

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

Coloured covers/
Couverture de couleur

Coloured pages/
Pages de couleur

Covers damaged/
Couverture endommagée

Pages damaged/
Pages endommagées

Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée

Pages restored and/or laminated/
Pages restaurées et/ou pelliculées

Cover title missing/
Le titre de couverture manque

Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées

Coloured maps/
Cartes géographiques en couleur

Pages detached/
Pages détachées

Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)

Showthrough/
Transparence

Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur

Quality of print varies/
Qualité inégale de l'impression

Bound with other material/
Relié avec d'autres documents

Continuous pagination/
Pagination continue

Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Includes index(es)/
Comprend un (des) index

Title on header taken from:/
Le titre de l'en-tête provient:

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

Title page of issue/
Page de titre de la livraison

Caption of issue/
Titre de départ de la livraison

Masthead/
Générique (périodiques) de la livraison

Additional comments:/
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

| | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 10X | 12X | 14X | 16X | 18X | 20X | 22X | 24X | 26X | 28X | 30X | 32X |
| | | | | | | | | ✓ | | | |



Published for the Department of Agriculture for the Province of Quebec, (official part) by FUSEBI SENECAL & FILS, 20, St. Vincent St. Montreal.

Vol. XI. No. 10.

MONTREAL, OCTOBER 1889.

\$1.00 per annum, in advance.

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.

Table of Contents.

| | |
|---|-----|
| Council of agriculture..... | 145 |
| Deliberations of the Council of agriculture..... | 146 |
| Monthly Bulletin of crops for the month of August 1889..... | 148 |
| Description of a piggyery..... | 149 |
| Wheat-yield in Quebec..... | 153 |
| Extracts from Censuses of 1881, Province of Quebec..... | 153 |
| De Omnibus Rebus..... | 153 |
| What breed of Sheep shall we keep?..... | 157 |
| Correspondence..... | 158 |
| Continuous Winter Stabling for Cows..... | 159 |
| The Strawsonizer..... | 160 |
| Special Fertilisers..... | 160 |

Quebec, 2nd September, 1889.

His Honor the Lieutenant-Governor in Council, has been pleased to make the following appointments :

COUNCIL OF AGRICULTURE.

The Honorable H. G. Joly, de Lotbinière, agriculturist, Pointe-Platon, county of Lotbinière; The Honorable Elisée Dionne, agriculturist, Ste-Anne de la Pocatière, county of Kamouraska; MM. Israël Tarte, agriculturist, of Quebec, county of Quebec; Auguste Casgrain, agriculturist, Rivière Ouelle, county of Kamouraska; Eugène Casgrain, agriculturist, of L'Islet, county of L'Islet; Joseph Richard, agriculturist, of St-Casimir, county of Portneuf; The Honorable Louis Archambault, agriculturist of L'Assomption, county of L'Assomption; Alexis Ernest Ed. Lussier, M. P. P., agriculturist, of Varennes, county of Verchères; Charles Gibb,

agriculturist, of Abbotsford, county of Rouville; Robert Ness, agriculturist, Howick, county of Chateauguay; S. N. Blackwood, agriculturist, of West-Shefford, county of Shefford; Jérémie Décarie, agriculturist, of Notre-Dame de Grâce-Ouest, county of Hochelaga; Urgèle Valois, agriculturist, of the Pointe Claire, county of Jacques-Cartier; Joseph Pilon, M. P. P., agriculturist, of St-Ephrem d'Upton, county of Bagot; Auguste Guilbault, agriculturist, of Ste-Elizabeth, county of Joliette; Antoine Rocheleau, M. P. P., agriculturist, of St-Hubert, county of Chambly; J. J. A. Marsan, agriculturist, of L'Assomption, county of L'Assomption; Charles N. Péloquin, agriculturist, of Notre-Dame of St-Hyacinthe, county of St-Hyacinthe; Louis Sylvestre, M.P.P. agriculturist, l'Île du Pads, county of Berthier; Frederick N. Ritchie, agriculturist, of Ste-Anne la Pérade, county of Champlain; Higobert Morier, yeoman, of St-Cyprien, county of Napierville; Colonel The Honorable W. Rhodes, Commissioner of Agriculture and Colonization, and The Honorable Gédéon Ouimet, Superintendent of Public Instruction.

COUNCIL OF AGRICULTURE.

Copy of the Report of a Committee of the Honorable Executive Council dated August 29th, 1889.

Approved by the Lieutenant Governor, Sept. 2nd, 1889.

No. 486 Concerning the approval of certain resolutions of the Council of Agriculture.

The Honorable Commissioner of Agriculture and Colonization, in a memorandum dated 28th of August of the current year (1889) recommends the approval of the Deliberations of the Council of Agriculture of the province of Quebec, passed

at the session of the 30th of July of the current year, a copy of which is annexed to the said memorandum, in conformity with the article 1614 of the revised statutes of the province of Quebec.

Certified.

(Signed)

GUSTAVE GRENIER,
Clerk of the Executive Council.

Deliberations of the Council of Agriculture.

SESSION OF JULY 30TH, 1889.

The Council of Agriculture met at 2 P. M.

Present: Colonel the Hon. W. Rhodes, Commissioner of Agriculture, the Hon. MM. Archambault, Dionne, and Ross, Messrs. Blackwood, Casavant, A. and E. Casgrain, Lesage, Marsan, and Massue.

Mgr. Labelle, Assistant-commissioner of Agriculture, and M. J. C. Chapais, were also present.

At the request of the Commissioner, M. Massue took the chair. The minutes of the last meeting (April 11th and 12th) were read and approved.

The chairman read a letter from the Hon. G. Ouimet, stating that it was impossible for him to be present at the meeting.

The secretary informed the Council that the Hon. L. Archambault could not attend the last meeting owing to his not having received notice of it, although it was duly recorded. M. Eugene Casgrain having been away from home at the time of the last meeting of the Council, did not receive notice of such meeting in time to attend it, and wrote at once to that effect.

