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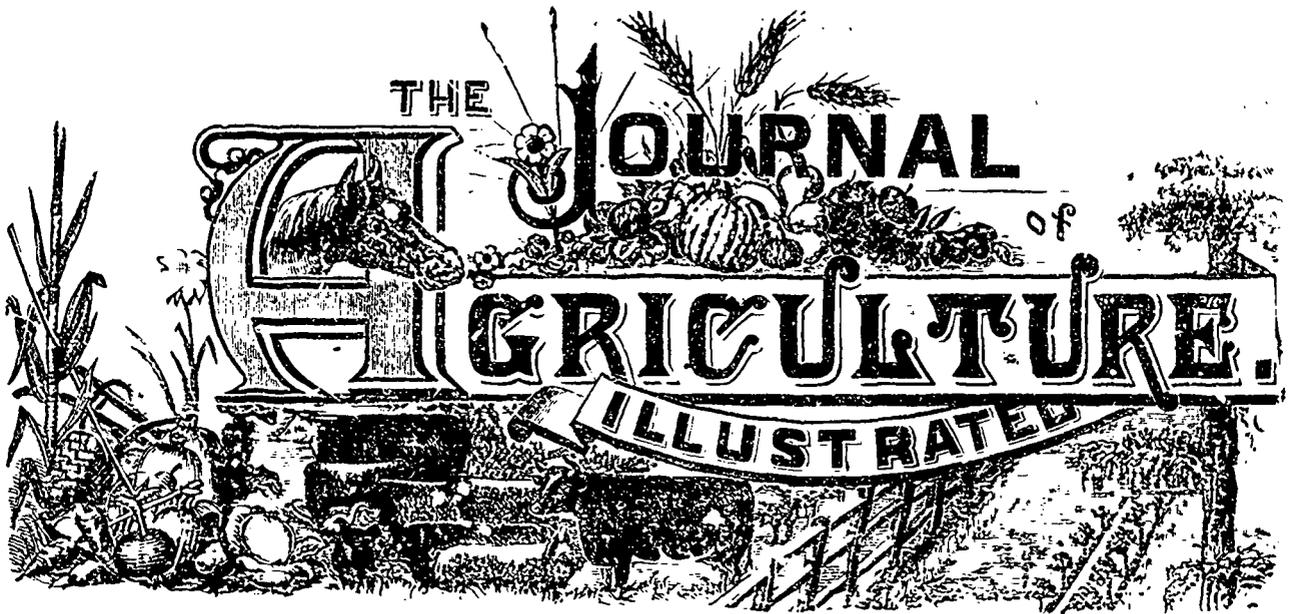
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NOTICE.—The subscription to the *Illustrated Journal of Agriculture*, for members of Agricultural and Horticultural Societies, as well as of Farmers Clubs, in the province of Quebec, is 30c annually, provided such subscription be forwarded through the secretaries of such societies.—**EDITORIAL MATTER.** All editorial matter should be addressed to A. R. Jenner Fust, No. 4 Lincoln Avenue, Dorchester Street West, Montreal—or to Ed. A. Barnard, Director of the *Journals of Agriculture, &c.*, Quebec.

OFFICIAL PART.

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REPORT ON SILOES AND ENSILAGE—1891

(A separate report should be made for each silo visited.)

THE JUDGES ARE REQUESTED TO READ THE QUESTIONS CAREFULLY, AND TO REPLY AS SOON AS POSSIBLE

The undersigned, instructed to visit the siloes built this year (1891) in the county of has the honour to make the following report :

QUESTIONS	REPLIES AND REMARKS OF THE JUDGES.
1. Date of the visit.	Answer, 1891
2. Address of the proprietor of the silo	A. (name)
3. Dimensions of the silo	A. Length.....breadth..... depth.....in feet.
4. Construction of the silo ; in stone, wood, brick, &c ?	A.
5. Is the foundation of brick, concrete, wood, &c ?	A.
6. Is the bottom of beaten earth, or of wood, &c.	A.
7. What means are taken to prevent the frame, especially the lower part, from rotting ?	A.

- 8. Can the air be admitted from below, when the silo is empty, by taking away the earthing up, or otherwise, so as to dry the parts likely to rot? A.....
- 9. Is the silo painted within to preserve it, and how? A.....
- 10. How is the frame of the silo made? (give the dimensions of the boards, &c.)
What is the distance from one board to the other? A.....
- 11. Is the silo boarded only inside? Is there paper between the panels? Or both inside and out? Explain how. A.....
- 12. If it be boarded both ways, is the vacancy filled, and with what? A.....
- 13. Is the silo filled with maize? A.....
What sort of maize? A.....
White or yellow? A.....
What was its average height when cut? A.....
Were the ears and grain full grown? A.....
If the silo was filled with clover, or with oats and vetches, give some details as to the sort and as to the state of the silage. A.....
- 14. How much do you think the quantity harvested, an arpent, green for ensilage is worth by the 1000 lbs? A.....
- 15. How high was the silo filled? A.....
- 16. How many feet did it sink before it was opened? A.....
- 17. How was the silage covered to preserve it? A.....
- 18. Did you find the upper part or the sides of the silage more or less damaged, and if so, how much of it, in feet or inches? A.....
- 19. What is the colour of the silage now? A.....
- 20. Is the taste sour or sweetish? A.....
- 21. To what sort of stock is the silage given? A.....
- 22. In what quantities daily to each sort? A.....
- Horses. A.....
- Sheep. A.....
- Cows. A.....
- Pigs. A.....

- Poultry A.....
- 23. Do the stock seem to like the silage? A.....
- 24. Do you give it any prize, and which? A.....

ADDITIONAL REMARKS BY THE JUDGES

(Signature)

(Address).....

The first prize collection of Potatoes.—1891.

Of the twenty eight sorts shown, the greater part may be called early sorts, ripening in three months, and only very few late, though some of those called early are late, or at least long growers, that is, they produce potatoes that at an early period of their growth are quite eatable, and go on increasing in size and improving in quality until near the middle of September. Of this character are Lee's favorite, Puritan, and Green Mountain, especially the former, which I have sometimes kept growing through a long dry spell by the steady persistent use of the cultivator. Among the early sorts, even when strictly pure, may be found some plants of stronger and longer continued growth than the bulk of the planting of any particular sort: that there seems to be no accounting for, as in color shape and size, there is no variation. The only variation seems to be in the bulk of the yield for the particular plants. In this way, the sort called Late Rose is said to have had its origin. New varieties from several old well known sorts might be obtained by means of a selection of such plants. Many of the new early sorts are so similar in color and shape as to appear to be identical. But the grower notes the differences in the field. Early Rose and extra early Vermont can hardly be distinguished, but the latter is, by several days, the earlier of the two. Clark's No 1. is very like them but made more productive. Queen of roses, Rosy Queen, and Vanguard are also very like. Beauty of Hebron is another type in color and shape. White Elephant, Lee's favorite, Everett, and New Queen, resemble it. In color they are a yellowish white, tinged or clouded with a rusty pink. Potatoes of this color are rather more solid, firmer in texture and coarser in grain, than those of the Early Rose type, and probably better bearers, besides being supposed by some to be less subject to rot.

Another type, or family, of comparatively recent introduction, is clear yellowish white, without any tint of red, Puritan, Green mountain, and Polaris may be mentioned. They are very productive, of large size and good quality. While not the earliest, they are early, solid, fine grained, and good keepers. Rural New-Yorker stands by itself. It is white, large, round, flattened, late, and very subject to rot. Snowflake and Charles Downing are small, white, very rough-skinned like the old Rusty-coats of forty years ago. They are only moderately productive, though very numerous in the ground, and are thought by many people to be of the very finest quality.

