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

**OFFICIAL PART.**

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**FELICITOUS INNOVATION.**

**GRAND STALLION-SHOW—OPEN TO THE PROVINCE OF QUEBEC—LAPRAIRIE, SEPT. 30TH, 1889.**

With a view to encourage the breeding of the best stamp of horses in the Province, Col. the Hon. W. Rhodes, Commissioner of Agriculture, with the kind assistance of M. Goyette, M. P. P. for Laprairie.

A special prize for the best stallion in the province of Quebec, offered by the honourable minister of agriculture : \$40.00.

Three prizes for the best imported stallions, belonging to the district : 1st, \$25 ; 2nd, \$20 ; 3rd, \$15.

Four prizes for the best aged stallions, belonging to the district and bred in the province, whose weight exceeds 1,400 lbs. each : 1st, \$20 ; 2nd, \$15 ; 3rd, \$10 ; 4th, \$5.

Four prizes for the best aged stallions, belonging to the district and bred in the province, under 1,400 lbs. : 1st, \$20 ; 2nd, \$15 ; 3rd, \$10 ; 4th, \$5.

Three prizes for the best 4 year-old stallions, belonging to the district, and bred in the province : 1st, \$20 ; 2nd, \$15 ; 3rd, \$10.

Three prizes for the best 3 year-old stallions, belonging to the district and bred in the province : 1st, \$20 ; 2nd, \$15 ; 3rd, \$10.

Three prizes for the best 2 year old stallions, belonging to the district and bred in the province : 1st, \$15 ; 2nd, \$10 ; 3rd, \$5.

**REGULATIONS.**

The prizes will be awarded to stallions sound and fit for stock-getting.

The Veterinary Surgeon of the Council of Agriculture of the Province of Quebec will be on the spot to grant certificates of the above qualifications.

The exhibitor must have been the *bona-fide* owner of the animal exhibited for at least a month before the show.

**PROVINCIAL PLOUGHING-MATCH.**

The Hon the Commissioner of Agriculture will open a Ploughing match for the Province of Quebec, which will take place at Laprairie in October next. (The date of the meeting will be notified hereafter.)

Entries will be \$1 each, which must be sent to the Secretary, M. Alexandre Brosscau, on or before the 28th September next.

**CUT-WORMS.**—These depredators in gardens and in corn fields may be surely destroyed by watching for the scattered plants which they have recently cut off, digging down and finding and killing them. From many years' experience we find this mode effectual and much less expensive than many

person suppose, provided it is gone about thoroughly and continued till the destroyers are destroyed. But entomologists have adopted a shorter and easier, but rather more expensive way. As soon in the season as their presence is seen by their depredation, take a load of freshly cut grass, and soak this grass with water in which Paris green or London purple has been well mixed in the right proportion. Scatter this poisoned grass over the patch or field at evening, applied at the rate of a pound to 150 gallons of water. The out-worms will eat the fresh grass and that will be the end of them.

**CHURNING SUPERSEDED!**—Within the last fifteen or twenty years dairy farming has made rapid progress, amongst which the Swedes have not contributed the least towards the manufacture of a more superior butter than was produced by our grandmothers. If my memory serves me, I believe it was some fifteen years since, in 1874, the first Continental skimming machine made its appearance, and the extraction of cream from the milk by the application of centrifugal power, was not the least important, after which we thought the climax of perfection had been achieved. Such I am informed is not the case, and in 1889 we are to welcome the appearance of the "butter-extractor," patented and invented by Mr. C. A. Johansson, inventor of the hand separator and emulsor; here again we have the Swedes to the front in the production of butter, to which they have paid great attention. If all that is said of the "butter-extractor" in producing the butter direct from new milk is correct, it will cause a great revolution in dairy farming, as well as a consternation to the churn manufacturers. At present it would be somewhat out of place to give more particulars of this remarkable invention, as to which I will in the future enlighten your readers.—COSMOPOLITAN.

## FARM BUILDINGS.

LECTURE BY JULES N PAQUET.

*Mr. President and Gentlemen,*

We, a few members of the great Canadian family, are met together to facilitate the progress of agriculture by means of the dairy-business. Most of you can already reckon long and brilliant years of service consecrated to this noble cause, and have earned the right to contemplate, with very legitimate satisfaction, the results of your labours. Thanks to your encouragement, to your constant efforts, dairy work has regenerated the agriculture of our province, as the beneficent dews reanimate the languishing meadows. The different breeds of cattle—especially the milking breeds—are improved; the fields, better cultivated, are covered with a lush herbage; cows give more and richer milk; and of all our agricultural exports, the products of our cheese- and butter-factories reach the highest figure. Still this vast field is not yet thoroughly worked in every part. The French fable-writer makes his ploughman address his children in these words: "Work, take pains, it is this that is the most abundant source of wealth." The dairy-business is an inexhaustible source of wealth. The problems in agriculture which, up to this time, you have been studying, have brought about the introduction of the subject of the construction of farm-buildings in connection with dairying. I know that many of you, with the noble desire of spreading the light of agricultural knowledge, have put up, during the last few years, model buildings, either by way of experiment, or with a view to the introduction of our young men to the secrets of the management of the land. These fine

examples have remained, I dare say it, isolated, and have not won the publicity they deserve. We must now, then, plunge into the domain of the study and discussion of this question of farm-buildings, in order to make the subject widely known, and to make it bear fruit even at the home of the humblest of our farmers.

This, then, was the thought that triumphed over my hesitation when I consented to address a few words to you on this interesting subject. After having taken an active part in the improvement of old buildings, I thought I might possibly give some useful advice to those who were about, either to build new, or to remodel old buildings. Not having had good health, I have been unable to endure the heavy burden of the labour of the farm; still, in proportion to the humble measure of my powers, I have devoted my leisure to agriculture, I have been deeply interested in its development, and I have always thought it an honour to call myself a farmer. For the last year, the parish of St. Nicolas has had a creamery; its product is considered to be of the best quality; the maker and his patrons, regard being had to the unfavourable season just past, are satisfied with the results, and have a right to look forward with bright expectations to the future. I do not, I think, deceive myself, when I say that it is to the Dairy-men's Association that the establishment of this valuable manufacture is due. In the name of my parish, then, I desire, Gentlemen, to acquit myself of a debt of gratitude to you. If I cannot suitably discharge this duty of gratitude, I hope, as a farmer, that you will accept my attempt to do so with indulgence.

### FIRST PART.

Before explaining the plans which I have the honour to show you, let us enumerate in a few words the reasons that should convince us, I do not say of the importance, but of the necessity of arranging our farm-buildings in such a manner that they may afford its full development to the dairy-work:

- Make the cowsheds more comfortable;
- Give the milch-cows more digestible food;
- Make more dung and keep it better;
- Diminish manual labour and make it less hard;
- This is a condensation of the first part of this essay.

Hervé, a French writer, used to say: "Confinement to stables and sheds is indispensably requisite to increase the production of meat and milk, but the stay of cattle in low, narrow, badly ventilated sheds, is often the cause of the ruin of the farmer; indeed, epizootics, diseases of all sorts which decimate the herds in many farms, proceed, in most cases, from the bad state of the buildings that shelter them." Making an exception in favour of some few farmers who are in advance of their neighbours as regards the steps taken in the road towards improvement, may I not say: "There; that is a true picture of the way in which the cattle of our country are housed?" Most of our stables are unfit for our cold winters, and not ventilated enough. Animals, though not endowed with reason, are sensitive enough, and require an atmospheric medium suitable to their nature. They have an interior furnace, continually fed by their daily rations; thence, they derive their animal heat, develop themselves, and yield to man either their produce or their labour, according to the purpose for which they were created. If the milch-cow lives in too cold a place, the food she consumes is employed in sustaining the heat of her body, to the detriment of the milk she yields. At the approach of autumn, when the soft dews of summer begin to give place to white-frosts, observe your cattle making their way to the buildings; listen to their lowings, loudly demanding a warm lodging. If you

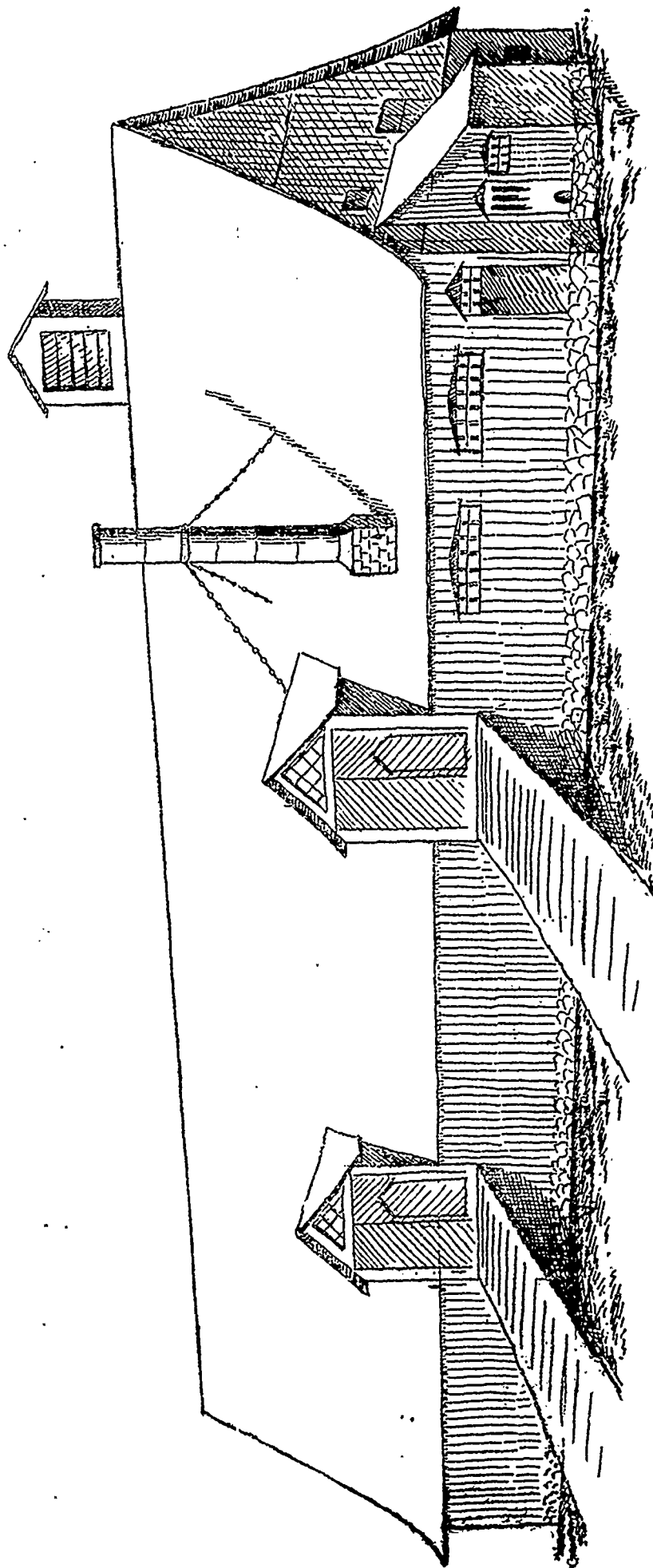


Plate IV.—Building of MM. Ignace and Jules N. Paquet, St. Nicolas, Q ; as erected 1887, after plans furnished by the *Journal of Agriculture*.