The Council heard, with deep regret, that M. Jos. de Blois, who was present at the last meeting, one of the most active and devoted of its members, was no more. The Council bitterly bewailed this loss, and offered its sincere sympathy to the family of the deceased.

The Executive Committee reported: 1. That it had received an essay, by the secretary of the Council, on the rules to be proposed for the ensuing provincial competition of the best cultivated farms: it recommended that this essay be published in the *Journal of Agriculture*, that the members of the Council, and those generally interested, may study it, and make useful suggestions on the matter to the Council before its next meeting, which is fixed for Wednesday, November 6th. (Carried.)

2. The committee recommended that the secretary immediately put himself into communication with all the Agricultural societies, in order to obtain as soon as possible every information about matters connected with this year's competition of the farms, and that the societies which shall not have conformed to the regulations of the Council as concerns the competition be deprived of their grant. (Carried.)

3. That the secretary obtain and place before the Council at its next meeting the questions sent by the Council of Agriculture to the societies, in virtue of a resolution, dated February 3rd, 1886, as well as the report of the committee appointed Nov. 17th, 1886, M. Marsan in the chair, charged to study the answers and to report thereon.

4. The committee having ascertained that the society No. 2 of Chicoutimi has raised, *bona fide*, a subscription of

(\$744.70) Seven hundred and forty-four dollars $\frac{1}{100}$ in 1886
(\$410.12) Four hundred and ten dollars $\frac{1}{100}$ in 1887
(\$506.00) Five hundred and six dollars in 1888
and that it has employed these sums in the purchase of grass-seeds in accordance with the rules of the Council of Agriculture concerning these matters;

And the committee moreover having ascertained that this society has, up to the present time, always been authorised by the Council to expend its funds in the purchase of seed-grain and grass-seeds; that, as usual, it has contracted a debt of \$782.23 with Mr. Evans, Montreal, and one of \$507.87 with the firm of J. B. Renaud & Co., Quebec, for seed-grain and grass-seeds duly delivered to the society, which debts were to be paid out of the grant becoming due to the society, in virtue of its subscriptions and of the approval by the Council of its programme of operations;

That, certain formalities not having been fulfilled, owing to the neglect of the secretary of this society, the grant thus promised to the society and to the seedsmen has not yet been paid;

That it is important to preserve the credit of the agricultural societies with the seedsmen of the province, when the approval of the Council of the outlay for seed-grain and grass-seeds shall have been previously obtained; as appears to be the case in the present instance:

In consequence, the committee respectfully recommends to the Commissioner that the debts due to Messrs. Evans and M. J. B. Renaud & Cie. be paid out of the unemployed balance of the grants made this year to the Agricultural societies; but that it be for the future understood, that no debt due from an agricultural society be recognised unless it have been previously and directly authorised by the Commissioner of agriculture. (Approved.)

5. The committee, having examined the programmes of several agricultural societies and found them not to be in conformity with the regulations of the Council, recommends: (a) That the existing rules be adhered to which prohibit the societies, under pain of losing their grants, purchasing stallions, or other breeding stock, which are not thoroughbred; (b) That the secretary of the Council communicate immediately with all the agricultural societies and notify them that they will have to conform to the rule of the Council above cited, as well as to all other rules of the Council that have been communicated to them; failing which, the grant in favour of these societies will not be paid over to them this year. (Approved.)

6. The committee recommends for adoption the two following forms of certificates, to be signed by the Veterinary-surgeons of the Council of agriculture; the former (A) for the purchase of stallions by the agricultural societies; the second (B) for horses winning prizes at the exhibitions:

A—Council of Agriculture of the province of Quebec

Permit of purchase.

CERTIFICATE OF INSPECTION OF STALLIONS.

In accordance with regulations of the Council governing the expenditure of public money in purchasing stallions for Agricultural societies, I

Veterinary-surgeon, duly appointed and authorised by the Council of Agriculture, to examine the said stallions, do hereby certify: that I have examined for the Agricultural Society of

measuring hands, marked as follows

aged years; and in my opinion, the said horse is sound and free from hereditary defects.

I have also examined the pedigree certificates and find

them correct and that he is duly registered in vol. page of the stud book.

And further; in my opinion, the said horse is of sufficient individual merit, as to conformation, bone and action, to be recommended for purchase by the said society for the improvement of stock in its district.

Veterinary-surgeon.

B—Council of Agriculture of the Province of Quebec.

Permit for prize-giving by Agricultural Societies.

CERTIFICATE OF INSPECTION OF STALLIONS.

In accordance with the regulations of the Council governing the expenditure of public money in prize-giving to stallions by agricultural societies, I

Veterinary surgeon, duly appointed and authorised by the Council of Agriculture, to examine the said stallions, do hereby certify: that I have examined for the Agricultural Society of a stallion named

measuring hands, marked as follows

aged years; and in my opinion, the said horse is sound and free from hereditary defects.

And further; in my opinion the said horse is of sufficient individual merit, as to conformation, bone and action, to be recommended for prize receiving by the said society for the improvement of stock in its district.

Veterinary-surgeon.

The Council approved of the forms, and decided that they be printed in two special books with counterfoils (*talons*), that the counterfoil remain in the hands of the Veterinary-surgeon granting the certificate, which, duly numbered and signed, shall be sent without delay to the secretary of the Council to be preserved in its archives, and that an authentic copy of the certificate be handed to the agricultural society, if it be for permission to purchase a thoroughbred stallion, or to the proprietor of the stallion, when it is a case of a certificate allowing it to compete in the county, district, or provincial exhibitions. (Approved.)

7. The executive committee recommends that the Society No. 2 of the county of Joliette be officially recognised, and that it have a right to its share of this year's grant, provided that it conform in every point to the regulations of the Council of Agriculture. (Approved.)