Large roundish deep bright red potatoes are almost invariably late in season and long keepers. Two comparatively new ones are Astonisher and Bonanza, both very productive and of fine quality.

Productiveness, long keeping, and non-rotting, are qualities,

that, to a considerable extent, depend on the mechanical condition and fertility of the soil. Perhaps more to these than to the character of the variety. This season none are exempt from rot. In low spots the rough skinned sorts seem to have suffered most this season.

ROBERT HAMILTON.

Turnips—Mr. McCombie, the great Aberdeenshire cattle-breeder, fed his bullocks for the great London Christmas market on nothing but turnips and straw until one month before they were sent off to the block. This I venture to state for Dr. Hoskins' benefit, in confirmation of the views of the butcher mentioned in an extract from the *Vermont Watchman* in last month's Journal.

Potatoes.—Mr. Terry writes to the *Country Gentleman* stating that he planted in the spring 165 lbs. of a new sort of potato, and had just dug the crop, which amounted to 304 bushels = 18,240 lbs. = 9 tons! A hundred and ten for one is not a bad increase. The sets were cut small, and planted 32 x 32 inches.

Culture intensive.—A good example is being set at St. Hilaire by an old Frenchman and his sister who have set to work on a couple of acres of sandy soil, and are cultivating their tiny farm in a most marvellous manner; at least so says one of my daughters who has just returned from a visit to the Iroquois House, and who knows what she is talking about. The vegetables are described as superb: "equal, in fact, to anything I ever saw you grow, Papa," and the grapes are in material and flavour far superior to any of the sorts usually cultivated. But—and this is a sad but—the poor creatures have hardly any rest! The man watches the fruit till midnight when he wakes his sister, who continues on guard till sunrise, otherwise their labour would be thrown away, as they are continually subject to the incursions of pilferers from the village. Poor things; I feel deeply for them, as they are clearly enthusiasts.

Jerseys and Dairy-shorthorns.—Last month, in England, there was a sale of Jerseys, the property of the well known breeder Mr. Triender, of Aylesbury. The average price of the herd was \$80.00.

On the same day, Mr. Simpson's dairy-shorthorns were sold; averaging \$126.00. In England, therefore, the dairy-shorthorn is valued, if these sales are any guide, at 56% higher than the Jerseys.

Lambs in England.—The price of mutton is not so high as it was in England, still, at Wilton fair, where, on the 10th September, upwards of 50,000 sheep were offered, lambs of the Hampshire-down kind sold up to 50s. a head! Ten dollars is not a bad price for a lamb a few days over 6 months old, is it?

Sainfoin &c.—Mr. Wm. Evans will have new sainfoin seed to sell in the spring. I have succeeded in convincing him that "Paceys" perennial rye grass has never been tried on his farm, but only the common per. r., which I know will not stand the climate; so, next season he will try the Pacey's.

OUR ENGRAVINGS.

SUFFOLK STALLION from the *Country Gentleman*.

We re engrave from a catalogue of Suffolk Punch Horses, issued by Mr. ALFRED J. SMITH, Rendlesham, Woodbridge, Suffolk, Eng., the portrait of a very high-bred specimen of the breed, a stallion called Queen's Diadem, 1721. He was got by Weldon's Diadem 1553 out of Queen of Newbourn

10.0 by Capt. Snap, 142, and is now five years old. The picture shows to perfection the typical formation of this useful kind of horse, and it is not surprising that the original has carried off a long string of important prizes.

The word Punch is never used in England to describe the large Suffolk. The *Punch* is the smaller horse mentioned in the article on the Exhibition in the last number of the Journal. (Crowded out last number.)

ARTHUR R. JENNER FUST.

M. C. F. Bouthilliers's farm.—The farm I am about to notice briefly is situated on the banks of the Ottawa, near Ste-Thérèse. The moment I saw the house, I exclaimed to my friend Mr. Tylec who was with me; Why, we are not in Normandy, are we? The whole buildings, courtyard, stables, &c., are just what one would expect to see on a large Norman farm! And the peculiar part of the construction is that the material consists entirely of stone gathered from the surface of the land, which utilitarianism is perfectly in accordance with the views of the great English ecclesiastical architects, the Streets, Gilbert Scotts, &c., who hold that all buildings should be composed of the best materials to be found in the immediate neighbourhood of the place in which they are to be used. Butterfield's church in St. Margaret Street, London, is a fine example of this style. The whole exterior, except the spire which is of stone, is of brick in three colours, red, yellow, and blue-black, in couches several feet wide, and a most charming effect it has.

The stables at Bleury are well arranged, with several loose-boxes and plenty of room. As M. Bouthillier is an ardent lover of horses, the principal object he has in view is the rearing of good, stout colts, and if the brood mares I saw in the stalls, served by the thoroughbred stallion he bought from Mr. Dawes of Lachine, do not turn out some rare weight-carriers, I know nothing of horse-breeding.

The mares are six in number, big, upstanding animals, chiefly brown in colour, and one of them I really thought would approach 17 hands, though I since find that she does not much exceed 16½ hands. As I guessed her height when in the stall, I may be pardoned for such an error. These mares do all the work on the farm. What with colts, &c., there are 15 horses of all kinds on the farm.

The stallion, Kindkead by name, comes from the purest English racing stock, being by Waverley, out of Brenna, by Knight of St. George—see the English and American stud-books. Besides serving his owner's mares, his former possessor, Mr. Dawes, sent four mares to him this season. Unfortunately, Kindkead broke down on his off fore-leg, so he did not distinguish himself on the turf; but the defect is purely accidental and not at all due to any local weakness. He is as handsome a chestnut as I have seen, and appears to be as perfect in temper as in build.

As for the young ones, there is one two year-old that is a sight to open the eyes of the neighbouring farmers; any of whom might be pardoned for taking him for a four year-old. He stands 16 hands high, and is furnished like a mature horse, with really amazing power all over, particularly in the loins, quarters, and hocks. If he goes on well, he will make a model hunter for the heavy countries in Hampshire (below the hill), Sussex (in the weald), &c. His only fault is that, if he keeps on growing, he will perhaps be a little too big, but he will always fetch his price as a brougham-horse.

A pity to dock the young ones' tails. The fies were tormenting them terribly, and the vile modern fashion of short tails for all sorts of horses will not last for ever. In my breeding days, the dealers used always to say; Pray don't touch their tails, Sir; leave that for us to do when we get them into our stables. We know what tail will suit each!

horse, and what our customers like, better than you do.

Of cow-stock there are nine, with a Jersey bull, which animal roars all day to that extent that I should like to choke him. The cows are all grades, but there are two I must notice in particular. No. 1. As far as I can judge, a cross between shorthorn and Devon; a fine looking animal, giving the highly satisfactory quantity of 26 quarts (65 lbs.) of milk a day, after calving. This splendid cow was unfortunately attacked with milk-fever after the birth of her last—in July—and has not done so well since. No. 2. I took, at first sight, to be a cross between shorthorn and Guernsey, and a newly imported cattleman from Cheshire, Eng., whose father is, and has been, for twenty years, in the employment of Mr. Fowler of Southampton, the great importer of Guernseys into England, backed me in my opinion; but M. Bouthillier assured me that she was by a Jersey bull out of a grade shorthorn. I don't care how she is bred, she is one of the most perfect models of a farmer's cow. Very heavy in proportion to her height, and gives, after calving, 2½ quarts (60 lbs.) of very rich milk a day. If these two cows are to be beaten in a class of dairy-cows at the Montreal show, I should like to be the owner of the prize-winners.

M. Bouthillier intends to breed all the grades as nearly thoroughbred as possible, or to sell off the grades and replace them by pure Jerseys; but if he will take my advice he will not get rid of such profitable animals as Nos. 1 and 2 without great consideration.