leave them out in the cold, you need not ask for milk in the morning. If, on the contrary, you give them a comfortable bed, they will, in return, give you as abundant a flow of milk as in the softest days of summer. An evident proof that a mild temperature favours the secretion of milk.

No less necessary for the health of your stock is pure air. They inspire oxygen which purifies the blood, strengthens the vital powers, and expire it in the state of carbonic acid, a gas unfit for respiration. After a night passed in a confined abode, all the oxygen is consumed, and what remains? Injurious gases, unfit for respiration. Go in, with a lamp: the light diminishes sensibly; it no longer finds a sufficiency of oxygen for its wants; and so the milch cow, in its now unwholesome abode, has no air fit for breathing. It is true she does not die, but like the lamp whose flame is threatened with extinction, she can do no more than half-breathe; her blood becomes poorer, her vital power weaker, for, in accordance with the well known axiom, the blood is the life. This is why so many farmers say, with an air of discouragement. I have fed my cows well this winter, they have not given much milk, and they are in very bad condition. To remedy this evil, a good system of ventilation will suffice. Place good ventilators in the cow-sheds, which will carry off the moist, hot air, and all the deleterious gases which proceed from respiration and from the numerous emanations which are given off from the stables; at the same time introduce pure, fresh air by a conduit below, and the temperature will become more uniform, more wholesome, the health of the cattle will be secured, and their food will produce its desired fruits.

2. "Nature," says one of our distinguished agriculturists, "is a good mother, who knows how to vary her products so as to always offer something fresh to the animal, but once in the stable, it is the hand of man which must continue to supply its wants." Consequently, if we wish to give food in a proper state, we must imitate the proceedings of nature. Hence, arose the notion of cutting hay and straw into chaff, allowing them to steep for some time in steam or boiling water, to soften them, to render them more succulent, more digestible. The glumes (*balles*) of all sorts of grain, mixed with a little bran or meal, are submitted to this process; and in this way, the watery food excites and maintains the secretion of milk in a most surprising manner.

Hence, the importance of every farmer having an implement to cut a part of his fodder-crops, and to establish, either in the stables or near them, a boiler of some sort, that he may always have a sufficient quantity of boiling water. Not that food prepared in this way is richer, but having been made more tender, more digestible, the milch-cow consumes more of it without increasing the work of digestion, and gives, in consequence, more milk and more manure.

3. This question of manure is not a new one, since our *agronomes* have skilfully dealt with it in several treatises, still, here, it has never had the attention it merits bestowed upon it. Cato the Elder used to say, 200 years before Christ: "Try to gather a large heap of manure; take great care of your mixen." A little later, Columella, living in a climate more temperate than ours, "recommends the farmer to have two manure-pits, one to receive the manure made daily, the other to contain the riper dung in all its strength by avoiding the drying up of its juices, and allowing it to steep in a constant supply of moisture." Since from time immemorial, the importance of making a large quantity of manure and keeping it in good condition has been understood, why have we ignored its value? The fertile soil of Canada, enriched by the ashes proceeding from the clearings, seemed to promise abundant crops for ever. In those parishes which were the earliest occupied, the limits of the forest have so far retrograded that the farmer can hardly find the firing necessary for his house-

hold-requirements. There are no more new lands to clear; we must go back to our starting point, and work up the soils that were first cleared, and have since been impoverished by successive grain crops. How is this to be done? Only by restoring to these soils the fertilising materials that have been taken from them, and this restitution is only to be made by manuring. I admit that it is impossible to make complete restitution by the farm-manure alone; but it is not within the limits assigned to me to speak of extraneous manures; what I aim at is to attract attention to the point that every farmer owes it to himself to make the greatest quantity possible of manure and to preserve it in good condition, being at liberty afterwards, if he thinks fit, to buy chemical or other manures. It is enough for me to say, that manure kept under cover is worth 40% more than manure exposed to all the changes of the atmosphere, to show the importance of having pits or sheds for manure. "Many farmers," says again one of our *agronomes*, "cart out to their fields a corpse whose spirit has escaped." It is easy to preserve the life by which this body is animated; that is, all the fertilising principles contained in the manure. These principles constitute a complete food, appropriate to the wants of every sort of plant, since they comprise in abundance ammonia, phosphates, lime, and potash, — provided that the liquid dejections are mixed with the solid. If every farmer cannot have a dung-pit, he can easily make a shed to shelter his manure. In this case, there must necessarily be a tank to hold the urine which must afterwards be poured or pumped over the solid matters. The working of hogs, to mix the cold and warm manures together and to prevent their heating, is recognised as being necessary in both cases. These quadrupedal labourers demand no salary; only a place where they may come for their food. Litter, generally speaking, is not wanting, but it remains without fertilising properties in consequence of being carted to the fields without having imbibed the liquid matters. To sell one's straw, says the proverb, is to sell one's manure, and who so sells his manure empties his granary. How, then, will it be if it is allowed to go to waste? In the manure-pit or shed, litter, with its porous structure, will completely absorb the urine and contribute to the richness of the manure.

These improvements intended to increase the quantity and the richness of the manure, to double the crops and the product in milk, have, besides, the advantage of saving time, and according to the saying of our wealthy neighbours of the American republic, time is money. I asked a farmer who had just completed the improvements we are considering: How much time do they save you in a day? Two hours, he replied. Thus, in a month of 28 days, 56 hours: in six months, 336 hours; so in ten working hours a day, I save 33½ days. It takes me some days to cart the dung from the pit to the fields, but there will remain, all deductions made, a certain saving of a man's work during the period the cattle are in doors.

It is a matter of importance not only to save time but also to lighten the burden of labour, especially in this age of ardent search after prosperity and comfort. Who has not felt the hardship, in the coldest period of the season, of leaving his soft warm bed to go and clean out the stables: a hardship, indeed, both for the man and for the cart-horse employed at this work. Let us improve the lot of the farmer, for, in so doing, we shall have gained more influence over the young and attached them more to the land than by the most paternal advice, and the most patriotic speeches. Not only our young men, but the wife and daughters of our farmers are equally interested in these improvements. The Canadian woman possess not the virtues alone, but the demi-virtues, and among them, that of very great cleanliness. A girl returning from

- A Stove, chimney, boiler-house.
- B Ventilator and cold-air entrance.
- C Stairs.
- D Mangers.
- E Trough for pigs.
- F 3 feet passages.
- G Gutters.

- K Hay-barn.
- L Troughs.
- M Principal passage.
- N House for young beasts.
- O Calf-stall.
- P Piggory below the barn-floor.
- P' Dung-cellar.