8. The committee recommends that in future the auditors appointed to audit the accounts of the agricultural societies, before the annual meeting of the said societies, be obliged to sign and attest the following certificate (C); which certificate shall be sent by the secretary of the Council, in blank and in duplicate, to the secretary of each society before the 15th of November in every year. One of these certificates shall be sent to the Commissioner with the annual report and statement of accounts by the secretary of each society, and the other shall be preserved in the archives of the society.

(C) Certificate to be signed by two qualified auditors: I (name) (address) (profession) solemnly declare that I have accustomed to keep commercial books; that I have carefully examined the accounts of the agricultural society of the county of that the accounts are (or are not) well and duly kept entered in a durable and proper book (or books); that I have also examined the vouchers pertaining to each of the entries in these accounts, both for the last and for the current year, and I declare that these accounts are (or are not) correct. That the balance in hand at the commencement of the year was \$

That the balance now in hand is That there is now due to the society The debts due by the society amount to for which the society pays an interest of—per cent per annum. (Carried.)

I make this declaration conscientiously believing it to be true, and in virtue of an act passed in the thirty-seventh year of Her Majesty's reign, entitled: An act for the suppression of voluntary and extra-judicial oaths.

(Signed)

Received before me at this day of one thousand eight hundred and eighty

(Magistrate's Signature)——

The secretary of the Council was instructed to communicate with the managers of the veterinary-colleges which enjoy a government grant on the subject of the entrance-examinations of intending pupils. The secretary is expected, too, to be present, as often as possible, at the annual examinations which, in future, the pupils of the agricultural schools receiving assistance from the Council will have to pass.

The Council having ascertained that many pupils from the province of Quebec are at present in Europe following a course of eminently superior agricultural teaching at the Agricultural Institute at Beauvais, France, entertains an earnest desire that strenuous efforts should be made to endow this province with an establishment calculated to give to its pupils an agricultural education of the highest class. The Council learns with pleasure that there is a great probability of there being opened at the Lyceum of Mont St-Louis, Sherbrooke St., Montreal, in connection with the best cultivated farms, gardens, &c. in the neighbourhood of Montreal.—a branch of the agricultural Institute at Beauvais, which enjoys a very high reputation throughout the entire world, and the Council recommends that the question be examined as soon as possible, with a view to arrive at the desired end; provided that it can be done without pressing too heavily on the funds placed at the disposal of the Council for agricultural instruction. (Carried.)

The Commissioner related to the Council the result of the visits he had recently made to the schools at l'Assomption, Ste-Anne, the Deaf and Dumb school at Outremont, and Richmond.

He greatly extolled the working of the Deaf and Dumb School at Outremont, than which nothing could be more encouraging. He hoped that the schools at Ste-Anne and l'Assomption would, in the future, be very useful to those youths who study agriculture. As for Richmond, the Commissioner said that a radical change would be necessary, if a good result were expected from it. Consequently, he had given notice to its present manager that the school would be closed on the 1st January.

The Council warmly supported the Commissioner in his efforts to place the teaching of agriculture in this province

on the best possible footing, and recommended that no money be paid to the Richmond school, as long as it does not conform in every point to the rules of the Council which concern it. (Carried.)

M. Lesage, chairman of the commission on the herd-book for Canadian cattle, which commission is also charged with the duty of opening a stud-book for Canadian horses, proposed the following resolutions:

REGULATIONS FOR THE STUD BOOK FOR CANADIAN HORSES.

1. A permanent *Stud-book* has been established for the province of Quebec, by the Council of Agriculture, in which, upon request, shall be enrolled individuals (1) showing distinctive characteristics of the Canadian race.

2. The duty of superintending the entries is entrusted to a commission composed of four members of the Council of agriculture, elected by that body every year, to whom shall be added the secretary of the council, the Veterinary-surgeons of the Council of Agriculture, and such other specialists as it shall see fit to call to its aid.

3. This commission, as composed by resolution of the Council of Agriculture on the 11th of last April, shall remain in office till the end of the current year, and its members shall be reeligible.

4. The commission shall appoint its own president, vice-president, and secretary, and the signatures of these officers shall be a sufficient authentication of the documents to which they are appended.

5. The commission shall hold its meetings at Quebec, in the Department of Agriculture and Colonisation.

6. To be effective, the decisions of the commission shall be taken by an absolute majority with at least three members voting. In cases of equality, the president's vote shall decide.

7. Canadian horses that received a prize at the provincial exhibition, held at Quebec in 1887, shall have the right of being entered in the Canadian Stud-book.

8. The sire and dam being entered, their progeny shall also have the right of entry. To ensure the entry of the progeny the certificate of service (*carte de saillie*) must be shown.

9. At the request of the proprietors, all horses having the distinctive characteristics of the Canadian race shall be also entered, provided always they have no hereditary blemishes.

10. This request shall be addressed to the secretary of the commission, with an undertaking from the proprietor that he will show the horse in question to the commission, and the entry shall not be made until this has taken place.

11. The progeny excepted, no entries shall be made after 31 December 1892.

12. In the month of July, in each year, a statement of the produce and of the changes that have taken place shall be made. For this purpose, sheets will be sent to the proprietors of the entries, on which sheets they will be required to report all births, deaths, and changes that have taken place as regard their entries.

13. The entries in the stud book and the changes shall be made free of charge.

14. At the request of the proprietor, the entry shall entitle him to a pedigree which shall be extracted from a stock-book with counterfoil (*talon*) and the price of such pedigree shall be one dollar for all members of agricultural societies, and two dollars for non-members.

15. Proprietors of Canadian horses residing out of the province, shall, if they request it, be admitted to entry on exhibiting the animal to the commission.

16. If fraud be proved, the commission shall have the right to erase every entry unfairly obtained.

17. As soon as the number of entries shall be sufficient,

the commission will publish a bulletin containing all the information contained in the stud-book. (Carried.)

