing food, the writer, in order to propagate with certainty the milking qualities he had secured, would not trust to such bulls of the breed as he might have selected from. He feared that from want of careful selection in the bulls, from generation to generation and exchange from a milking stand point, the milking qualities of the cows could not be reproduced with certainty. On the other hand, he could secure a *Dauncey* Jersey bull of the best milk producing blood and possessing all the important points which he wished to reproduce. The similitude in both the appearance and the exceptional dairy qualities of these two distinct families, was explained in a previous article where it was shown that the Jersey and Brittany stock of olden times were of one origin, being born and bred, even to the present day, within a few miles only of each other.

Thus the nick was made of the *Dauncey* family and of the French Canadian stock with the remarkable results lately shown, of a larger quantity of rich milk per annum, and it may be added, on a smaller food ration than was ever known to have been produced before.

The results obtained were constantly kept before the eyes of the readers of our provincial Journal of agriculture, the best Jersey bulls of the St. Lambert type were used in many parts of the province on the French Canadian cows, with equally favourable results, until the Legislature by an enactment opened to this family also the honors of Provincial Registration.

These facts are of considerable importance. They deserve to be carefully elucidated, and the writer is pleased to find that such men as Ex-Governor Hoard, of the *Dairyman*, professors Saunders and Robertson of the Dominion Experimental Farm at Ottawa, and we hope, the high dairy authority, L. S. Hardin, of the *New Dairy* will soon make it their pleasure to elucidate in a thorough manner the full facts of the case.

Respecting the weight of these animals, the figures published were taken in 1888 when the herd was mostly all young. Still the average of the *Jersey Canadians*, a king in the three years old, should not exceed 750 to 800 lbs., whilst the pure French Canadian cows, in the same stable, and giving about 7000 lbs. of milk in the year, would not reach 700 lbs. live weight.

This question of weight will be thoroughly elucidated presently, as well as that of the current richness of the milk, for which a Babcock tester has been secured. As to the extreme economy of feeding, this subject might later on necessitate a distinct article, in which the results obtained, from waste materials near cities, might prove interesting to many similarly situated.

ED. A. BARNARD,

Director of the *Illustrated Journal of Agriculture*, and  
Secretary to the Council of Agriculture, Quebec.

Garden of the Farm.

KITCHEN GARDEN —A correspondent in the *Gardeners' Chronicle* (Mr. George Taber), writing of peas fifty years ago, says:—"I gathered early peas in the last week in May from seed sown in the end of January or early in February. (1) I attribute part of my success to making the bed for the seed solid instead of merely drawing a drill with a hoe. I make a trench by treating the ground deep enough to sow, and, having sown the seed, I again tread the soil, pressing the peas into the solid earth, and to prevent mice taking them I make a mixture of soot and sulphur, and sprinkle it thinly over the peas, and then covered them up in the usual manner. The early sorts then in cultivation were Early May, Early Warwick, Prince Albert, and Nimble Tailor. Early May produced the finest pods. After fifty years' experience, I find that land otherwise well prepared is not as a rule made solid enough for a bed for the seed." I can thoroughly endorse the above remarks, for I am sure this important point, the making of ground firm and solid before sowing the seed, is often overlooked, and is often the cause of the seeds not growing. The seed is often pronounced bad, when it is the fault of the sower, not of the seed. I have before called attention to this matter, and in a dry season like the present it is well worth bearing in mind; when the soil is dry it should always be made firm before sowing seed. The onion crop is often a failure through not making the ground firm, more especially on light soils. Strawberry beds should now be gone over, and all the dead leaves removed from the plants, and a good dressing of rotten dung placed all over the bed right up to the collars of the plants, and pressed firm down. Where young plantations were made last autumn the frost will, in many cases, have loosened the soil round the young plants; they should now be made firm, and where any of the plants are dead fill up with young plants from the reserve beds. Raspberries: the ground around these should never be dug with

(1) Of course the months must be altered here. A. H. J. F.



the spade, only slightly moved with a steel fork, afterwards spread a good dressing of rotten manure all over the surface of the beds. All kinds of fruit trees and bushes that were planted in autumn should now be looked over, and where the ground has become at all loose round them have it made firm right up to the stems; this is most important with newly-planted fruit trees. They should also be mulched with half-rotten manure, which will keep the roots moist in summer, and save much watering.

J. SMITH.

*Mentmore, Bucks, February 25th.*

We have received from the Secretary of the Bath and West of England Society an advance proof of the report of the Society's *mangel experiments* conducted in 1890. The object of the experiments was to ascertain what manures can be most advantageously used for the production of a good crop of mangels having regard also to their effect upon a succeeding crop to show the effects of corn. There were twenty-five field experiments conducted in nine counties, the plots being arranged thus:—Artificial manures with dung, artificial manures without dung, dung only, and no manure. Mr. J. E. KNOLLYS, chairman of the Experimental Committee, thus summarises the results:—

1. That both in larger produce as well as in smaller cost the plots without dung have the advantage.

2. That the addition of mineral superphosphate alone to a full quantity of dung has given a slight advantage (A and E).

3. That half the quantity of dung with 2 cwt. nitrate of soda added has given a better result (B C D) than a full dressing of dung.

4. That the further addition of mineral superphosphate in B and of salt in D has given in each case an increase of crop, the salt rather the larger (C and B, C and D).

5. That the addition of mineral superphosphate and salt to 1 cwt. of nitrate of soda in H, and of mineral superphosphate (without the salt, in L, have each produced heavier crops than 4 cwt. nitrate of soda alone in G.

6. That 3 cwt. sulphate of ammonia in K has not done so well as 4 cwt. nitrate of soda in E, each having the same addition of mineral superphosphate.

7. That 4 cwt. of nitrate of soda in H has produced 2 tons more mangels than half the quantity in I, but that the increase obtained from 4 cwt. appears to be less in proportion than that obtained from 2 cwt.

Mr. KNOLLYS adds that the experiments point very forcibly—so far as the mangel crop alone concerned—to the advantage which artificial manures in proper combinations, either by themselves or with small quantities of dung, have over large and heavy dressings of dung. But, he remarks, that "we have yet to see what will be the effect upon the succeeding crop of corn, and until we learn this our experiment is incomplete." It is further recalled that the season was very exceptional, and that a different season may tell a different tale. Under these circumstances it has been decided to repeat the experiments this year. The report will appear in the *Journal of the Bath and West of England Society*, which will be published soon.—*Ag. Gazette.*

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Why struggle with exhausting diseases when you may be promptly cured by the use of nature's remedy—Burdock Blood Bitters—the perfect cure for dyspepsia, biliousness, constipation, sick headache and all forms of bad blood from a common impure to the worst scrofulous sore.

### CONSUMPTION CURED.

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

820 Powers' Block Rochester, N. Y.

### Like Paralysis.

"For years I suffered with my back which sometimes became as if paralyzed. I suffered awful agony for months and could not sleep, but now, thanks to your Burdock Blood Bitters, I am strong again, have no pain and can work well, eat well, and sleep well."—Mrs. Hammerton, 23 Charlotte St., Toronto.

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### Dyspepsia.

This disease may be traced to a variety of causes, such as constipation, liver troubles, improper food, &c. There is one cure—Burdock Blood Bitters—which may be thoroughly relied on to effect a permanent cure. It has cured obstinate cases of 25 years standing.