Neither sheep nor pigs on the farm. Horses are the main thing, with cows enough to supply the house. Of poultry, there are 30 Plymouth-rock hens, with a suitable number of cocks, and about 200 and odd young ones, all of which latter are consumed in the house. I should recommend M. Bouthillier to get two or three Dorking cocks this autumn, as the hens he has want a refresher from the original parentage. This would improve the breasts of the fowls, and, after all, the *flets de volaille* are the main thing. Pure Dorkings, they say, are too delicate for this country; but Mr. Thomas Irving, of Logan's Farm, Montreal, does not find them so. I do not believe that on *dry soils*, any fowls will be found more profitable than Dorkings, and for the table, they are certainly more fleshy on the primer points than any other breed, though, perhaps, the game-fowl is superior in flavour. The latter kind, crossed with the Dorkings, is about as well flavoured as any, but they are such quarrelsome brutes that I should not care to have them about my yard.

M. Bouthillier's farm consists of 140 acres. Some of this, between the château and the river, is inundated every spring, and is pretty well useless; though, as a sort of drainage-system has been begun by the municipality, the future may see an improvement in it. The land is light, very light, towards the town of Ste. Thérèse, a good deal of it too light to carry any crop but grass and barley, of which latter crop M. Bouthillier, a year or two back, reaped what would be a great crop anywhere: sixty-six bushels to the imperial acre! Eight quarters, two bushels an acre, would be considered an extra large yield in the great barley-districts of the eastern counties of England.

The clover had failed on part of the lightest land N. of the house, and on the 20th August, a week before my visit, more seed of clover and timothy had been sown, but not covered. The clover had just sown, and had thrust one foot into the earth. I was asked whether it would be right to harrow it, but I recommended rolling instead. Anyhow, I fear it was too late in the season to do much good.

The *paddocks*, about 1½ acre each, are charmingly situated on the slope of the hill towards the South. The colts, on my first visit, July 7th, were wandering about in 1½ ton of clover to the acre, which crop I persuaded M. Bouthillier would be

better out at once for hay than tramped to a wash by the horses.

Round the farm, runs a training-ground, which, when completed, will be about 3 miles in extent. A pleasant gull path enough before breakfast. I believe the intention is to put up fences of every description along one side of this course, from stone walls and big ditches to double-post-and-rails and plan gates. As M. Bouthillier breaks and trains all his own colts, and as the person of all others who ought to know says: He has very light hands on a horse; I fancy his young ones when put on the market ought to have that most desirable quality: *Gentlemanlike manners*, always worth an extra £50 on a two hundred guinea horse.

The cropping on this farm is not particularly considered. There are, usually, 20 acres of oats, 2 acres of barley—6-rowed, for the poultry—1 acre of red-carrots for the horses, from 1 to 1½ acre of potatoes, and 40 acres of meadow. Four acres near the house are kept in soiling-crops, cabbages, &c. Some years, a couple of acres of pease and a little buckwheat are grown.

Such a dog! A great Danish wolfhound, who, when extended at full length, covers about 4 feet in length. Heavy grayhoundish in build, with bull-dog skull though long in the jaw, and ears cropped like those of a terrier. A most amiable beast, though I should think a terror to evil-doers at night.

One fault I must point out: the dosing of the potatoes had been neglected, so that the leaves were stripped bare on my first visit, July 7th, and though Paris-green was applied immediately afterwards, and on the 25th August the leaves had shot again, the crop must have suffered seriously by the delay.

At Sorel, M. Séraphin Guèvremont, following my advice, doses his potatoes up to the last, and, I presume to say in consequence when I visited his farm, on July 14th, there was no sign of a Colorado beetle, either had there been. If the last brood were poisoned as carefully as the first, the beast would soon be got rid of; but, no; the lazy farmer says: the potatoes are at their full growth, and I am not going to bother myself.

About singling carrots; they cost M. Bouthillier about three times as much they ought to cost him. If he will allow me—as of course he will—I mean to single some for him next year with a hoe constructed after my own ideas.

As there were no prizes offered for agricultural implements at the Montreal Exhibition, my horse-hoe was not shown.

ARTHUR R. JENNER FUST.

Dairy-school at Burlington, Vt.

Below will be found a copy of an official circular respecting the *dairy-school* to be opened at Burlington, Vermont, on the 20th November next. The complete course will occupy four weeks.

At our request, the University of the State of Vermont will kindly throw open this course, gratuitously, to our butter-makers. It will afford them a unique opportunity of perfecting themselves in all the details of butter-making.

We also append the prospectus of the Cold-storage Company, of St. Albans, Vt., which we have lately closely inspected. On the 20th September, we saw and tasted fresh butter made on the 1st June last, and found it to be in a thorough state of preservation. Mr. Parker, the largest butter-maker in the whole world—he makes 5,000 lbs. a day—told us, that he has now in a refrigerator butter perfectly fresh that he made two years ago! In an early number of the Journal, we shall give a complete description of the St. Albans' creamery, which is under the management of Mr. Parker, and which we went through in detail.

This question of the perfect preservation of butter while waiting for sale is of the most vital importance. We have often spoken of it before. Now, we have a proof of the ease with which perfect preservation can be secured after a year's keeping and more, provided the refrigerator in which the butter is stored be kept at the right degree of *dry cold*.

ED. A. BARNARD

(From the French.)

University of Vermont and State Agricultural College
Burlington, Vt.—Dairy School.

Recognizing the fact that *dairyng* is the leading industry in Vermont, the trustees of the University of Vermont and State Agricultural College, have made arrangements for conducting, the coming winter, a DAIRY SCHOOL. The session of the school will last four weeks and will be devoted to the subject of *Butter-making*.

This school is especially designed to give instruction to professional butter-makers, that is, to those men who have been making butter for years and wish to learn some of the nice points and newer methods of conducting the business. It is believed that the course will be of great value to butter makers and to those who have in charge the running of separators and creameries. In these days of sharp competition a slight advance in quality or a little saving of losses in skim-milk and butter-milk, makes a wonderful difference in the net profits of the year's work.

Any one taking this course ought to be able to save *at least* one-tenth of one per cent more of butter fat from the skim-milk and the buttermilk and to add a half-cent a pound to the price of his butter, the first of which means a net gain of \$400.00, and the second a gain of \$500.00 on a creamery handling the milk of five hundred cows.

The instruction in the department will be given by Mr. H. B. GURLER of De Kalb, Ill., who owns and operates four large creameries, running six separators and handling in the flush of the season over forty thousand pounds of milk a day. Mr. Gurler has made a careful study on a large scale of the principles and practices of the economical handling of milk, and in his home creamery is getting the largest yield of butter per hundred pounds of butter-fat in the milk delivered, of any creamery in Illinois, and is selling his butter at the top market price. There are few, if any, butter-makers in Vermont, who cannot get valuable hints from Mr. Gurler.

A new dairy house has just been built at the University with special reference to the work of this Dairy School, and no expense will be spared to fit it out with apparatus and supplies for making the school a success. The machinery will consist of a twelve horse power engine, with fifteen horse power boiler, De Laval separator, Danish Weston separator, Russian steam separator, Stevens separator, U. S. butter separator, De Laval continuous churn, and the Baby separator. To these will be added apparatus for cold deep setting, the Boyd starter vats, cream ripening vats, churns butter workers, and various styles of butter prints and packages.

One thousand pounds of milk daily, will be handled by the students, giving them ample opportunity to conduct their work under creamery conditions.

A peculiar feature of the work will be the butter testing.

Arrangements have been made with two of the leading commission houses of Boston to ship packages of butter each day to the school. This butter will be examined and scored in Boston by at least two butter experts, and the score sent with each produce. The students will be given samples of the butter to score, and then their judgment compared with that of the city expert. It will be seen at once how large an effect

this ought to have in aiding the student to *know* and consequently to *make* good butter.