The Council pressing recommends the agricultural schools at Ste-Anne and l'Assomption to do their best to promote the breeding of registered Canadian horses. (Carried.)

It was decided that, in future, all the members of the Council of Agriculture shall form part of the executive committee, which meets before each meeting of the Council.

The Council is desirous of visiting—in a body—in, at their next meeting, some of the siloes and model herds which have been mentioned to them at St. Sauveur and in the suburbs of Quebec. (Carried.)

The Council respectfully recommends that the vacancies now open in the Council of Agriculture remain open in favour of the most deserving model-farmers at the next provincial competition. (Carried.)

The Commissioner informed the Council that arrangements had been lately made with the College of St. Hyacinthe for the purpose of endowing the province with an experimental station and a chemical laboratory, to which will be attached a distinguished agricultural chemist. This will enable the agricultural problems which chiefly concern our province to be studied profoundly under the immediate direction of the Commissioner himself.

The Commissioner told the Council about the experiments he was making with superphosphate from the Capelton manufactory, in this province. This factory sells its superphosphate at \$12.50 the ton of 2000 lbs. The results obtained up to the present time give great hopes of advantages, in which all the farmers of the province may share.

The Council thanked the Commissioner for this information and adjourned at 6 p. m.

Certified true copy.

(Signed) ED. A. BARNARD,
Secretary of the Council of Agriculture, &c., &c., &c.

Monthly Bulletin of crops for the month of August 1889, published by the Department of Agriculture of the Province of Quebec

The rains at the end of July and at the beginning of August have caused a little damage to standing crops.

Oats and other grains in this district are ripening well.

The potato rust has begun to make its appearance in several localities, especially in low lands, but on the aggregate the yield will not be much affected. A few days of good weather and heat, such as we are having now, will have a very beneficial effect on all outstanding crops.

The returns from all the agricultural societies of the different counties of this province are very encouraging as may be seen by the general summary given below.

GENERAL SUMMARY.

Hay.—Very good.

Wheat.—Good, average yield from 20 to 30 bushels per acre.

Barley.—Good, average yield from 20 to 30 bushels per acre.

Oats.—Very good, average yield from 30 to 40 bushels per acre.

Buckwheat.—Good.

Rye.—Good.

Peas.—Good, from 12 to 15 bushels per acre.

Indian corn.—Fair.

Potatoes.—Good.

Root crop.—Very good.
Culture for silos.—Excellent.
Tobacco.—Very good.
Fruits.—Greatly under the average.

WEATHER.

Temperature.—Mean 79°.

The month of August has been showery, causing slight damage in certain localities by hail.

By order,

GEORGES LECLÈRE,
 Director of agriculture, &c.

Quebec, 1st September 1889.

DESCRIPTION OF A PIGGERY.

LECTURE BY M. ANTOINE CASAVANT.

Mr. President and Gentlemen,

I have been asked to give, before this meeting, a description of my piggery at St. Dominique de Bagot.

The secretary, in his letter of invitation, calls my piggery, a *model one*. I feel this to be a great honour, and I beg the secretary to believe that I am truly sensible of it. But my ambition does not carry me so far as to induce me to believe that I have built a model-piggery.

I was simply guided, in the building of it, by my long practice in porcine hygiene. The numerous experiments on the feeding of pigs that I have made having proved to me beyond all doubt that the cheapest and quickest way to fat pigs is to cook their food, I have attached a kitchen to my piggery.

A propos of cookery of food, I know that many here present do not agree with my views. Nevertheless, I cannot now argue the question of the cooking of food; I will content myself with saying to those who are opposed to my system: try it, as I have myself done, that is, keeping an account of everything expended in your experiments. Repeat these trials for a long period—I have carried on my food-experiments during more than 20 years,—and I will answer for it, that the results arrived at will force you to adopt my opinion.

Not to speak of the profits obtainable thereby, the fattening of pigs offers great advantage, not only to the general working of the farm, but also to the dairy-work in particular. After I have described my piggery, I propose, gentlemen, to say a few words to you about these same advantages.

DESCRIPTION OF THE PIGGERY AT ST. DOMINIQUE DE BAGOT.

The entire building is 43 feet long by 20 feet wide.

The (*solage*), of stone, is 3 feet thick and 3 feet high, serving at the same time as a support to the floors of the stalls and of the yards.

The sides are double-boarded, the interior of tongue-and-groove boards, the exterior of plain boards placed close together.

The height to the joists is 7 feet.

This building is separated by a wooden partition, starting from the ground and rising to the roof, into two parts: one, 13 feet long by 20 feet wide, is the kitchen; the other, 30 feet long and 20 wide, is the piggery proper. Above the piggery proper, is a straw-store, which is filled in winter, to serve as litter. The division which separates the kitchen from the piggery has two doors in it, each 4½ feet wide; one

serves to communicate with the piggery, the other with the straw-store.

The floor of the kitchen is laid with flat stones, forming a perfect flagging, and sloping a little. This flagging has the double advantage of preventing all danger of fire, and of being easily kept clean. The pitch or slope prevents the water, used for washing roots or any other purpose, from remaining in the kitchen.

The kitchen contains:

1. A root-washer.
2. Two wooden tubs, perfectly staunch, for preparing the food.
3. Two furnaces, set in mason-work, supported by a stone wall 6 feet high. On one of these furnaces, is fixed an iron boiler holding 140 gallons, intended for the cooking of boiled food. On the other, are two iron kettles, holding about 21 gallons each, and serving both for boiling food, and for cooking roots by steam.

For cooking by steam, I have adopted a plan which I recommend to all of you, gentlemen, who are, at the same time, anxious to put the thing in operation, and continue it in practice, as economically as possible.

I took two common casks, and had the bottom of each pierced with a certain number of holes. The bottoms of the casks should be of such a diameter, as to fit the tops of the kettles above mentioned, and to close the opening exactly.