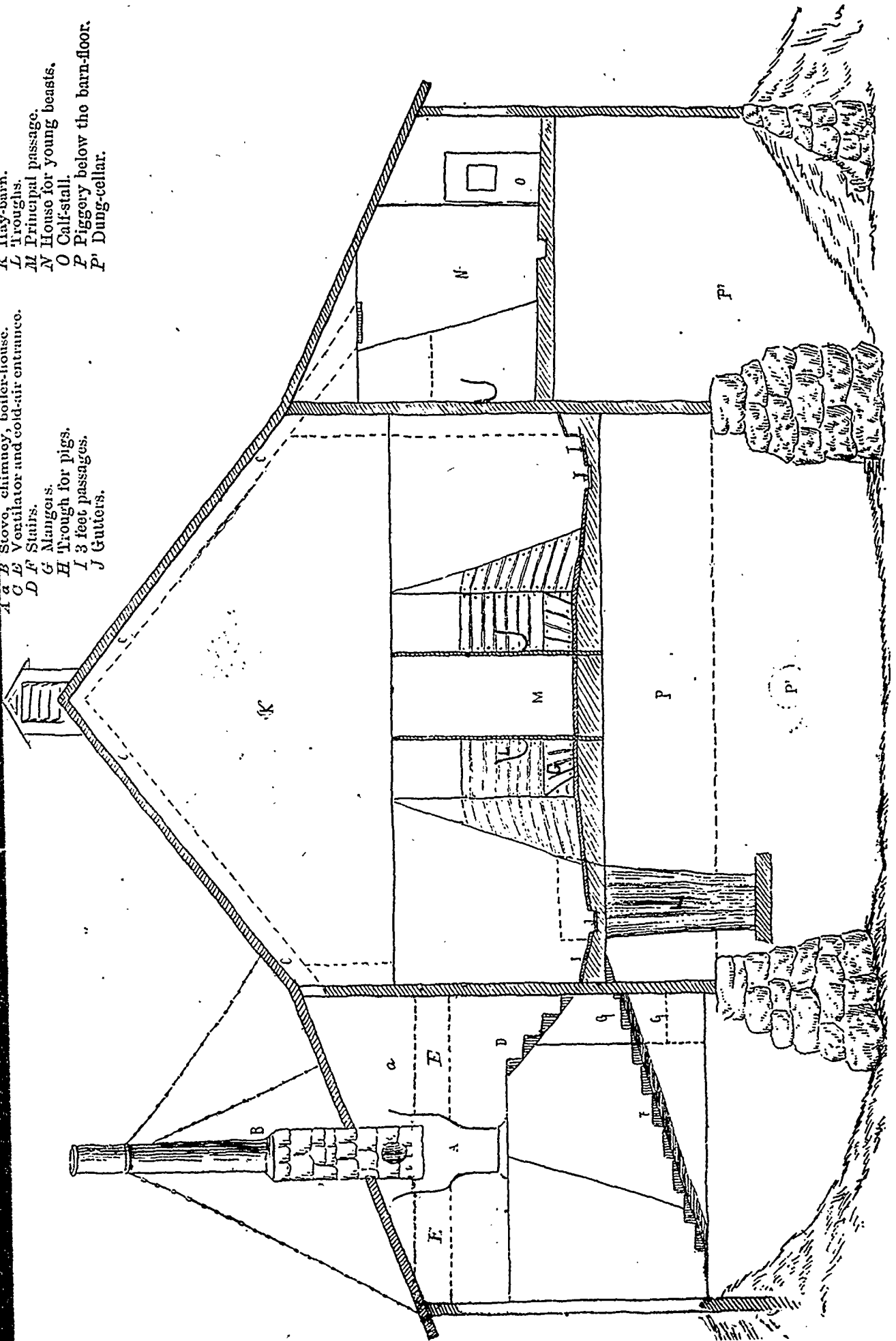


Plate V.—Building of M.M. I. and J. N. Paquet, St. Nicolas, Q., (continued).

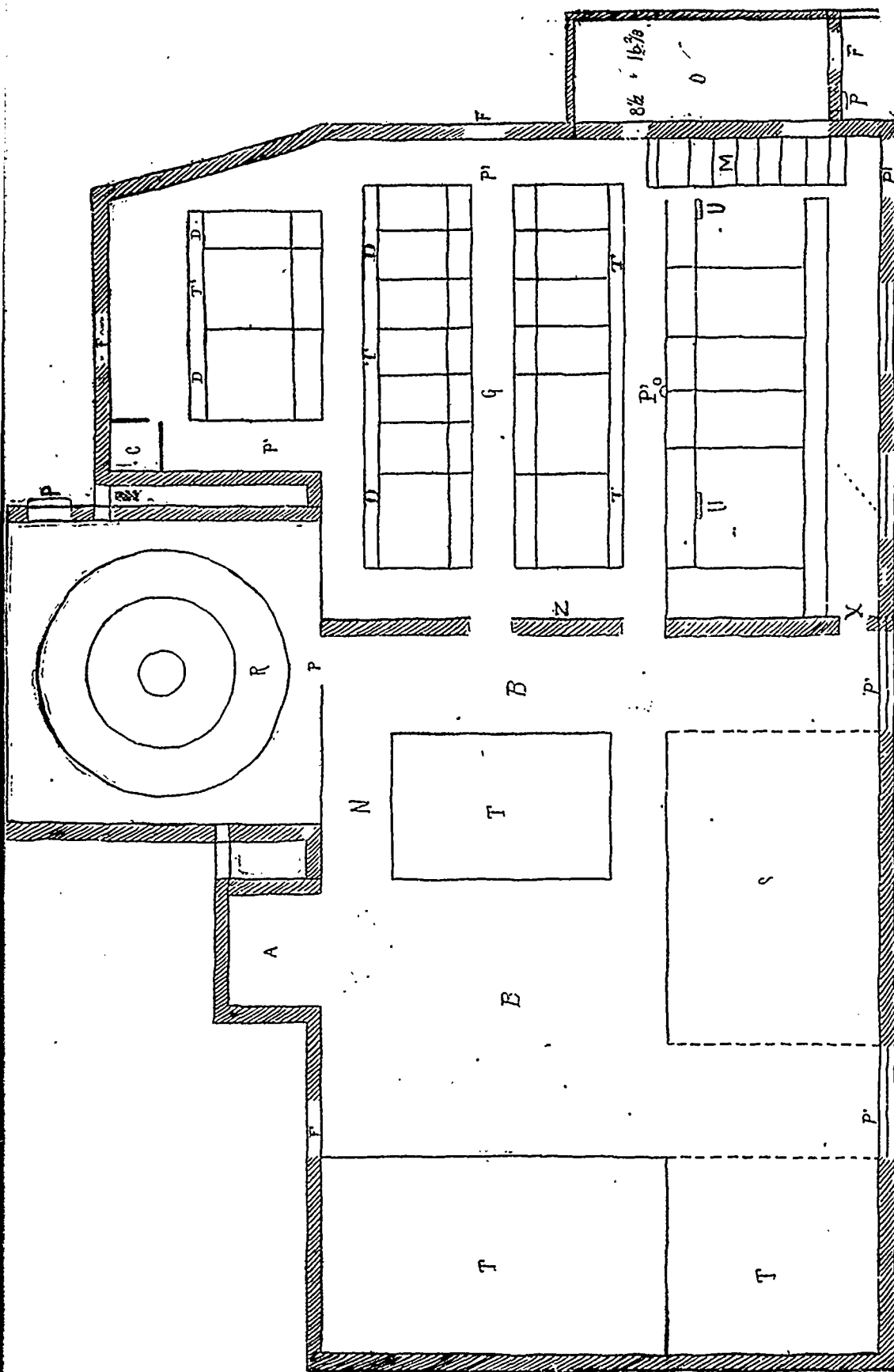


Plate VI.—Building of M.M. Paquet, St. Nicolas, Q., (continued).—Ground plan.

- A Old addition 7 ft x 10 still in existence.
- B Threshing floor.
- B Large do., serving for a bay, if wanted.
- C Calf-stall 4' x 4'.
- D Dung-traps and gutters.
- T Threshing-floors.
- U Trap-doors.
- X Door leading to the cowhouse.
- Z 4 ft passage.

- O Henhouse.
- P Passages, doors.
- R Horse-power.
- S Silo.
- T Threshing-floors.
- U Trap-doors.
- X Door leading to the out-room and the piggery, both under the

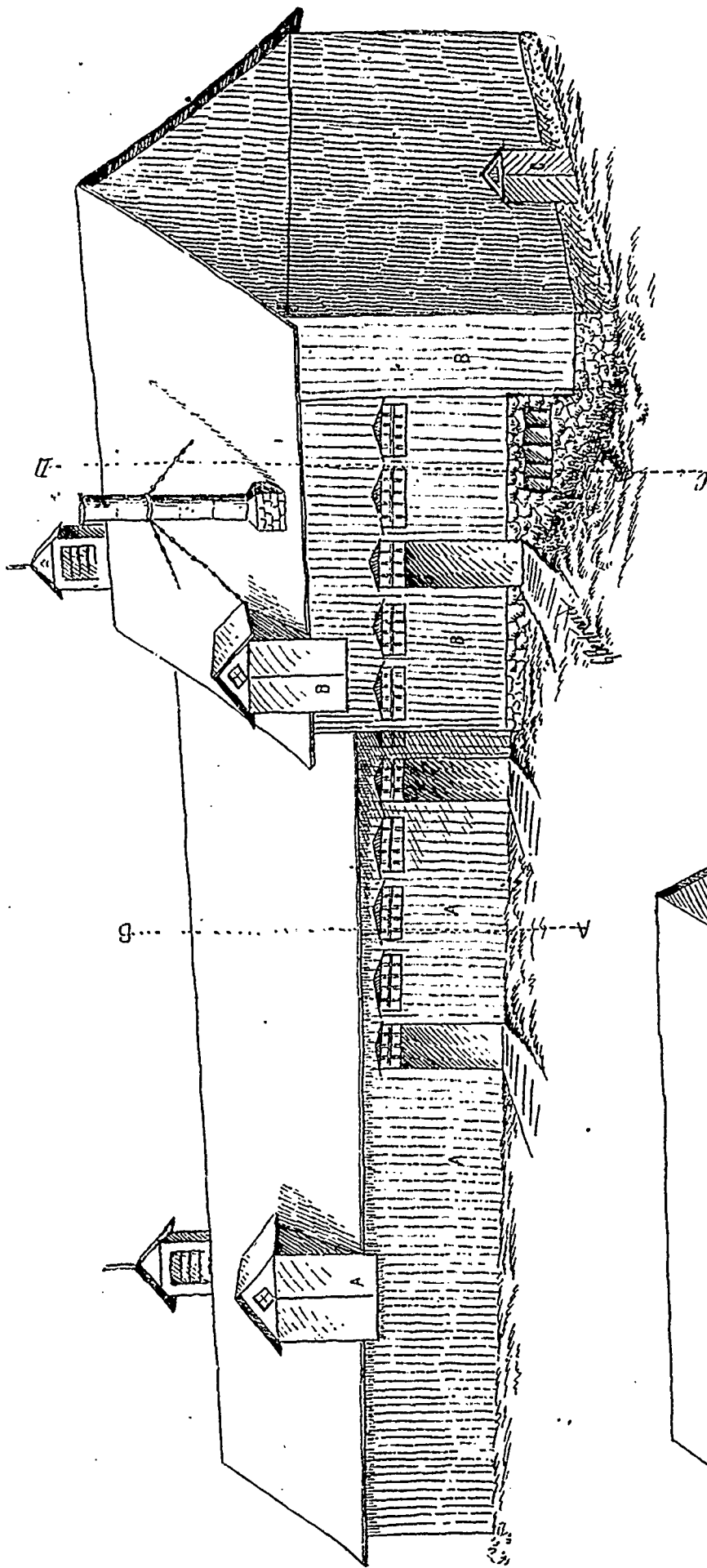
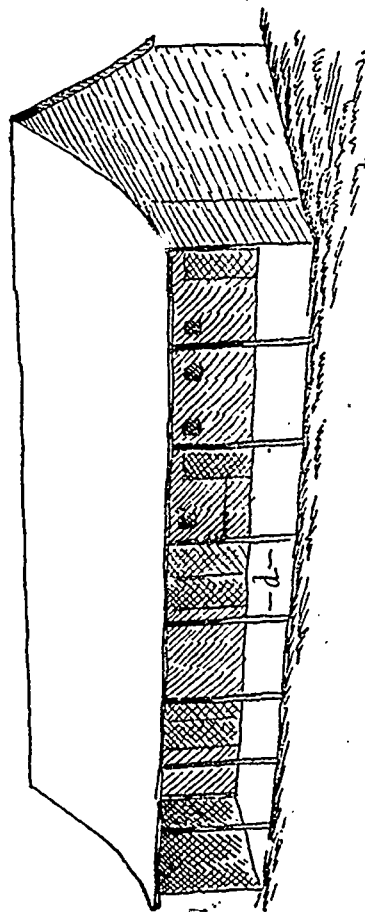


Plate VII.—Building belonging to the Rev. Ladies of the hospital of the S.-H., of Quebec, on their farm at Ancienne Lorette.