Considerable time will be devoted to teaching the students how to test milk and cream, how to detect skimming or watering, and to test their skim-milk and buttermilk to see how good work they are doing. A laboratory for this purpose will be provided in the Dairy School building.

There will also be given lectures on the general care of milk, the production and the best methods of handling it on farm and at the creamery.

COURSE OF STUDY.—8.30 to 9.30 A. M. Lecture on milk production, methods of testing milk and cream, methods of paying according to test at creameries

9.30 to 10.30. Laboratory work in milk testing and in the detection of adulterations in milk and cream.

At 10.30 the class will be divided, one half going into the dairy room to handle the thousand pounds of milk, and the other half remaining in the laboratory to score the daily butter samples and to work out the results already obtained in their tests. At 11.30 these latter students will go into the engine room and take practical lessons in the running of the steam engine.

2.00 P. M. The students will meet for a general discussion of the work of the day.

2.30 Those students who ran the separator in the morning, will churn and work the butter from the cream of the day previous, while the others will take practical work in running the machines, using water instead of milk.

REQUIREMENTS—No entrance examination will be held and no definite standard of scholarship required for admission. In fact, what a person knows or does not know of book knowledge, is a secondary matter in this course. The purpose is not to give a general education, but to furnish technical and practical instruction in the single subject of the handling and manufacture of dairy products.

EXPENSES.—*There is no charge for tuition* Half-fare rates will be given by the principal railroads of the State, to students. Room and board can be had at \$4.60 to \$4.50 per week, so that \$20 to \$25 will cover the entire expense of the school. It will be best to make arrangements for room and board and half-fare certificate at least a week before the beginning of the school.

The Dairy School will begin Monday, November 30, 1891, and continue six days in the week for four weeks.

For further particulars and half-fare certificate, apply to

W. W. COOKE, Prof. of Agriculture.

Burlington, Vt., August, 1891.

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Modern style. Jackson patent. Dry air.

Rates of Storage, including Insurance, Unloading and Loading.

NOTICE.—There will be three rates A, B, and C, for storing Butter, Cheese and Eggs, and which rate a customer will be charged for storing either kind of these goods will be determined by the amount of such goods he may store in his own name, during the season from April 1st, 1889, to December 1st, 1889 Goods purchased in the Cold Storage house not being reckoned to make up the amount required to entitle a consumer to one of the lower rates.

BUTTER RATE A—For customers storing 20 or more tons

of butter, (equal to 800 tubs of 50 lbs. each net,) the rate will be 15 cents per 100 lbs. net per month.

RATE B.—For customers storing 5 or more, but less than 20 tons of butter (equal to 200 tubs of 50 lbs. net each.) the rate will be 18 cents per 100 lbs. net per month.

RATE C.—For customers storing less than five tons of butter the rate will be 25 cents per 100 lbs. net per month.

CHEESE RATE A.—For customers storing 15 or more tons of cheese (equal to 600 cheese of 50 lbs. net each,) the rate will be 12½ cents per 100 lbs. net per month.

RATE B.—For customers storing 5 or more, but less than 15 tons, (equal to 200 cheese of 50 lbs. net each) the rate will be 15 cents per 100 lbs. net per month.

RATE C.—For customers storing less than 5 tons of cheese, the rate will be 20 cents per 100 lbs. net per month.

EGGS, RATE A.—For customers storing 12,000 or more dozens of eggs, the rate will be 1-3 cent per dozen per month.

RATE B.—For customers storing 5,000 or more, but less than 12,000 dozens of eggs the rate will be 3-8 cent per dozen per month.

RATE C.—For customers storing less than 5000 dozen of eggs, the rate will be 1-2 cent per dozen per month

TERMS AND CONDITIONS.—All the above rates are for charges for each month or fraction of a month, and in all cases fractions of a month will be charged as full months, except that in some cases there may be two (2) days of grace.

All storage bills are due and payable upon the delivery of a whole, or part of a lot.

No eggs received unless thoroughly candled.

All goods received subject to inspection.

Delivery orders must be endorsed upon regular warehouse receipts. No goods delivered otherwise.

Reasonable advances made on consignments.

ST. ALBANS COLD STORAGE COMPANY.

DRAINING

The question you ask in your letter of the 3rd inst. has been asked very often before, both here and in England. In reply, I would ask you to consider the space that necessarily intervenes between any two pipes in a row of perhaps 40 rods long. Pipes, however well made, never fit closely; there is plenty of room for the greatest fall of rain to get into them in that way in the course of, at most, 36 hours. Bear in mind that the water rises into the drains and does not, as some seem to think, hunt its way through cracks in the soil until it gets into the top of the conduit, as thus: all soils can contain a certain quantity of water; when the land is fully charged with moisture from a rainfall, you can conceive that there is, so to speak, a column of water in the soil extending from the surface to the level of the drains; the next drop of rain that falls will press upon that column, and force the last of it to strive to find an exit, which exit it finds to be most easy to obtain at the bottom of the drain.

No doubt, some water gets into the pipes through their substance. If you soak a drain-pipe in water for a few hours, you will find it much heavier than when dry, but the greater part of the water enters between the pipes. Our pipes are much heavier than they need be, one inch and a quarter bore is enough for any ordinary length, and 2½ for mains. As for their cost, the smaller pipe ought to be made for five dollars a thousand at the kilns.

Remember that depth, up to a certain point, will compensate for distance. The heaviest clay in Kent, England, I have drained perfectly at 4 feet deep and 33 feet between the chains. The labour of digging, laying the pipes, and returning the soil, averaged, by contract, sixpence a rod of 5½ yards; including pipes, carriage, &c., \$17.00 an acre.

A long article on drainage from my pen, appeared at p. 129 of the Journal for 1881. I presume to think that it contains all the information necessary to a thorough apprehension of the subject. I superintended the drainage of several hundred acres of land in Kent, Essex, and Gloucestershire, and, to make myself master of the job, I worked at the "bottoming out" part of the operation for several days.

Mr. Stevens.

A. R. JENNER FUST.

M. J. de L. Taché writes me word to-day, Nov. 21st, that the date is not yet fixed for the meeting of the Dairyman's Association at Montmagny.

A. R. J. F.

Preservation of Our Apple Trees

The following abstract of an address on "Our Apple Trees and their Enemies," delivered by Prof. L. H. Bailey before the New York State Cider and Cider Vinegar Makers' Association, at Albany, N. Y., January 28, 1890, contains much valuable information upon a subject of vital importance to fruit growers and cider makers.

"The failure of the apple crop was never so complete as in 1890. The trees blossomed very full, but the fruits failed to set. The spring was exceedingly wet, and mostly cool. When the orchards were in bloom unusually heavy rains fell. Shortly afterwards the blossoms withered and fell, and the leaves of apples, pears and quinces began to blight. The rains were succeeded by drought, which, in some sections, became severe. During the early part of the season the blight of the foliage increased, until, in July, when I inspected the orchards in several counties, there were thousands of acres of apple orchards which appeared to be dying. In many places the blackberries and later raspberries, in some sections, dried up and the bushes looked unhealthy. It is probable that similar injuries extend, in a greater or less degree, to all parts of north America.

It is an almost universal opinion among growers that the weather is responsible for the general failure, particularly in the case of apples, where failure is the most complete and disastrous, and which were just out of the bloom when a prolonged storm, of unusual severity and accompanied by lightning, passed over the country. It has long been supposed that cold and heavy rain at blooming time will prevent fertilization of the flowers, and the idea seems universally accepted. Yet I know of no reason for thinking it generally true, or at least of sufficient moment to account for the failure of a crop. There are not only strong general reasons for doubting the notion, but several minor observations are also against it. For instance, two Seckel pear trees, equally exposed and of the same age, both of which bore a heavy crop last year, stand but a rod apart, and were in bloom at the same time: one has no fruit and the other is loaded. We have all observed good crops of fruit in years when heavy rains fell at blooming time.