The other end of the casks is closed by a heavy wooden cover. When we wish to cook roots by steam, we proceed as follows:

The kettles are filled $\frac{3}{4}$ with water; the casks are put on the top of them, a short time before the water boils. Unnecessary to say that it is the pierced bottoms of the casks that are placed directly over the kettles. These are then filled with well-washed roots, covered with a rough linen cloth, the covers put on, and well-weighted to prevent their being lifted by the force of the steam. The steam which is formed by the water, finding no other means of exit, passes through the holes, makes its way into the casks, where it cooks the roots, in from an hour and a-quarter to an hour and a-half.

The advantages of this plan are: the ease with which it is carried out, its cheapness, the power of employing at it the first man to hand, and, lastly, its security.

At the side of the kitchen, communicating with it by a covered-way, 4½ feet wide by 6 feet high, is a cellar, in mason-work, of the following dimensions: 30 feet long, by 20 wide. This is to hold the tubers and roots for the pigs' food during the winter. Above the cellar are the granaries.

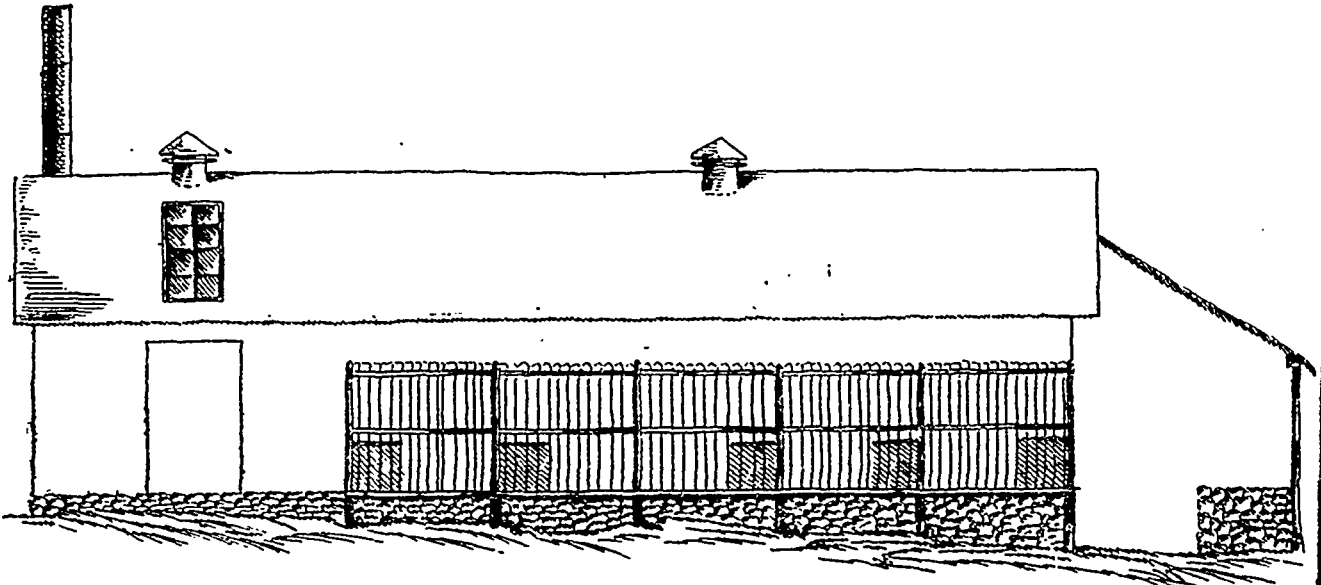
The piggery proper is divided by a longitudinal passage into two equal parts. This passage gives communication at one end to the piggery with the kitchen, and at the other to the piggery with the manure-pit. Along this passage, on each side open five sties, 7 feet 9 inches long by 6 wide. The floor of the sties is formed of closely fitted boards. This floor, as regards the two rows of sties, slopes towards the central passage, where two flags (*dalles*), placed under the flooring of the passage, receive the urine and other liquids that escape from the sties, by passing through troughs placed for that purpose on wooden blocks an inch and a half thick. The two flags themselves slope towards that extremity of the piggery opposite the kitchen, and so lead the liquid into a tank made in the front of the dung-pit.

Of these 10 sties, five are intended, one for a boar the other four for two sows. These four sties communicate with each other, two by two, by a small door high enough to let the young pigs pass, but not high enough to let the sows follow them; so that the pigs can be fed without fear of their mothers robbing them. The sties can also be used for fattening-hogs, two in a sty, each sty having a door opening into

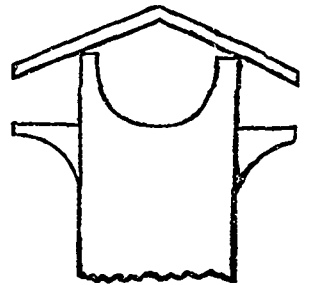
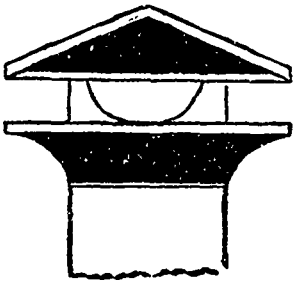
the central passage. The litter is placed on a sort of raised platform (*lit de camp*), 3 feet high and quite level.

The feeding troughs are 4 feet long by 13 inches wide and 6 inches deep; made of wood, and the edges covered with hoop-iron. They are half-open towards the feeding passage, so that the feeder can clean them out without entering the sties. The height of the division between the sties and the feeding-passage is 3½ feet, including the cross-piece (*entre-toise*) which finishes the partition from one end to the other. To this cross-piece are hung the shutters serving to close the space between the trough and the cross-piece. The shutters swing freely; it is only necessary to give them a gentle push to expose the troughs.

lower parts of the feeding doors and in the yard-doors of each sty, which holes can be partially or entirely closed at will. In winter, the air-holes of the sties are closed, only those of the feeding-doors remaining open. The pigs then breathe the air pure as it enters the piggery, before it has become heated and tainted. Now, the hot air being lighter than cold air, finds itself driven into the upper part of the piggery the moment the cold air is admitted. As a means of exit is provided for the hot air in the upper part of the piggery, it follows that the ascent of the hot air continues indefinitely. And more, the cold air of the interior enters naturally, as it is invited by the vacuum produced by the ascending current of hot air. A continued movement of fresh air is thus produced.