*A A A* Old building improved, 90 ft x 38.

*B B* Addition now being built, containing stable, silos &c, 46 x 38.

*C* Door entering the manure-collar, passing under the middle of the siloes.



*d* Building in its original form. Barns and cowhouse; 90 x 30, with lean-to 8 ft wide.



milking in a newly arranged shed, said to me: "It is a pleasure, now, to go and milk! It is all so clean! It is as warm as in the house!" I like to believe that the young people will consent willingly to the expenditure of the money they now employ in the purchase of objects of luxury in the erection of useful buildings.

Let us now see how we ought to proceed in application of the improvements I have been proposing to our farm-buildings, in such a manner as to form a complete whole, an economical system adapted to the wants of the dairy-industry.

#### SECOND PART.

I could, Gentlemen, leave you under the impression that I am the author of these plans that I lay before you: the modesty of Mr. Barnard would not allow him to assert his right of paternity; but I cannot be deaf to this legal axiom: "Res clamat Domino;" which, freely translated, means: The plans are Mr. Barnard's; and this is one reason why they should demand our serious attention. They are improvements I am proposing, and not a revolution, which upsets and destroys without rebuilding. I address myself to all farmers, rich or poor, since they are all equally called upon to supply the demands of the creameries and cheese factories, convinced as I am, that all, if only animated by a little earnestness, can make these improvements; if not wholly, at least in part.

In order to be clear, to suggest to all and each of them a plan that may suit them, I will divide farmers into four classes.

First, those who are obliged to build entirely anew.

Then, those who wish to increase their buildings and to have a manure-pit.

Thirdly, those who having a manure-pit already, want to increase and improve their buildings.

Lastly, those who can only afford to construct a boiler-house, or a manure-shed.

I will only lay down the principal lines, leaving to each the care of the details, which will vary indefinitely, according to the conditions and circumstances in which each farmer finds himself. Before beginning, it is important to have an idea of the whole system, to proceed with order in accordance with the means at each man's disposal.

1. To the farmer obliged to build entirely anew I propose this first plan:

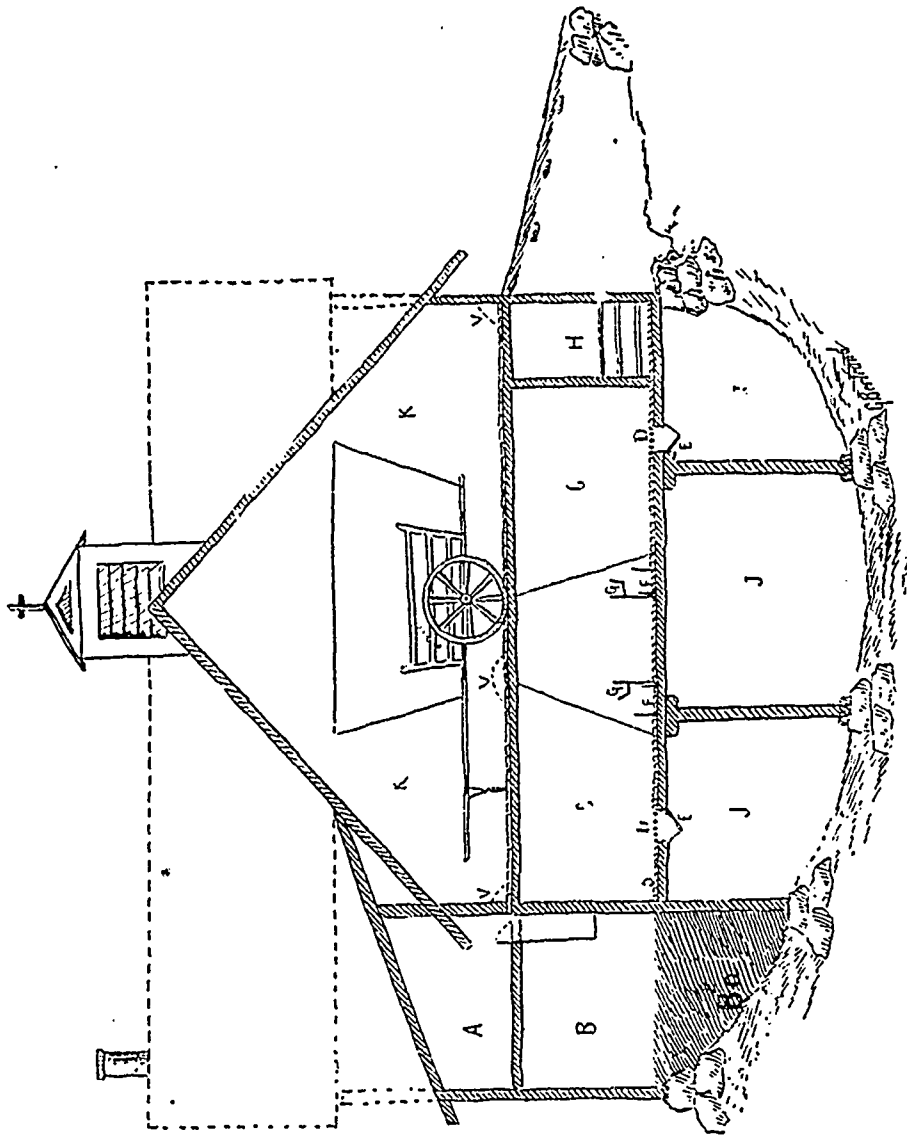
A building 18 feet up to the roof, 96 feet long and 38 wide. You will have a manure-pit at least 8 feet high; a stable and cowhouse of the same dimensions; in the south-part of the building a boiler-house and a poultry-house; under the floor next the pit a piggery; and space to build a silo, and to set a horse-power to work a threshing-machine and a chaff-utter. If the stable and cowhouse are too narrow and do not come up to your ideas, it is easy to build, on the east-side, a lean-to, which will serve for a piggery, in the lower part, and for a boiler-house and poultry-house in the upper, so that the whole space below the floors may be reserved for the sheep, the carriages, and the implements. If the land is on a slope, you will be spared the expense of making raised approaches; you might, possibly, be able to enter with your loaded wagons by the gable-end of the barn, and this would enable you to drive in as far as the hay-loft, an immense advantage. These plans you will modify according to your wants; in taking them for your starting point, you will certainly have a building both simple and convenient.

2. In the second place, I produce plans belonging to an old barn which has been improved to suit a dairy-farm. The proprietor wished to preserve this building, because, though old, it was in good repair; he wanted to enlarge it and to have

a manure-pit. This is the barn in its original state; that is it in its modern dress. You will perceive at a glance that it has been raised 4 feet from the ground; an operation easily performed by aid of the *screwjack*. Being raised like this, there is room for a manure-pit of great size under the cowhouse, a piggery under the floor next the cowhouse, and very deep bays. Aided by this heightening, an annex of 14 feet wide has been built towards the south, the whole length of the building; another of the same sort, but facing the cowhouse, on the north side; the lower part of this latter becoming a part of the manure-pit, while the upper storey serves to enlarge the cowhouse. In the annex on the south-side, there is a part retained for the horses; another for the working-oxen; in this last place, that is, for a width of 12 feet, only 6½ feet have been left between the two floors of the stable, so that the boiler-house can be placed in the upper part of the stable. The raised path, leading from the stable to the cowhouse, is 3½ feet high by 13 feet long. By means of large bars solidly fixed, like stairs, the cattle surmount it with ease. Between the two great dormer-windows, there is a space of 20 feet, intended for a silo. Behind the barn, there is a shed sheltering the wheel that moves the threshing-machine and the chaff-utter. The original poultry-house has been put in communication with the stable and the manure-pit. An examination of the interior plan gives an exact idea of the bottom of the pit, made in basin-form, that the centre of gravity of this enormous mass of liquid and solid matters may not injure the walls of the pit. Below the stable is an inclined plane, allowing the descent of the liquid matters into the pit. The bottom, whether of the dung-pit or of the manure-shed, should always be covered with a layer of beaten clay, 5 or 6 inches thick, whereby the manure is prevented from *leaching* into the cellar, and into the well, which is generally situated close by, and sometimes is in the cellar itself. You observe four ventilators terminating in one cupola; two lead from the cowhouse, a third from the boiler-house, and the fourth from the cellar. An air-hole having its orifice below the roof, passes above the floor of the stable and ends in the cowhouse. Pure, fresh air is constantly replacing the hot and unwholesome air, which, departing through the ventilators, maintains a temperature of nearly 50° F. The ground plan shows how you can observe the temper of the horses and cattle, all of which are fed with ease from a passage in front of them. The cleaning is managed by means of trap-doors placed in the gutters behind the animals. The dung from the stable is thrown into the cellar by two openings in the partition between the stable and the cellar.

This, I presume, is enough to give you an idea of the whole building; a more attentive examination of all the plans will teach you the exact dimensions and the other details. All these buildings should be put up with precaution, that is, in regard to warmth. If they are rooms (*pieces*) they should be well panelled and caulked; if in clear frame-work, they should be double-boarded with a stuffing of saw-dust, to keep out the cold and damp. Those whose buildings rest on a firm sloping surface can make a dung-pit beneath their cowhouses, without being obliged to raise them, provided they can manage to admit into it a little light and air.