In undertaking to determine why blossoms fail to set, it should be borne in mind that fully four fifths of the flowers of apples and pears fall naturally. The flowers are borne in clusters, yet the fruits are usually borne singly. The redundancy of flowers appears to be nature's method of insuring fertilization, by increasing the amount of pollen and multiplying the chances of success. The blossom which is strongest, or which gets the best start, whips aside from its position in the cluster, appropriates energy to itself, while its neighbors fail.

In most cases the apples had set and were about the size of small peas when they began to die. They withered, turned brown and fell. The date of attack varied somewhat in varieties which bloom at different times. The Greenings died before the late flowering sorts, but all were attacked at about the same period of growth. At the same time, the young leaves began to look unhealthy, and they rapidly assumed a blighted appearance. Most growers assert that those trees which bloomed most profusely were most attacked by the leaf blight. Three or four years ago a similar failing of flowers and blighting of foliage occurred, at least in some parts of Orleans county. In that case, however, the attack is reported to have been a little earlier, and the flower clusters often fell off entire. The meteorological conditions were similar in both years.

All these facts show that there is an intimate connection between the death of the flowers or young fruit and the blighting of the leaves. The blight is caused by the apple scab fungus. Whether the flowers or young fruits were actually attacked by the fungus in this case, or whether they fell because of the impaired vitality of the injured trees, I am unable to say, but it is probable that their death is due in large part, directly or indirectly, to the fungus. This apple scab fungus part, directly or indirectly, to the fungus. This apple scab fungus (*Fusicladium constrictum*), which is so destructive to foliage, is the one which causes the scab upon the fruit itself. It is nearly always present to a greater or less extent upon both leaves and fruit, but is rarely so destructive to foliage as this year. It has increased rapidly in New-York of late years, and last year the apple was unusually scabby. The wet spring afforded it just the conditions for rapid growth. It appears to be somewhat worse upon low and undrained lands than upon high and warm elevations, although the latter are never by any means exempt in the infected regions. Some growers think that the scant foliaged varieties, like Spitzenberg, are most seriously injured. The growth of the wood is very scant because of the unhealthy foliage.

I am strongly of the opinion that a large part of the apple failure this year is due to the unusual and very early development of the scab fungus. If the season next year is like the last one—cool and very wet at blooming time—we may expect a return of the difficulty, but there is reason to expect that the same conditions will not occur again for some years. The scab will undoubtedly always be bad, however, but it usually appears later in the season, and makes the fruits spotted and gnarled instead of causing them to fall.

The last two seasons have demonstrated that carbonate of copper is a sure remedy for the apple scab fungus. It is not yet fully demonstrated just what are the best times to make the application, but it is necessary to begin before the flowers open, and to make from four to six applications between that time and the first of August. Three applications at any rate should be made,—one before the blossoms open, one just after they fall, and another three or four weeks later. These applications, even when a half dozen, need not cost more than 15 to 25 cents for a large tree for the whole season, counting both materials and labor. The following are good formulas.

1. Dissolve 1 oz. carbonate of copper in 1 qt. of aqua-ammonia; dilute with 100 qts. of water when ready to apply
2. Place 2 lbs. of copper sulphate in sufficient hot water to dissolve it, and in another vessel dissolve 2½ lbs carbonate of soda. Mix, and before using add 1½ pints of ammonia, and then dilute with water to about 30 gallons. This is the modified *eau celeste* mixture. The former is probably the better.

Any hardware merchant can furnish or order a spraying outfit, and several neighbors by joining in the purchase would find the expense to each one very small. Every orchardist should give the above formulas a thorough trial and note the results.

Another novelty is the Pasteuriser for killing the germs of decay in milk, shown by the De Laval Separator Co., 74 Cortlandt St., New York. The sketch, rough as it is, will give the idea. It consists of an upright tube, closed at one point at the centre as shown, and "bulging out," so to speak, into a number of shelves.

The upper half of this contrivance (tube, shelves and all) is heated by injected steam to about 150°, the lower half is cooled with icewater to say 50°. Milk flows down outside over the shelves, *not dripping from one to the next*, however, but running down the bottom of the shelf in each case—sticking to it, as it were; and is of course heated while passing the upper half of the tube, and cooled while in transit over the lower section. Just between the hot and cool parts is a pan as indicated, in which is collected any sediment that may form. The results of this operation are said to be, first, that milk thus treated will keep much longer, and reach the customer in much better condition—perhaps also with a diminished risk of conveying disease—than otherwise, and, second, that buttermilk or skimmed milk, pasteurized, will keep in fine condition and furnish a far better article of calf feed than if allowed to proceed with its usual

course of souring and decay.—The De Laval Co., show also a new pump intended to take the skimmed milk from the separator and send it wherever the operator desires; and an improvement in the separator itself—a series of metallic plates, conical in form, but having the apex cut off—which lie one above another in the revolving bowl, cutting up the milk into a great number of thin and nearly horizontal sections. This change so greatly facilitates separation as to double the capacity of the machine, and by its aid a separator is now manufactured that can take care of what seems the enormous quantity of 3,500 lbs., pretty nearly two tons, of milk per hour.

Beef Raising in New England.

Even in the present condition we believe that beef-raising in New England (and Canada) can be made to yield a profit. In order to do that, the matter must be skillfully managed in every respect. In order to succeed, the aim must be to produce beef at the lowest possible cost. By bringing the animals to maturity early, the cost of production will be greatly lessened. The Canada Agricultural College found by trial that cattle matured at two years of age gave thirty per cent more profit than those fed till three years old. It costs less to produce a pound of increase in young animals than it does in older ones. The statements of the results of feeding accompanying the animals exhibited at the Chicago fat stock shows are of much interest in this connection. The value of the animals, the cost of feeding, the weight and the cost per pound of increase for year fed, were all stated in tabular form. One animal, named "King of the West," weighed when one year old, 1,000 pounds, had cost \$34.47, was worth \$60.00, and had cost 3.47 cents per pound. The second year the increase in weight was 600 pounds, the cost of keeping \$52.13, and the cost per pound of increase, 8.68 cent. The market value of the animal was \$96.00, and cost of raising \$86.70. The third year the increase of weight was 650 pounds cost of keeping, \$81.50, and the cost of increase per pound, 12.54 cents. The market value at three years of age \$135, and the cost of rearing, \$168.20.

These figures are instructive. They show that if the animal had been sold when it was a year old there would have been a profit of \$25.33; if it had been sold at two years of age there would have been a profit of \$9.30; finally, if it had been sold at three years of age there would have been profit at all; on the contrary, a loss of \$33.20. This is not an isolated case; numerous other similar instances might be given illustrating the same point, showing that feeding the animals resulted in a good profit the first year, a smaller one for the second, and a loss for the third year. These figures plainly show that feeding young animals pays the best return for the food consumed.

The secret of successful beef raising in New England will be found in securing early maturity of the animals which are raised. Good stock must be secured to begin with. Some of the improved breeds like the Hereford and Shorthorn which admit of being brought to early maturity easily, should be selected for the purpose. The feeding must be of the most generous character. The young animals must have all the food that they can eat and digest from the time of birth to the day of slaughter. It is not enough that they are kept in fairly good condition, they must be made to grow fast all the time. It is when the creatures are young that flesh can be put on at the least cost, and the aim should be to get on as much as possible during the first year or two. Feeding the first year will be the most profitable. The statistics of the Chicago Fat Stock Show gave us the cost of each pound of increase the first year at from 2.08 to 4.72 cents per pound; the cost for each pound of increase the second year ranged from 5.31 to 8.68 cents; while the cost per pound the third



year was 12.54 cents, or much above the market price. The conclusion to be drawn from these figures is that if Eastern farmers wish to succeed in raising beef they must feed well enough to bring their stock to maturity, fit for the market at one or two years old.