Elevation of the piggery and manure-shed.—Scale 1 line to the foot.
Mr. A. Casavant, St. Dominique, Bagot.—Plate I.



Ventilators mentioned in M. Casavant's lecture.

When feeding is going on, the shutters can be fastened to the inner part of the troughs by cleats. The sole weight of the shutters compels them to return to such a position as will enable to pigs to get at their food. To prevent the pigs having trouble in feeding, and to keep them from lying in the troughs, two wooden bars are fixed, one end to the cross-piece, and the other to the floor, one bar inside the sty and the other in the feeding-passage. These two sloping bars, joined at the height of the trough by a third, divide the trough into two equal parts. The two bars also serve to prevent the shutters from getting out of their places whether within or without.

The piggery is supplied with air by means of the following system of ventilation. Air is admitted by means of holes in the

The opening for the exit of the hot air is a simple wooden chimney surmounted by a four-sided top, which is placed on four posts in such a way that, between the upper part and the upper rim of the chimney there is an open space of about 4 inches. The lower rim of the chimney is fitted with a corner-piece (*cornière*), semi-circular below and prominent, the object of which is to prevent the outside air from penetrating into the chimney where it meets the semi-circular and prominent part of the *cornière* which sends it into the opening of the chimney.

Two ventilators like this give my piggery perfect ventilation.

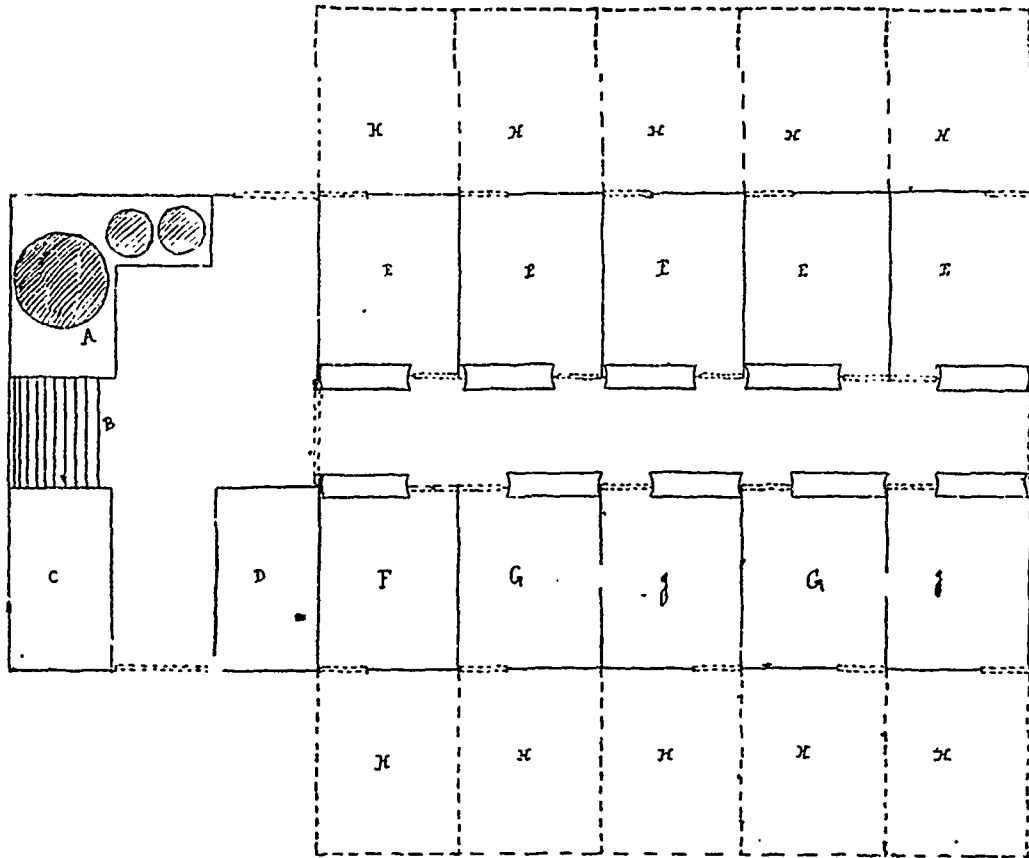
The piggery is lighted by a large window placed in the outside gable and looking into the feeding-passage. The

kitchen is lighted by a snuff-box window (chassis tabatière) in the roof. Pigs, especially the weaners, must have plenty of open air and exercise, so I have contrived, in front of the piggery, a series of yards answering to each sty, and each of about the same dimensions as its sty.

A door open between sty and yard. These yards, as I said before, are floored. Behind the piggery, and leaning against the gable opposite the kitchen, is a shed, a simple roof on four posts, intended to cover the manure-pit. This pit not only holds the pig-dung, but the horse dung too, which I mix partly with former.

consequence, look upon it as an inferior dressing, too weak to do much good to vegetation.

A good deal of pig-dung is indeed of inferior quality, but this inferiority depends on the bad quality and poverty of the food the animals receive. The pig being regarded as an animal that can and must eat everything, he gets only the cheapest kind of food, the refuse of everything, and the least nourishing of vegetables. The English, who have bred the finest races of pigs, look upon their dung as being as useful as any other kind. But they are in the habit of giving their stock very rich food; meal and cake. Now, the richer, the more



Interior of the piggery.