3. Let us examine a third case: that of the Nuns of the Hospital of the Sacred-Heart of Jesus, at St-Sauveur de Québec. These ladies possess a fertile and extensive property at L'Ancienne Lorette, and are now busy in improving an old barn under the direction and after the plans of the Director of the Journals of Agriculture. In this barn, there is already a manure-cellar, but the cowhouse and stable want enlarging, a silo has to be made, a boiler-house, &c. On the south-side, the roof extends about eight feet beyond the barn, forming a shelter. To utilise this part of the roof, it is pro-



- A B* Lean-to, closed, so as to enlarge the cow-house &c. by 8 feet.
- B* Loose-box for brood-mares.
- Ba* Earthen floor.
- C* Cow-stalls 4 feet long.
- D* Iron grating, through which the dung drops—2 ft wide.
- E* Doors, closed by a chain, to prevent the cold ascending, if required.
- F* Mangers.
- G* Troughs.
- H* Loose-boxes of different sizes for calves, bulls, sick cows, &c.
- J* Manure-cellar-floor of beaten clay.
- K* Floor above the hay-barn, with entrance 12 feet wide, through a lofty porch.
- V* Ventilators (practicable) in the sides and the middle of the cowhouse, &c., throughout the whole length. By this means, the cows can remain in the house, if desired, all the summer.

Plate VIII.—*A B* The buildings of the Rev. Ladies of the hospital of the S.-H. of Quebec at their farm at *Ancienne Lorette*.—Section of the improved buildings.

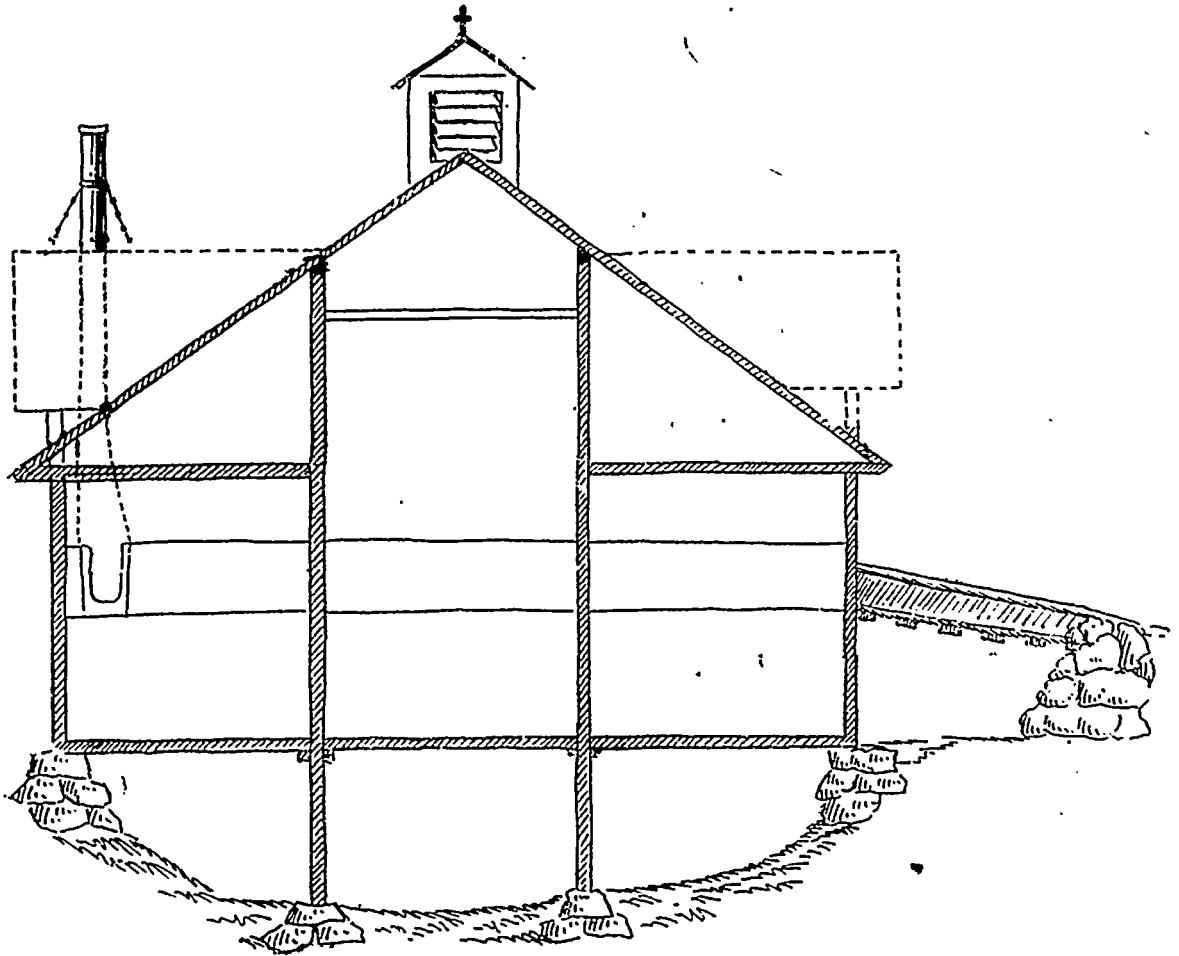


Plate IX.—Section of the addition to the same building (now under construction).

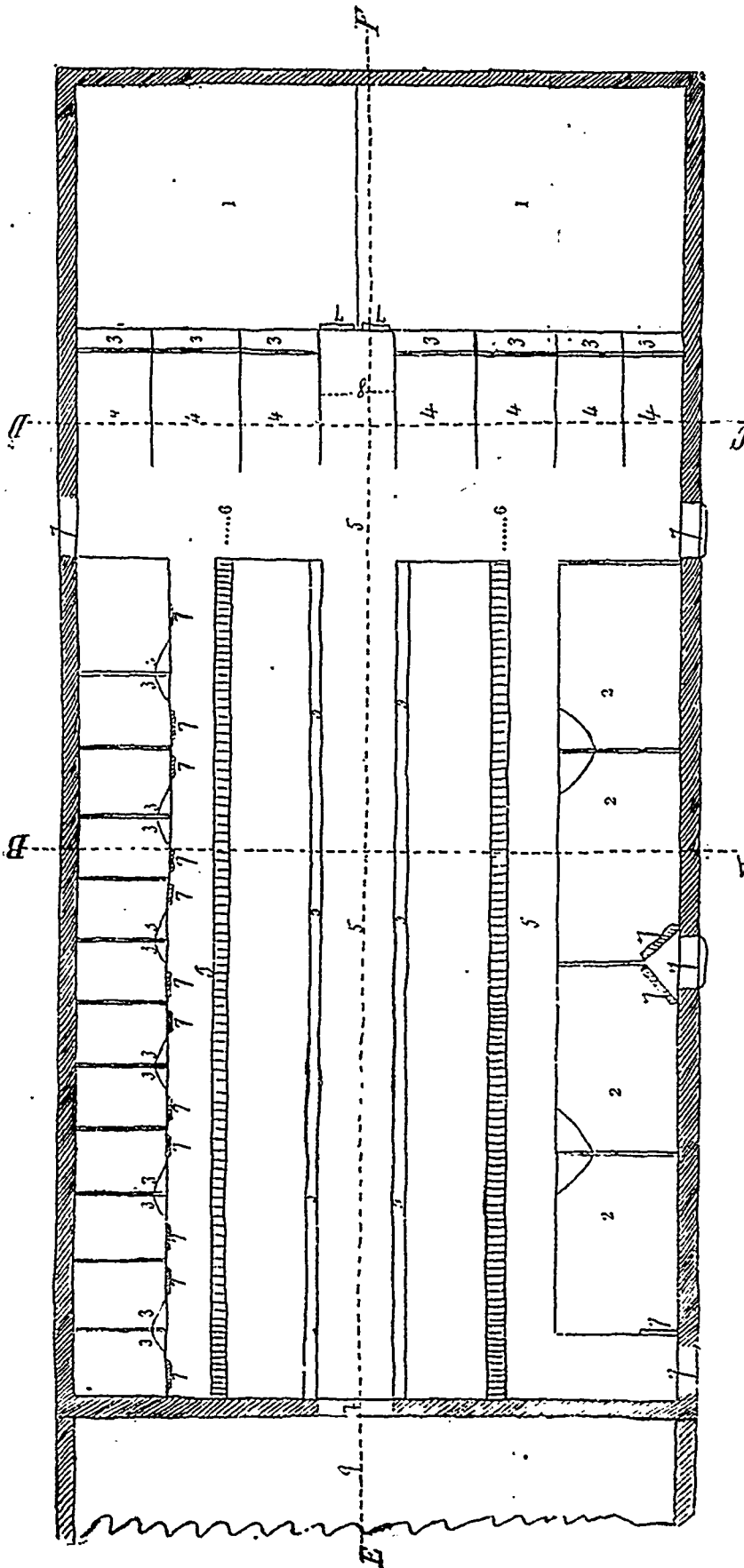
The whole as above; except that the interior will be 18 ft high instead of 12, and that the threshing floor will here serve as a floor for the stable, 4 ft higher than in the other parts, for the better ventilation of the whole building, and to enable the unloading of carts, &c., into the hay-barn of the old building, into the siloes, &c., to be carried on from a higher position.

posed to close this shelter (*abri*) with a wall (*pan*), which will enlarge the cowhouses and bays, and, then, to lengthen the building by about 46 feet. This addition will allow of the stable and cowhouse being made roomy, containing a double row of cattle, and stalls at the side for calves and horses. The Reverend ladies propose to keep about 20 cows in quasi-permanent confinement to the cowhouse, and require several horses for the work of their estate. In the eastern part, there will be an immense silo, 38 feet long by 16 wide, for they intend growing a large quantity of green-fodder for ensilement. The land slopes so much that access can only be had to the cellar by the east gable end; so a wide passage has been reserved below the silo which freely admits of horses and carts being driven into the cellar. At a level with the floor of the barn (*carré de la grange*), a little above the upper floor of the cowhouse, there will be a threshing-floor to which loaded wagons will have access, by means of a raised-way and a great dormer-window built in the northern part of the roof. Thus, it will be possible to carry all that is necessary to the boiler-house in the southern part, above the cowhouse, and to fill the hayloft and the bay next to this threshing-floor with the greatest possible ease.