By adopting a course such as to ensure the bringing the stock to maturity for the market early, we believe that beef raising may be made profitable in New England. Several of the animals exhibited at the Chicago Fat Stock Show weighed 1000 pounds at the age of one year, and others 1600 at two years old. Our farmers can attain the same results, and that is what should be aimed at.

Feeding for early maturity need not necessarily be very expensive. A Concord, N. H., man bought a calf which weighed 160 pounds, at the age of four weeks. He fed it exclusively on skim milk until it was nine months old, allowing it of course to graze what it would, during the next three months it got shorts in addition to the skim milk. At the end of that time, being a year old, its girth was six feet and five inches, and its weight 1200 pounds, live, dressing 902 pounds, as much as some four-year-olds.

Some persons entertain the idea that animals are not sufficiently matured for good beef until they are three or four years old. In England this feeding for early maturity has been fully tested. A trial was made with eighteen steers and heifers, mostly grade shorthorns, that had been bred with special reference to early maturity. They were killed at ages ranging from eleven to nineteen months, and weighed from 840 to 1305 pounds. The testimony of the butchers was that they were full of fat, finely grained and of very superior flavour. Therefore we need not fear that young animals brought into condition to be sent to the market at the age of one or two years will be of inferior quality. On the contrary, we may confidently expect them to prove to be of the very best quality. If farmers will try raising young beef for the market, we think they will not only find it satisfactory but also profitable. In this way beef raising can be made profitable in New England.

H. REYNOLDS, M. D.

For young beef, maiden-heifers are more profitable than steers, particularly if the former are spayed. I made some excellent specimens ripe fat at 20 months old in or about 1850.

A. R. J. F.

Livermore Falls, Mr. Massachusetts Ploughman.

SILO AND SILAGE

M. LOUIS BEAUBIEN.

Mr. President and Gentlemen,—I fancy the officers of that very useful institution called the Dairymen's Association are in the habit of indulging in treasonable practices with regard to your very humble servant. This evening on my arrival, they attacked me at once with, "You will have to speak about silos." Why, I have been speaking about them for two years, without reckoning the innumerable copies of my pamphlet that I have sown broadcast all over the province. Don't you think these people want to satiate—I don't say to disgust—but to satiate completely the audience, who might be listening to something much better worth their attention than anything I can say on this ensilage question?

It is true the subject is very important, but I have seen you all often enough to know that you were present when I spoke on this question. You will understand that it is embarrassing enough for me to have to repeat the same thing over and over again. I will try, Gentlemen, to divest myself of this embarrassment, by telling you what affords me the greatest

consolation in, that ensilage is always good, always excellent, and that the more ensilage we make, the more we shall desire to make.

Since I must talk ensilage, I will say that during the four years I have been practising this pursuit, so important on account of our climate, I congratulate myself more and more, and every year I repeat to myself that if each of my compatriots were in the habit of practising this system, we should for ever cease that movement of emigration which is decimating us, and all our farmers would be prospering. That cannot now be said of all of them, I fear. Had the system of ensilage not been discovered elsewhere, it must have been specially invented for the benefit of Canada, to help us through those 7 months of winter that ruin us, that use up all our crops, in spite of our having watered them with our sweat during the 5 months of summer.

The invention of the silo is due to Goffard. I am an imitator, a plagiarist, I never invented the system, I copied him to the best of my ability. I sang the anthem throughout the country, and it seems people are never weary of listening to it. Well, Gentlemen, when you have felt the value of this system, you will become its most enthusiastic apostles, and you will feel yourselves endowed with sufficient power to address the association on the subject of ensilage every year for the next fifty years to come. (Laughter.)

Gentlemen, with this system of ensilage, you have the means of getting in your harvest in spite of any chastisement Providence may inflict upon you. Never mind hail, or incessant rains, in the midst of the heaviest downfall you can carry your crop and pack it into the silo: it will be all the better for it. I have harvested ensilage, maize, when there were 8 and 9 inches of water in the furrows, thrown it into the carts, sent it through the cutter, and once in the silo, the silage was the better for it. Again, I have ensiled maize in splendid weather: it was no better.

You remember a discussion that took place a year ago, when Mr. Ross paid me some little compliments. He was with me as we were making our silage; he said: "What are you going to do with this maize all drenched as it is with rain?" There was, as you may imagine, some mud on it, too. "Your cattle won't eat it." Well, this silage was an improvement on that of the preceding year, when the weather apparently was far finer for ensilage work.

Gentlemen, I am satisfied, after four year's experience, that we can have no better system in the province of Quebec, and if we learn how to manage it, and how to make use of it, we shall blot out our winters, and make butter as good in flavour and of as fine a quality as in summer.

Moreover, we shall be obliged to do away with the system we practice now in our farming; a ruinous system it is: we shall be compelled to grow fewer grain-crops.

By the bye, Gentlemen of Sorel. I must beg of you to pardon the desultoriness of my speech. I have not had time to put my ideas in order, and I emit them just as they come. And I beg pardon beforehand for the want of consecutiveness that will appear in my observations, I will try to be practical. What I can say is, that with the practice of ensilage we shall be able to continue to cultivate the soil of Quebec otherwise we shall have to give it up. I explain.

We have to contend with the enormous production of the West. In that country, as you know, the land has not to be cleared. A colonist arrives with his horses, his cattle, does his ploughing, and in the spring every thing is ready for the seed. So we can never contend with the products of the West—maize, wheat, oats, barley, peas. You will have to give up the cultivation of these cereals; for they will always be purchasable at so low a price that you cannot compete with their producers. You must, then, change your system of farm

ing or resign yourself to continue on a system that will plunge you more deeply into difficulties every year.

We must look events fully in the face. This is the thought that occurred to me this year, as I was observing the poor crops we have had, particularly in the district of Quebec, but pretty generally everywhere. The harvest was not a good one, it was one of the worst we have had for many years; and you cannot sell oats, Gentlemen, for two reasons. First, because there is not much call for it, and next because you have none to sell. (Laughter.) When you have good crops of oats, there will be still more in the West. Then, you clearly must change your style of farming.

Here, like a real Providence, comes in the silo, which will help you to carry on your farm with much greater economy. I formerly cited the case of a man who grew a patch of maize for ensilage, and put all the rest of his farm, which used to be in grain, under pasture, because, he said, he had no means of paying for labour. He only grew enough grain to supply his family. Well, this man was able to do with half the labour he had been accustomed to employ, and his farm-products were greater: more milk, and of course more butter and cheese.

This is the system that will have to be adopted; if we do not change our present system we shall grow still less prosperous, we shall succeed even worse than we do to-day.

It is for this reason that I insist on our adopting the ensilage plan. I will not now enter upon the details. All the world knows what they are, and I have said so much about them that I no longer feel the same ardour inciting me to treat them at length. I will condense what I have to say in a few words:

There is your piece of land that you manured last autumn. When spring arrives you sow it and ensile the crop in the fall. You know how a silo is made, it is a vessel with both bottom and sides closed completely; a vessel into which the air can only enter from above. When the silo is full, cover it and all is done.

When we began to busy ourselves about siloes, we thought they must be covered with boards and have stones on the boards. Well, that was in our babyhood. Things are changed since then. When, this year, I was about to cover in the silage, an idea struck me about a cover still cheaper than that used in the previous year. You remember that I told you, at the last convention, that I had a silo I had not covered at all. I followed, the same plan this year. The cattle on entering their winter quarters continued to receive the same corn they had been previously eating in the field. That silo was never covered. But the others had to be covered. When I set to work to cover them, I put about a foot of straw upon them, and then simply put some fresh dung from the horses and spread it over all. The silage kept admirably and you will see why immediately.