- | | |
|------------------|----------------|
| A Boiler. | E Manure-pit. |
| B Cellar-stairs. | F Boar's sty. |
| C Tub for grain. | G Sows' sties. |
| D Root-washer. | H Yard. |

Piggery (continued).—Plate II.

The description of my piggery, Gentlemen, is finished. It now remains for me to prove my previous statement, that pig breeding offers great advantages both to farming in general and to the dairy-business in particular. This, I will do in as few words as possible.

THE ADVANTAGES OF PIG BREEDING AS REGARDS FARMING IN GENERAL AND THE DAIRY-BUSINESS IN PARTICULAR.

The principal advantage of pig breeding is to furnish the farm with a large quantity of dung, and of very good dung too. Some regard pig-dung as too watery, too cold, and, in

nitrogenous, is the food, the richer, the more fertilising will be the manure. This is so true, that my fattening hogs, better and more copiously fed, give me an infinitely richer manure than my piglings, whose food is less nourishing.

Pig-dung is, after sheep-dung, the richest of all in nitrogen; on the contrary, cow-dung is the poorest. In mixing, then, pig-dung with the bulk of other dung, it will decompose with them, and add to them a very important contingent of fertilising principles.

We have habitually extracted from our farms all that they could give us, and have returned to them in exchange nothing, or almost nothing. Hence it comes to pass that most of them

are to-day completely exhausted. We cannot succeed in making our farms give us a better yield except by supplying them with plenty of manure, and of all manures, the best is good farm-yard dung.

I have, therefore, Gentlemen, the right to say that pig-breeding is of great service to agriculture in general, since it increases more than any other the mass of manure, and serves to improve the land.

Almost all of us cultivate fodder-corn for our milch-cows, and we are all agreed that it is one of the best green-crops for the production of milk. These qualities make it valuable to us, especially as regards the dairy-business. Well, Gentlemen, the numerous experiments I have made to find out the best manure for corn have led me to this conclusion: pig-dung is the best manure of all for corn. I am certain that all those who will try it in the way I am about to point out will find an immense advantage in using it for that plant: Into the drills or rows, throw about a quarter of a shovelful of this dung (*that is, I presume, of pig-dung: Trans.*), that is, about one-fourth or, at most, one-third of the quantity of horse-dung, cow-dung, or of these two mixed, which we generally use.

One example in conclusion. I sowed at the same time 2 arpents of corn, on the same piece of land, and under the same conditions. One acre was manured with pig-dung, in the way I have described, and it gave me 16 double loads of ears.

The other arpent, dressed with mixed cow- and horse-dung, received three times as much as the other, and gave me only 9 loads of ears.

I have done, Gentlemen. Some of the details may have seemed rather long to you, but it is very difficult to avoid lengthy details in a description, especially when one heartily wishes to be thoroughly understood. As I said above, a detailed plan accompanies my lecture. This may perhaps assist some of you in erecting his buildings. That is all I can desire. I thank you, Gentlemen, for the kind attention with which you have listened to me.

ANT. CASAVANT.

DISCUSSION.

M. PAQUET.—Most farmers are exempt from the necessity of building piggeries as large as those described by M. Casavant.

This question is connected with that on which I have spoken: the improvement of rural buildings. It is important that those who are interested in the question of piggeries, should endeavour to combine them with the system of improved buildings, so that these piggeries may be connected with the manure-shed, and with the boiler house in which the food of the stock is cooked.

M. CASAVANT.—The reason that determined me to build my piggery in the form in which I have described it, is the advantage it gives me to be able to fat my hogs in winter, so that I may have bacon in the spring. You know how scarce bacon is in spring. If your piggery is cold, you cannot make cheap pork. Whether it be large or small, it must be warm and airy.

All those who have studied the matter a little know that if your piggery or the stall of any other beast be cold, some of the food will be used as a heating-power, instead of its being converted into fat. I, therefore, preferred building a warm piggery, and I find it cheaper than to burn pease or corn in the bodies of my hogs to warm them.

M. PAQUET.—My remarks are not opposed to your views, M. Casavant; I only wish to instil into the minds of the farmers the idea of warming the piggery by means of the kitchen in which the food of the beasts is cooked.

M. CASAVANT.—My first set of buildings which contained under the same roof 55 head of horned-stock and 6 horses, were burnt; so I had to rebuild as well as I could on the ruins. Still, every part is utilised. The dung is all under cover; there only remained the manure of my horses which was out of doors, and for some years, I thought of getting that under cover, for I saw that the most valuable part of it, the urine, was escaping. Now, thanks to the new buildings, and to the shed I mentioned, the stable-dung, which is hot and the only dung that gets fire-fanged in winter, is mixed with the cooler dung of the pigs and cows, and these three improve one another. They are moistened by the pump which I have on my liquid-manure tank.

M. PAQUET.—Can your pigs easily get into your dung-pit?

M. CASAVANT.—I keep my young pigs in my dung-pit, and my fattening-hogs in the piggery.

M. PAQUET.—Very good, as long as there is a certain number of pigs which can get into the dung-pit. Your hogs are, no doubt, in good order, since they do not suffer from cold.

M. CASAVANT.—They grow as fast in winter as in summer. I even think they fatten faster and more cheaply in winter, as there are no flies, and the heat is not too great. The sties too, when the doors are shut, are dark. When they have been fed and have finished their meal, they are in a sort of half-darkness. You would take my four-months old pig to be six months old.

M. CHAPPAIS.—As we are talking of pigs, I have a question to ask you. In our district, below Quebec, we have no grain this year, and corn being the cheapest thing to buy, we buy it for our pigs. What do you think of corn for this purpose, and what is the best way of preparing it?

M. CASAVANT.—I bought two carloads of corn for my pigs this year. I bought a crusher, and I mixed the crushed corn with one-third of barley or other grain. I prefer mixing it to giving it alone.