In the plan we have just been studying, you have remarked

that, behind the animals, there is a gutter and trap to allow the manure to fall into the cellar. Observe, here, a slight difference, the existence of which implies a more perfect and more complete system of feeding. It is intended to cut into chaff a great part of the fodder; to make the cattle eat it all, so that there will be no litter to bed up the animals with. That is why the stall-floor (*pavé*) is level with the passage; only, behind the cattle there are bars  $2\frac{1}{2}$  or 3 inches apart—according as they are of wood or iron, and below these bars, a sort of oblong box made of three planks. The bottom plank is retained in place, on one side, by two hinges, on the other, by a small chain which allows it to be let down when it is desired to make the manure descend into the cellar. There is, however, no reason why several traps should not be used, in case it might be considered best to use litter.

You see no piggery or henhouse here; that is, because these Ladies have at St-Sauveur a splendid set of buildings for pigs and fowls. Where no litter is used, there is no need of pigs to work in the dung-cellar. Plenty of ventilation, you observe. This establishment presents a perfection of details which I cannot point out here, but which may be studied with profit. M. Barnard desires to apply here his theoretical



Plato X.—Improved and enlarged building belonging to the Rev. Ladies of the hospital of the Sacred-Heart at Ancienne Lorette, Q Ground-plan.

- 1. Silos 19 x 16 x 24 ft high.
- 2. Loose-boxes for brood-mares, &c.
- 3. Mangers and troughs.
- 4. Farm-horse stable.
- 5. Passages.
- 6. Grating, through which passes the solid and liquid manure.
- 7. Doors.
- 8. Entrance to the siloes—place for the barrows.
- 9. The barn.

and practical knowledge to the promotion of the progress of the dairy-industry.

4. Lastly, let us consider the case of those farmers who are not in a position to undertake costly work, but who can afford to build a boiler-house or a manure-shed. As to this latter improvement, I am bold enough to say that any farmer, however poor he may be, should try earnestly to make it. Manure; that is the farmer's treasure, a treasure that the rust never devours; that robbers do not covet, but one which assures good harvests and the prosperity of the family. If no more can be done, at least build a manure-shed. Let it be well built, that the manure may not spoil in it, and may be easily carted away at any period of the winter. The pigs should have easy access to it, for their work is indispensable, and let the bottom be of hard beaten clay. In the rear of the cattle will be staunch gutters, emptying into a tank, so that the urine may be turned over the dung in the shed. All the farmers who have well arranged sheds of this kind are well satisfied with them.

In front of the cowhouse, a small boiler-house, 12 or 15 feet square, can be built at a moderate expense. A boiler-stove, in cast-iron—commonly called an agricultural stove—can be placed in it; or better, a bricked-in boiler, which will concentrate the heat more. With a good chimney and with the care generally taken in our houses, there will be no danger of fire.

To condense into a few words some of the other advantages which improved buildings offer, I will observe that lofty bays, owing to the effect of pressure, will contain a much greater quantity of hay or grain; that hogs kept warm in winter will consume less food and will come out fat in spring. It is precisely at the season when we degustate the delicious dishes yielded by this valuable creature that we refuse him all pity and leave him to die of starvation and cold. The poultry-house equally deserves our attention. On the trifling cares we extend to our fowls depend the profits they yield.

And lastly, the financial question, the end of all our operations, presents itself. Any one can make an approximate estimate of the cost of the work I have just been speaking about. Let each, weighing well his means, his receipts, and his expenditure, as well as the particular circumstances in which he finds himself, proceed with prudence, feeling convinced that the money devoted to these operations will pay him heavy interest.

Gentlemen, the plans I have been displaying before you are not all perfect; the height of perfection is not so rapidly attained: but I like to think that they will open the way to new improvements. Since the dairy-industry has attracted to Canada the attention of foreigners; since that gigantic tree has developed itself and stretched forth its branches over even our humblest parishes, these improvements have become a question. I will not say only of domestic but also of political economy, since it has for its object the development of the most prolific source of our national wealth.

What, Gentlemen, is a drop of milk? This tiny drop, does it not contribute to the production of that enormous quantity of butter and cheese furnished by our country? So, I dare venture to hope that this humble work of mine, united to your deeper investigations, your persevering efforts, will contribute to the development of the dairy-industry of this our beloved province of Quebec.

Length of the barn, 90 feet.

Width of the barn outside, 26 feet.

Height of the cowhouse between the two floors, 7 feet.

Height of the stable between the two floors, 9 feet.

Height of the stable below the boiler-house, 6½ feet.

Height between the two floors in the north-part of the cowhouse, 6½ feet.

Height of the cellar, 8 feet.

Height of the raised-way for the cowhouse, 3½ feet.

Length of the raised-way for the cowhouse, 13 feet.

Width of the middle passage of the cowhouse, 4 feet.

Passages in the rear of the cattle, 3 feet.

Length of the stall floors of the cows, 7 feet.

Width of the gutters, 10 inches

Height of the mangers, 1½ feet

Width of the mangers 21 inches at the bottom; 24 inches at the upper part.

Height between the bottom of the mangers and the under part of the troughs, 2½ feet.

Width of the cowstalls, 3 feet 3 inches.

Width of horsestalls, 4 feet and 5 feet, (inches? Trans)

Width of horse-mangers, 2 feet 4 inches.

Width of passage in rear of horses, 5 feet.

Length of horse-stalls, 9 feet

#### DE OMNIBUS REBUS.

Box 109 — Upper Lachine. — August 9th, 1889

*Wheat-crop of the Province.*—I was greatly surprised the other day to see a statement in one of the papers that the wheat-crop of the province of Quebec only amounts, on the average, to 1,019,004 bushels! As the population of the province, by the last census, is 1,359,027, this would give only 2¼ pecks per head! There must be some mistake in the statement. The consumption per head in England is 5½ bushels of wheat, and though buckwheat and oat-meal are largely used here, yet I fancy the amount of these meals consumed in the province can hardly make up for the enormous difference between 2¼ pecks and 5½ bushels = 800 per cent.

*De-horning.*—The Messrs. Dawes have had both their old Jersey bulls dehorned, and precious sulky they (the bulls) looked after the operation! They were not amiable animals; one of them particularly savage, roaring like an irritated lion at the approach of a stranger to his loose-box. Neither of them seems to have lost flesh.

*Barley-crop.*—The Barley-crop is all laid flat by the heavy rains of July, and the quality will be very much injured in consequence. On the Cross farm, six scythes were at work yesterday, the crop being so prostrate that the reaper would have cut off half the ears. Barley-harvest was finished last year here on the same farm on the 27th July. Still some hay to be got in, but it is so over-ripe and discoloured that it is hardly worth the trouble of carting.

*Oat-crop.*—By far the finest piece of oats I have seen since I left Sorel is that on the Maplewood farm here, next the G. T. R. They are "White Tartars"; the straw stands nearly 5 feet high, and the heads are long and well furnished with grain. I put them at 9 quarters = 72 bushels to the imperial acre, and I do not think I am very much out. The land, like all the farm, is full of condition, and Mr. Tuck holds with me, that the richer the land, the less seed is required; consequently, the seeding was only 2½ bushels the acre.

*Pease.*—My neighbour, M. .... sowed, on old pasture, in a dampish situation, 30 bushels of pease. He told me the other day that he would take a dollar for the crop! Well, it is about as sad a sight as one can see, but if people will farm without judgment, what can they expect? Oats

would probably have given 50 bushels on acre on the same land. The pease were put in late, hardly harrowed at all, and that in a bad season, and the furrows badly drawn, so that they have stood full of water most part of the summer.

**Wells**—A contractor has been at work for the last month or two sinking a well for the supply of the Lachine Brewery. After going 1,004 feet, the work was suspended, as the water was found to be unsuitable to the purpose for which it was required.

**Potato-beetles**.—Not a single beetle did I see on the potato crop of 'no Dawes' farm yesterday. The dosing with Paris green was continued later than usual, and if all farmers carried it on in like fashion, destroying the latest survivors, the pest would be utterly banished. Unfortunately, so short-sighted are people in general that nothing is more common than to hear: "Oh, there are only a few, and the potatoes are too forward to be injured by them." Consequently, a stock of breeders is left, enough to devour the crop the following year.

**Silos**—The 10 acres of silage corn on the farms of the Messrs. Dawes seem likely to yield from 20 to 25 tons an acre—say 800 tons in all, but I believe there will be 1,000 tons! A new silo is in process of adaptation out of an old hop-oast. But the two together will only hold, according to my computation, 282 tons, as thus: each silo measures 21 x 21 x 16 = 7056 cubic feet, which multiplied by 40, the usual number of pounds in a cubic foot, equals 282,240 lbs.

141 tons, for the contents of each: where will they put the other 520 tons?

Belgian carrots, sweet corn, swedes, mangels, the whole root crop, in fact, on these farms are about as good as they can be. This, after three years' failure, must be pleasant to the proprietors. I do not think they will give up rolling the drills down and manuring in the spring again in a hurry. Fall manuring is advisable on heavy land, where spring-ploughing only produces clods, but not on such soil as the Lachine slopes. And, again, if land is manured in the fall, the spring cultivation should be done with grubber, harrow, and roller, and the mangel-seed sown on the flat.

**Southdowns**.—Mr. Webb's sale of Southdown sheep at Stroud, Cambridge, England, seems to have gone off very well. The lot fetched £5729 - \$28,000; the average for rams being \$160, and for ewes, \$37.