Do you remember how costly it was to cover the silage as we were told to do at first? But our experience has led us through a rough school, and see how far we have got. We no longer need stone or boards. We only use a foot of straw and this couch of fresh dung.

I have already raised this cover of my silage. It has kept admirably, the air having been completely excluded by this layer. See how the system simplifies itself every day! But the best of it is, that the more one advances the more one sees the possibility of further advancement, and when one has made a silo, if one were compelled to give it up, it would be as much as to say that the exploitation of the farm could no longer be carried on.

See how necessary this system is in our country where the winter is so long that during its continuance the whole produce of the farm is devoured by the stock! With a silo, what

happens? There are my cattle that are dry. We give them 45 lbs. of silage maize, mixed with straw-chaff and nothing else. For the milk-cows, we add a little to their ration, and we give them a warm mash to keep them in milk. We no longer want hay: I don't make any; I grow no more grain; I prefer buying straw at \$3 the 100 bundles delivered. Well, do you see what an economical system this is?

If we take away the silo, what shall we do? We shall be back again at our contest with the West. Can we sustain this contest? Ah! maize is selling at a cent a pound and cheaper still. We can't grow it at the price. Let us, then, give up our old system: grain, and grain-crop after grain-crop. Let us proceed to the new system which must be our salvation since it lessens the labour-bill, and furnishes us at a cheap rate with what is needed for the support of our stock.

I intended, Gentlemen, this evening, to insist upon the importance of my countrymen changing their mode of farming, and to arrive at that result, it is only necessary to beseech those who are at the head of the progressive movement to make silage. By this means they will be irresistibly led to change their present system of farming.

If you meet a farmer, ask him: "Does it pay to grow grain?"—"Ah Sir, we have no wheat this year, neither oats, nor barley, there is nothing this year!" (Laughter.) Well, Gentlemen, I see you laugh: I rather think you are laughing at me, you speak the truth jocularly, and I too. This is a cruel truth indeed, and a truth we must look in the face.

How it pains me, when I see a grand convention, such as that we have here this evening, to think of so many honest farmers, the most respectable part of the population, who are growing poorer and poorer every day, I say to myself: Have the people no intelligence, do they not deserve to succeed as others do? How is it that we cannot succeed? The reason is very simple, Gentlemen; people do not acquire instruction in one year alone. When I see the Scots, the English, come hither from their island, where land is valued by the foot, where farming is intensive; when I see them come to Canada with their knowledge, their habits, I say to myself: It is not to be wondered at that they know how to farm; they were born in the midst of a population that knows how to farm. *They bring their knowledge of farming with them, and they succeed.*

How have our people—I speak of the mass of the population—gained their education? For the moment, I leave the question a little, but it is necessary to know how to account for what we see. Our population was abandoned here without leaders, obliged to make war at once upon the forests and upon the Indians. And the farmer, in those days, was not a farmer: he was a fighter against the forests, and a fighter against the Bostonese as well.

This farmer, Gentlemen, had he time to teach his children how to hold a straight furrow? Had he time to teach good lessons in farming to his family? Had he time to teach himself? Ah! he had only one book open before him, he had only one book whose mournful pages he could turn over. It was the book of his wretchedness.

This, then, is the abyss whence we have emerged! And I say, to-day, that if we have arrived at our present position, we may be proud of it, and reject the insult and the reproach with which we may be assailed for not having got on fast enough. We have quitted the chaos, the wretchedness, and it is only by unheard-of efforts that we have arrived at the present result. No slight amount of intellectual exertion, of perseverance, Gentlemen, has been expended to attain this end.

There have been devoted men who told us: "Listen, Canadians, you must cut out your own road of progress;

you cannot improve by calling strangers to your aid. To you, emigration is forbidden. You are not fortunate enough to be able to learn, neighbour from neighbour, you are here, isolated in this cold corner of North-America. You will have to instruct yourselves, to draw from your own breast those enlightened men, of whom you are in need!" It was then that were formed these highly educated men, reared in our classical colleges, and it is to our clergy we are indebted for those highly educated men. Will I shall never cease repeating it, you all understand that perfectly familiar phrase: now a days, the clergy must change the step they have been dancing. (*change de planche*) (Laughter.) I do not say, Gentlemen, that the institutions of high education must be abandoned, but I say the clergy must give us farmers, men of good education, and they once interest themselves in this behalf, the work well begun will soon be well ended. I decidedly approve of what we have already done; but the movement must become general. Let them give us the farmer honest, religious, industrious, enlightened, as they have given us the intellectual, daring man of high education, and we shall be a perfect people. On one side, we shall have intellectual progress, on the other, sound, material progress: we shall have good farming.

Then, Gentlemen, let there be no hesitation on the part of the clergy...and let them make ensilage! (Prolonged laughter.)

I am sure it is not Monsignor Labelle who will say: What, the deuce, shall I do in that boat? "Monsignor Labelle understands me, and so does M. Montminy, and the clergy in general understand me. They don't hear me now, but my words will reach them.

I am going to preach you a sermon, Gentlemen. When one finds in any part of the country a well to do farmer, I ask the members of the clergy who are present, if 90 times out of the 100 he is not an honest man, an example to the parish. I know the people, I won't pay you compliments, but I will tell you the truth. Take in any parish the farmer; I don't say the richest farmer, sometimes he is lending money at high interest—but take the farmer in easy circumstances, and you have found an honest man, the example man of his parish, religious, and a man who educates his children properly. He is in an awful rage if he cannot make them priests, advocates, physicians; so much has it entered into the mind and habits of the people to bring up their children in such a way that the higher education may form them for professions. So long has this been preached to us, that the moment a farmer becomes at ease, he must always make one of his family a highly educated man. He, the farmer, has always been a ploughman: his ambition is that his son shall be learned, and able to make little speeches, like I am making to you at present. (Laughter.)

If we could put it into the heads of the people, into the heads of our good curés, to give us the man of good agricultural knowledge as they have given us the man of high education, the province of Quebec would become prosperous. There would be no more emigration, no more need of sending cheese, even No. 2 cheese, to England, not at all: we should have perfect prosperity, and our parishes would be rich. We must come to this, and to this end our curés must make ensilage. I know all about this from experience. If you knew how many letters I have had from curés showing intense devotion to the interest of their parishioners! "Sir, I beg you to tell me what to do, my silage is in danger of perishing, and if the contents rot, the system is for ever dead in this parish. Help me, at this critical juncture, save the silage, and the position is saved. Well, one of these curés, like many others, had no land, not even a village-lot. But he said to himself, in probably another form, what I said do you just now. If I had a farmer

to set the example to others I could do a great deal of good to my parishioners. Then said this curé to himself: If I can't find any one else to do it, I will do it myself. He got one of his people to sow and harvest a piece of maize, he ensiled it, and watched over it; when he saw the silage begin to heat, he slept not. It was the first time he ever made silage, and he did not know how to set about it. The walls of his silo let the air enter on all sides: success you see was impossible. But since that time he has succeeded to perfection, and he wrote to me this year: "There are ten siloes in my parish." Well, Gentlemen, there are ten farmers saved from ruin. He who has made a silo won't be without one, and those who make siloes are always sure of their business succeeding.

There is a farmer who has 25 cows, and not enough to winter them on. Were I to say to him: I will winter your cows for you and hand them over to you fat in the spring, do you think I should be doing him a service, and that he would be convinced of it? Well, that is what the silo will do for you.

With an *arpent* of land you can winter 5 head of cattle. I have said as many as 7 and it has been done too, but I have not yet arrived at such perfection. Do you think that can be done with an *ARPENT* of roots or of grain? By teaching people to grow maize for silage, we teach them the way of wintering stock for almost nothing. By showing farmers how to make silage, you render them a very great service.