**Hampshire-downs** I see by the papers that Mr. Wood of Mount Kisco, New York, has been selecting the pick of these sheep for his flock. I had hoped to have seen an importation of them into this province, as well as a small herd of Dairy shorthorns, but I am doomed to be disappointed.

**Early harvest**.—In England, Talavera wheat was cut in Kent and Sussex on the 17th July! This wheat has a very long grain and is much sought after by biscuit bakers. Farmers in the southern counties sow it in the fall, and thresh immediately—in the fields by steam—as it gives them a few pounds of ready money to pay their harvestmen.

**Cheese**.—Prices keep at about 9½ cents a pound. Not much profit on exportation with Liverpool at 44 shillings per 112 lbs. Best creamery butter only 20 cents! Not being able to get any butter fit to eat either here or in Montreal, I content myself with making Camembert cheese. I buy the milk of Mr. Trenholme, of Rockfield; 3 quarts make a good sized cheese—5 inches in diameter by 2 in depth—and, after

three weeks keeping in a cool cellar, I find it takes the place of butter very well, though of course it is more expensive.

**Sturgeon**.—Dr. Stockwell says, in the Country Gentleman, that there are no young sturgeon taken in our waters. This seems odd to me, as I always supposed the *escargot*, lots of which I have seen caught on night-lines in Chambly basin, to be the young of the sturgeon. Will some one enlighten me on the subject? Why *escargot*, which is the edible snail of Europe?

**Grain returns**.—Mr. Dodge, statistician of the Agricultural Department of the United States, does not seem to give satisfaction. Dr. Hoskins says he does not put the returns of the potato crop high enough, and Mr. Chamberlain accuses him of magnifying the yield of the wheat-crop in Iowa. "The United States Department of agriculture," says the latter, "estimates last year's Iowa wheat-crop at 24,000,000 bushels. I do not believe there was one-quarter that amount of No. 2, or even of No. 3, wheat in the state."

**English wheat fields**.—Mr. Wood, the Hampshire-down breeder, Mount Kisco, in a recent issue of the Country Gentleman, seems to have been delighted with the farming on the Chalk districts of the south of England. But I must notice one statement in his letter that might easily be misunderstood: "Within the past few days I have seen a number of pieces of wheat of from 500 to 1,000 acres each." Mr. Wood is speaking of the custom observed in the Chalk farms of doing without fences, except the hurdles surrounding the sheep-folds. He cannot mean that he saw a number of pieces of wheat of a thousand acres each belonging to one farmer, as that would only be possible if the farm consisted of four thousand acres, the district in question being, as Mr. Wood truly observes, farmed on the 4-course system. There may be men in the southern countries who cultivate as many as four thousand acres, but there is no one farm of anything like that extent. Mr. Houghton, an eminent land agent, did farm between four thousand and five thousand acres, but his farms were situated in four or five different countries. *Chrysal Grange*, near Saffron Walden, Cambridge, in the occupation of the late Samuel Jonas, was the largest self-contained farm I ever knew, (1) and that was only 2,200 acres.

**Bulletin**—I have read with a good deal of attention, but, I regret to say, without much profit, all the bulletins that have been sent me by the managers of the Experimental Stations in the different States of the Union. A sum of, I believe, \$15,000 a year is handed over to each of these establishments by the central government, and an immense amount of almost useless figuring is the result. Column after column of analyses is printed, and, I suspect, in most cases the bulletins are thrown aside as soon as received. Some practical experiments have been carried out, but they are chiefly repetitions of English ones. It was surely unnecessary to prove anew that pease and other nitrogenous foods produce lean meat, and corn-meal, fat, for every feeder of animals knew that practically when I was a boy.

**Nitrogen**.—In England nitrogen, in nitrate of soda, is worth about 10 cents a pound; in sulphate of ammonia, 12½ cents, f. o. b. at Liverpool. The latter is, I believe, to be had at Mr. Vasey's works, Hochelaga, for \$3.25, in quantities, which would be equal to 13 cents a pound for ammonia = nearly 17 cents a pound for nitrogen.

(1) Not speaking of the mountain sheep farms of Scotland.

*Ontario Veterinary College.*—This college was established in 1860, when Mr Andrew Smith, on the recommendation of the well known Professor Dick of Edinburgh, was appointed Principal. Three regular students attended the first course of lectures, and the numbers increased rapidly until at present the lecture-hall, which is calculated to seat 400 people, is inconveniently crowded. The lecturers are: A. Smith, on anatomy and the diseases of domesticated animals; Dr. Thorburn, on *materia medica*; Dr. Barrett, physiology; Prof. Buckland, on the breeding and management of farm work, while chemistry, &c, are taught in University college.

*Sir John Lawes.*—The *Farmer's Advocate*, speaking of the magnificent gift of £100,000, made to trustees for the purpose of carrying out the Rothamsted experiments after his death, says, with great truth:

As most of our readers are aware, Sir J. B. Lawes is the largest private experimenter on agricultural matters in the world, and it is very doubtful if all the experiments ever conducted on the American continent have benefited agricultural science as much as his have done, and for the man who has devoted most of his life and a large amount of money to this object, to bequeath as a final tribute so princely a legacy is philanthropic indeed, and deserves the gratitude of every intelligent agriculturist.

*Do Cows Need Exercise?*—The Hon Hiram Smith, Dairy Commissioner for Wisconsin, recently made the statement that cows do not need exercise. It has long been conceded that ruminants require but little exercise, and Mr. Smith claims that in the case of cows sufficient is furnished in the elaboration of milk. The best stockmen in Ontario assert that cattle may be tied up in the fall and not turned out until spring, and the very best results obtained, and we have yet to hear of evil results from such a course. The writer has for some years past pursued this course with one or two cows with very satisfactory results, and would not hesitate to repeat the experiment on fifty, if necessary. This removes the most serious objection to the soiling system, and there is little doubt that, before another decade, soiling will be adopted by many who now sneer at the idea of taking food to the cattle instead of taking the cattle to the food.

I think it will be a long time before soiling will be a general practice except in the immediate neighbourhood of large towns, but experience long ago taught me that cows, if kept in well ventilated stables, can do without exercise in winter. Roomy yards and commodious racks are necessary for soiling: a hot stable in July and August is not a proper place for any stock.

*What Sheep?*—M. Casgrain, one of the most successful sheep-breeders in the province, must have more patience than I have, and displays a wonderful amount of good temper in a correspondence, published in the July number of the *Journal d'Agriculture*, with M. J. O. Coulombe, on the question: which breed of sheep should we keep?

M. Casgrain is a *Down* man; M. Coulombe prefers the *Cotswold*, and gives nine reasons for his preference, the third of which is worthy of notice. Because the meat of this breed is at least equal if not superior in weight and *quality* to that of any other breed whatsoever!!! And then he talks about *amateurs* and *practical men*, as if M. Casgrain were not known as a thorough flock-master!

The meat of the *Cotswold* equal if not superior, &c. Is it? I can tell M. Coulombe that no respectable butcher at the West end of London would dream of buying a *Cotswold* to supply his customers; and I presume they know what mutation is.

M. Casgrain relates that, at his visit to the quarantine last summer, he found there 900 *Shropshire downs*, 60 *South-downs*, 20 *Oxfords-downs*, and 20 *Cotswold*. But his whole letter is worth reading, and I will translate it for the October number.

*Antrachnosis of the French bean*—This is the name, according to M. J. C. Chapuis, of a disease that is playing the very mischief with my "butter-beans." The Latin name is almost more terrible than the other: *Gleosporium lindemuthianum*! I wish MM. Saccarda and Magnus, who gave it that name, had added the derivation. Anyhow, the disease is fatal to the crop. It makes its appearance first as a small red spot, and increases rapidly until pod and beans rot completely.

*Cooked vs. uncooked food*—Beyond steeping crushed linseed in water and boiling potatoes for pigs, I have always found that cooking food for farm stock was an unnecessary trouble and a useless expense. Several experiments have been made of late years to settle the question, a few of which I note for my readers' information:

Several were made at Poppelsdorff, in Germany, with hay, which went to prove that the albuminoids of steamed fodder with cattle, digested at the rate of 30%, while with hay in its natural condition, the digestion amounted to 46%.

Mr. Ladd, of the Experiment Station of the State of New-York, showed that the digestion of the albuminoids was diminished by cooking. Corn-meal, cooked and uncooked, was submitted to the action of pepsin, and it was found that with the raw food the ratio of digestion was 72.58%, in the cooked, 63.17%.

M. Dulong, of Pomerania, found that uncooked barley-meal produced in his pigs an increase of weight three times greater in a given time than when cooked. (This seems questionable. A. R. J. F.)

Prof. Henry, Wisconsin, mentions, in his report for 1886-7, that uncooked barley-meal gave 15% more pork than when the same amount of meal was cooked, and the same with corn- and wheat-meal and pease.

As to potatoes, the evidence is in favour of cooking them for pigs in the ratio of 86.5 to 57.5 uncooked.

In fact, the almost invariable practice of English farmers is as correct now as it was 50 years ago.

*Sugar.*—In 1840, the annual consumption of sugar in England was 16 lbs. per head; in 1888, it had increased to 72 lbs. per head! The average price was formerly sixpence a pound; now, it is twopence!

*Scour in calves.*—A correspondent, whose calves have been suffering from this complaint, asks for a remedy, and would be glad to know from what cause or causes the complaint originates.

There are several causes whence the scour springs. First, injudicious feeding, as giving pail-fed calves too much milk at a time; giving milk at too low a temperature; feeding at irregular periods, letting the calves drink too greedily, &c.

Calves should be fed at least three times a day for the first month, Jersey calves—in fact, the calves from all rich milk-giving cows—should have a little water mixed with their milk for the first week; a pint and a-half is enough for a meal during the first few days, increasing the quantity gradually according to the size and well-doing of the calf; the weaker the calf the smaller should be its meals, but they should be all the more frequently administered. Good dry beds and plenty of ventilation are necessary to the health of every calf.

New milk for the first fortnight; then a small quantity

—say, a tablespoonful—of crushed linseed, steeped in hot water and carefully mixed with the milk, at each meal, to be increased, as the calf grows stronger, to twice the quantity. If you want *bone*, give the animal skim-milk, and lots of it! The best food to produce scour in calves is ground oats *unsifted*.

Boiling water poured on clover-hay and allowed to steep for half an hour may be used, with linseed as above and a half-ration of milk, for strong calves without much danger; but, with new-milk only fetching at the factories 90 cents per 100 lbs., and even less, a calf from well-bred sire and dam ought to pay for the unskimmed milk it would consume during three months, after which time the other foods, hay, oats, and roots, or silage, will carry the work on more cheaply.

*Remedies.*—The best of all remedies for scour is *Dwight's Cholera Mixture*: dose, 40 drops in a little water. Give very little milk for a couple of days after seizure, and if the calf seems cold and shivery, administer a little gin or whisky in a wineglassful of warm water.

A very old recipe for this complaint is: six oz. prepared chalk, 2 oz. bole armoniac, 2 oz. ginger; I never tried it, but it is said to do well.

Keep your sick calves warm and well littered.

ARTHUR R. JENNER FUST.

## AMONG BRITISH IMPORTERS.

### Butter Packages

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#### LETTER NO. IX.

The British importers, while agreed on most points, showed some difference of opinion on the subject of butter packages. As many of my readers know, our export package is mainly what has been called the Welsh tub. It is wider at the top than at the bottom, with a somewhat loose-fitting cover, usually fastened down by strips of tin. The sizes range from a 25 to 70 pounds capacity. It is a stave tub. It is generally manufactured now by machinery, and may be procured at a low price at almost any country store. Within a year or two there has been placed on the market, and used in export trade, a tub of the above description, provided with an inside lining of tin, the whole called a "tin-lined tub." The Danish package is a cask or barrel, with both ends headed in the usual manner. It is also made by machinery, is light and clean-looking, and will hold about 100 pounds.

Several of the importers in Bristol considered

#### OUR BUTTER PACKAGE FAULTY.

Mr. Clark said: "The present tubs are simply ridiculous. The joints open, staves get loose, the tubs break off, and the cover is poor. These packages are faulty generally. The butter oozes out and around the edge, or where it touches the wood, it gets 'sidey,' or strong tasting." Mr. Iles also said that butter suffered from "contact with the wood." Mr. Clarke spoke of the tin boxes which came into the market, and said they were a favorite package; but the objection to them was their expense, and the fact that the butter could not easily be taken out to "tare" it. He would prefer the tin-lined tubs. These allow the butter to come out easily, to be "tared" or "stripped," but he thought their cost was an objection. Mr. Iles had less preference for tin-lined tubs,

their extra cost also being his main objection. If they were to be used at all, however, he would like to have them used altogether. He thought it a mistake to have various sorts of packages in the market containing one brand of butter. When he offered butter in both packages, the argument which justified the use of the tin-lining necessarily condemned the use of the wooden tub without the lining. As a dealer, he had actually experienced this difficulty of satisfying buyers that either or both packages were good! Here, certainly, is another argument for uniformity all through in dairy matter. I may say here that what little experience. I have had with the tin-lined package goes in its favor. While cheapness will be an essential in the package of the future, I would advise the dairyman not to allow a little extra cost to stand in the market. Mr. Clarke advocated the adoption of the Danish package, the cask or barrel, but of a somewhat smaller size, say holding 70 to 80 lbs, instead of 100 lbs. I am glad, however, to quote Mr. Price, who had

#### A GOOD WORD FOR CANADIAN TUBS.

He was much pleased with them. They could not be rolled like the Danish casks, and so had to be lifted. This fact saved the outside, in some measure, from contact with dirt. His experience led him to believe that these packages had been received by importers in England, fairly clean on the outside. He believed that the dirty appearance of Canadian tubs was largely due to the effect of long storage. He claimed that Danish casks had never been tested by storage, and believed if they were they would show a much dirtier appearance than the Canadian tubs do. There is much force in this statement, and its teaching should not be lost sight of. In making a comparison between Danish and Canadian packages, we must remember the different conditions under which they have been tested. The Danish butter transportation is of comparatively short distance and of continuous movement, shipments being made almost daily. The handlers engaged in this trade are completely familiarized with its needs. Again, it may be that brine is used in one case and not in the other. The brine, though it may serve to protect the butter, soaks into the wood package, and through to the outside, giving the latter, after some weeks of storage, a dirty appearance. All this goes to prove

#### OUR PACKAGE ONE CAUSE OF FAILURE.

Our competitors have adopted a package which, thought it may not be intrinsically a better one than our own, is better suited to the conditions of their trade than ours to the conditions of our trade.

Some suggestions were offered by these experienced dealers. Mr. Iles suggested the use of cloth to surround the butter in the packages. Cloth would be a great protection and it was not expensive—much less than tin. Cloth always had a certain value to the buyer, either grocer or consumer. I may add that I found the use of cloth for protecting butter, in connection with different styles of packing, growing in favor everywhere, and it may be strongly recommended. Mr. Iles thought, too, that there would be an advantage in keeping a little pickle around the butter. "It would help to destroy the rancid flavor of butter kept so long in transit."

Mr. Price asks that butter be packed and invoiced in a way that each package will more evenly

#### HOLD OUT ITS WEIGHT.

In his experience some tubs are over weight and some under weight. Even though a shipment may contain, in the ag-



gregate, a full weight of the invoice, the importer may suffer loss when he disposes of the butter in divided lots. He cannot charge the average weight to his customers, for those who get the excess weight say nothing, while those who are short weight insist on the loss being made up. He also advised, for butter packages,

#### STANDARD NET WEIGHTS.

It would be much easier to invoice them. The desirable sizes suggested were: For creamery, 70 lbs.; for dairy, 70.56 and 36 lbs. Mr. Hes also suggested tubs of uniform sizes and standard net weights. Creamery he would make 60 or 70 lbs. and dairy a range of 30 to 60 lbs. The standard weights proposed by Mr. Pricc appear to me to be better adapted to the usages of the country.

#### THE SORT OF PACKAGE NEEDED

for our butter trade is a most important consideration. The choice probably lies between our present package and the Danish cask. If it were settled that our present package cannot, or will not, be improved in its construction, one would be almost tempted to decide, off hand, upon the adoption of the Danish package. But were our own package to be improved in every respect wherein it is now defective, there is no doubt that it should be retained. The first argument in favor of retaining our own package is (a) the fact that it is the package already in use. It is easier to improve what we have than to revolutionize and introduce a substitute completely new. Our manufacturers are in the field equipped for making the present firkin. It would be a pity, and not in the interest of dairymen, to unnecessarily depreciate the plant of the manufacturer who supplies him with requisites, and who is, therefore, his friend. It were well and reasonable, however, to ask the manufacturer to take heed to the needs of his patrons, and to perfect his goods to the highest degree. The second argument (b) is the advantage (if ever we do happily make for ourselves a reputation abroad for our butter) of having a package distinctively our own. Such a package may ultimately be imitated, but that would not be ill fortune, for one must needs be ahead to be followed.

Now, the Danish form of package seems especially adapted for heavy weights—the Canadian form to light weights. Possibly, then, it would be well to

#### ADOPT BOTH PACKAGES.

For creamery purposes, a cask containing 100 lbs. butter would be convenient, and it would suit the English market. To adopt this package would be to follow our old record. A Liverpool firm told me that eight or ten years ago, Kamouraska butter was put into 100 pound casks, called "Goschens." This butter, by the way, had a high reputation for keeping quality, and was sometimes set aside because of this quality, for spring needs. The butter was highly salted; but it is likely that the package had most of all to do with the long keeping of the butter. These old-time packages, if I am rightly informed, came into disuse, because of the difficulty of "taring" the butter, and because of fraudulent practices such as giving overweight of package and underweight of butter. All such difficulty might be duly provided against, under a proper supervision of our butter interests.

#### THE PREJUDICES OF BUYERS

and of consumers is a factor not to be disregarded. The popularity of a Normandy fresh butter package—a small box—

will often sell other butter that would be refused in other shape. Mr. Clarke, however, thinks that at the present time, there are not any weighty prejudices in the market strong enough to bear against the adoption of any particular package. Whatever prejudice does exist he would expect it to work in favor of the Danish cask (in which some of the margarine also is put up)

#### SOME ESSENTIALS OF A BUTTER PACKAGE.

Of first importance is the material used in manufacture. Spruce is the wood now used most extensively, and it is good. Balsam might be even preferable, but it is not always available. There is no objection to soft wood, it is easily manufactured, and it makes a light and cheap tub. But it is no necessary and of first importance that the wood be free from sap if it be used without artificial treatment or coating. I have understood that the Vermont manufacturers are very careful to select the lumber used and to exclude any staves containing sap. I fear that some, at least, of our manufacturers have not been wise enough to follow this example. The "blucy" butter referred to by the Bristol dealer was very likely due to sap in the wood. Our perfected package should be made to hold brine perfectly. One of the Bristol importers advised keeping brine around the butter in transit, and the "Goschens" referred to contained brine, which kept the butter from contact with the air. Now, if our packages were of material impervious to brine and had a brine-tight cover, the butter would be in a better condition, whether it were actually surrounded by brine or not. When brine is used it would be prevented from soaking through to the outside, not only wasting itself but discoloring the package and giving it a dirty appearance.

#### THE RESOURCES OF SCIENCE AND INVENTION

have made it possible for our manufacturers to give us packages answering the essential conditions, but the enterprise of those interested, of both dealers and manufacturers, seems not to have been equal to the need, and a package perfected in these points has yet to be placed on the market, or, at least, to be introduced into trade our system.

In freely giving above suggestions of others as well as my own, I do not expect to have covered the whole ground or to have settled the question. Rather, I have only opened up the question for discussion. As the reader will see, before I am done I anticipate the necessity of more than suggestions or opinions, of one or of many, to determine what is best. Actual experiment in practical lines will be necessary here as in other directions to the attainment of success. Of experimental work I shall have something to say in a future letter touching continental methods.

W. H. LYNCH.

January 9th, 1889.

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