As it is getting late, I will not detain you much longer but I have brought with me some small plans (*images*) that I wish to show you. You know what a stern winter we have in Canada. I am about to speak to you on another point, but one still that is connected with ensilage. You know how long our winter are, and how we need good buildings to shelter our cattle during these long winters. We are not in the position of those lucky countries where the stock can be left out all the winter, or at least be merely kept in sheds of light construction. Ours must have warm abodes, for, the less warm they are the more food the animals will consume.

Look around you, Gentlemen; in the province of Quebec what sort of farm buildings is to be seen? In the district of Quebec, in that of Montreal, in this district of Sorel, you see the buildings all of one story; and, in consequence, you have a building of from 100 to 150 feet long, by the side of another of 50 feet, another of 25 feet, and so on. The man who attends the cattle during the whole winter, is obliged to go from building to building, and to leave the cowhouse to get water and fodder from another building.

This system gives the farmer double work, and will certainly cost him in labour twice as much as a building where all his stock could be lodged under the same roof.

I thought, then, I might be rendering a service to the farmers in drawing out the plan which I offer for your inspection, and which consists in constructing a building where everything is collected under the same roof: cattle, manure, and the silo. If your land is hilly you will erect your building on the slope of the declivity, and there will be only one story: you can enter from the level into the upper story from the front, and equally from the level into the lower story from behind.

I have had to build extensive stables for the Haras Company. After they were erected, I thought I would make use of the little experience I had gained to make this plan. I gave all the dimensions, Mr. President, to my architect, who drew out the plan which I am happy to present to you. I have had a thousand copies of it printed, and I have distributed them among my friends, the members of the Federal Parliament, the Senate, the Legislative Council, the members of parliament, the presidents of the Agricultural Societies the

presidents of the Agricultural Clubs; and I proposed to present them to this meeting.

I will not say that this idea is perfect, but I believe it to be an improvement on what we generally see. The silo is so placed that its bottom is on the same floor as the horned stock

In the lower story, there are manure pits which are with in the building with ventilators to prevent the effluvia of the manure from harming the cattle; and the loose-boxes, in which the young rearing-stock are kept, are also on the lower story, as well as the root-cellar. The poultry-house is placed in the warmest part of the building, in every instance, in that part that will be first in the spring to be warmed by the sun.

If any of you, Gentlemen, desire to make use of this plan, you must take care to make no alteration in the cardinal point; i. e. the edifice must be placed in the position it occupies in the plan, in order that the West-wind may not strike the building on the open side. In winter, when the wind is East, it often brings snow, but rarely great cold. Our greatest cold generally comes on the wings of the West-wind. On that side the building is closed.

The bottom of the silo is on the story (floor) higher than this depression, that the silage may be carried in barrows directly to the cows, without your being obliged to go up or down stairs. This is very important, for you will have to keep your cows on ensilage all the winter, and dealing it out will be the principal work of your cattle-man.

On the principal story (floor) are the stable and cowhouse.

With economy, this building can be put up for \$700. There are not many farmers whose buildings are not worth \$700, but they are in separate structures. You will be a great gainer if you can put everything under one roof.

There is the threshing-floor, on which you do all your threshing in winter; and the hay-lifter (*fourche*), which allows you to fill up your barn to the very top.

Lastly, I believe this plan can be of service to any one of my friends the farmers. I do not want any credit for it. I offer it as my contribution with great pleasure. I consider it as my quota added to the labour of the association, and you may make your arrangement with the printer as you please. I will lend you the stone, and you can have as many impressions struck off as you want. The more you have printed, the better I shall be pleased.

M. Mercier seemed to be inclined to have some thousand of copies printed. I myself have distributed a thousand. I do not ask for a halfpenny of profit. Let them be distributed among the different societies. What I should like would be that a sufficient number be printed (There! I am speaking in the name of the government, just as if I were a cabinet minister) to send some to each *caré*, so that this plan might be placed in the hall where the *habitués* assemble.

Those who wish to rebuild after their barns have been burnt down can profit by this plan. If we could erect a hundred of such buildings as examples to the province, I think we should render a great service to the country, and that the farmeries would improve step by step.

This evening, my friend, Mr. MacPherson, as we were travelling together from Montreal, said to me: "Do you know where good farming should make its first start?" "By good ploughing," replied I. "No," replied he, "by building a good improved barn." He added, "How? you farm your land well, you get good crops that you give to well selected cattle, and you keep them in a building where half the food will go to waste, destroyed by the cold."

You see I agree with Mr. MacPherson, since I set before you this plan of a building that I feel able to recommend to your notice. Now it is not an invention of mine, I visited many farmeries before I built mine. And I picked out, right and left, whatever seemed the best. I have not patented my

plans, and you will not be sued for damages if you make use of them.

Now, Mr. President, my address, I know, has been a very discursive one; it is your fault; I have done my best. The chief thing for me, Gentlemen, is that I have contributed my share, and that I have brought, not my grain of salt, but that little work that I am fit for to your assistance. This is the third successive annual meeting I have attended, and I hope I shall be able to attend as many more. I only wish I had been present from the very beginning.

Thanks, Mr. President, for having called upon me to address you. I beg my kind auditors to excuse me.

EDITORIAL NOTINGS.

Those kind-hearted readers who have protested against our remarks about sheep-killing dogs, and intimated that the pre-cription and destruction of these murderous pets is cruel and unjust, will oblige us by kindly reading and thoughtfully considering, the following five items, which we take from a single weekly issue of an exchange, the *Connecticut Farmer*.

Sheep-killing dogs here made sad havoc in the flocks of S. W. Smith, Hobart Beardsley and John Beach of Monroe. The dogs were found in the act of killing a sheep belonging to Mr. Beardsley by F. W. Wheeler, who knew the dogs, and Selectman Ferris caused one of the dogs to be killed and the owners of both to pay damages.

The dogs recently made a raid on a flock of sheep owned by Durkee Armstrong at the Petit Hollow station in Franklin, killing the whole flock. Mr. Armstrong also had a valuable two-year-old colt in the same lot which ran from the dogs until it died of exhaustion.

Charles Mallette of Trumbull found three dogs in this flock of sheep, the other day. They had killed one. He succeeded in capturing one dog, the others running away. Selectman Mathias Bradley was notified.

Dogs have again invaded C. M. Noble's fine flock of sheep at Watertown, doing a considerable amount of damage.

Three more of the Bronson sheep on the Gould farm have been bitten by dogs.

Now honestly, on which side is the hard-heartedness and the cruelty in cases like this, which are occurring hundreds of times daily over this country? It would be a low estimate to say that not once in ten times are the dogs engaged in these destructive depredations upon a harmless and very useful animal captured and killed. DR. HOSKINS.

Only the other day we were reading records of experiments carried out in the United States, proving that feeding hogs on green food did not pay; and now we see in an American paper a statement to the effect that more pounds of pork can be made from an acre of clover than from an acre of maize. The average yield of maize, it is said, is not more than 50 bushels (this is double the average of the United States as a whole), and 12 lb. of pork per bushel is considered good production. This would make 600 lb. of pork per acre. But an acre of fair clover, it is added, will pasture eight hogs from the time of starting in the spring till the autumn, and doubling their original weight of, say, 100 lb. each. Here then, we have 800 lb. of pork as the production of an acre of clover. The writer, who appears to base his remarks on experience, says that he gives 1 lb. to 2 lb. of extra food (probably maize) to hogs feeding in clover but that many feeders give nothing extra beyond water and salt. The pigs are turned into the clover as soon as there is a fair bite, and are given free access to ashes as well, as salt under cover. We fear the writer deals loosely with figures, and that an acre of clover never yet did produce 800 lb. of pork in one season.

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