M. CHAPPAIS.—Why?

M. CASAVANT.—Because the pigs get tired of it; they get disgusted (*se ouillent*) at getting corn alone, and it is a bother. And besides, the more difference there is between the composition of these grains the better; they complete one another.

This is the mode of preparation:

I have a large pot, holding from 50 to 55 pails, in which I warm my water. When it boils, I throw in the crushed corn, and after the mash (*bouette*) has been a couple of hours on the fire, it is drawn off and allowed to steep four 12 to 24 hours. I then serve out this preparation, which in the hot vessel retains its warmth for many hours. It takes at least 12 hours to cool. I have plenty of tubs to hold it, so that we can make it several days in advance.

M. CHAPPAIS.—You recommend, then, crushed corn mixed with barley and boiled: you find that the best?

M. CASAVANT.—Yes; ten pounds of oats are equivalent to 7 lbs. of barley. Oats do not yield so rich a manure as barley. In breeding it is different rather, for oats are of a stimulating character. Up to the age of three months, I consider oats and barley mixed to be the best pig-food. Corn gives young pigs small limbs; and until they are 4 or 5 months old they should have very little corn. Before developing fat, the bony frame, the general structure of the animal must be developed. As soon as that is done, then fattening may be begun; that is the whole secret of successful breeding; I do not give my young pigs grain only; up to 4 months, they get green-meal, mangels, boiled potatoes, mixed with a little meal, and a few pease. A ration of roots is given every day.

An experiment I made this summer: in one sty I put two

pigs fed on pease, in another, three, fed on cabbage-leaves, frozen tomatoes, all the waste from the house, and a few dry pease. At the end of a few months, the three gave, each, 40 lbs. more pork than those which had passed too rapidly and without preparation, to a too fattening description of food.

A. VOICE.—What difference do you find between corn and oats?

M. CASAVANT.—Corn makes fat, to the neglect of other things, such as lean meat and bone. Oats give energy, tone, force. Vegetables build up the frame. If the frame is to be particularly well developed, milk is the food to do it.

I am in the habit of letting my sows pig before the factories open. I manage to have my piglings a few months old when the time to take milk to the factory arrives. Then, I take care that the second litter is dropped a month before the closing of the cheese-factory.

M. A. COURURE.—What is the difference between oats and corn in price?

M. CASAVANT.—They are both worth about a cent a pound, but one pound of corn is equivalent to one and a quarter of oats. It pays, then, to sell oats and buy corn. Barley and corn are about the same as regards fattening properties. The best food for young pigs, is rye, very little grown in this country, barley, and oats.

Wheat-yield in Quebec.

I observed, in the Sept. No. of the Journals, that the quantity of wheat grown in this province in 1888, given in some of the papers as only 1,019,004 must be underrated. Mr. Barnard has sent me the real yield of wheat for the year 1881: 1,999,815 bushels of spring, and 19,189 of winter-wheat. As there were 224,678 acre sown to wheat, this would indicate all but 9 bushels as the yield per imperial acre, or nearly six pecks to each head of the population—1,359,027.

The wheat crop does not seem to improve in yield here, as I see, in the 1st No. of the Journal—1879—, that it was 8½ bushels per arpent then = 5¾ per imperial acre; but arpents and acres got so mixed up here that one rarely gets at the real yield of any crop.

A. R. J. F.

Extracts from Census of 1881, Province of Québec.

| | |
|------------------------------|------------|
| Population | 1,359,027 |
| Total acres under crops..... | 4,147,984 |
| do in pasture | 2,207,422 |
| do gardens and orchards..... | 54,858 |
| Total improved..... | 6,410,264 |
| Acres in wheat..... | 224,678 |
| Bushels of spring wheat..... | 1,999,815 |
| do winter wheat..... | 19,189 |
| Bushels of barley..... | 1,751,539 |
| do oats | 19,990,205 |
| do rye..... | 430,242 |
| do peas and brans..... | 4,170,456 |
| do buckwheat | 2,041,670 |
| do corn | 888,169 |
| Potatoes—Acres | 123,869 |
| Bushels..... | 14,873,287 |

| | |
|------------------------------------|-----------|
| Bushels of turnips..... | 1,572,476 |
| do other roots..... | 2,050,904 |
| Hay-crop—Acres | 1,495,494 |
| Tons..... | 1,614,906 |
| Bushels grass and clover seed..... | 119,306 |

DE OMNIBUS REBUS.

Box 109, Upper Lachine.—Sept. 10th, 1889.

Errata.—In the last number of the Journal, p. 119, last paragraph but one, I regret to find that I omitted a passage. After "have just decided upon," should follow: "You have heard the decision. The two best samples are those made from the fresher cream, with but one working of the butter; they are exactly those which have been submitted to conditions differing from those of last year's experiments." Again: in the third line of the last paragraph of the same page, the words "Hardly, for," should be omitted. I am much obliged to M. J. de L. Taohé for taking the trouble to inform me of these blunders.

Spring or autumn manuring.—In an article in the "Country Gentlemen" I read that: "Applied in autumn or early winter a good top-dressing of barn-manure should be given to the grass-sod of a pasture intended for corn. Intelligent farmers assure us that the difference between the effects of fall-spread manure and spreading in the spring, is about twenty-five per cent of the product in favour of the former."

I do not think the writer of these words had sufficiently studied the different points connected with his subject. Fall-manuring on meadows is a necessity, if they are to be manured at all; but, surely, except on grass-land, the sooner dung is covered up out of the way of sun, wind, and the washing caused by the thaws of spring, the better will its constituents be preserved. Again; manure made in autumn and early winter must necessarily be applied in a raw state, and not having been turned and allowed to heat, all the weed-seeds will infallibly grow, and the land will, in consequence, be foul. A case in point: on a large farm in this neighbourhood, towards the end of potato-planting, rotten manure ran short, and the farmer was obliged to use green dung out of the yard: the land in question is now one bed of weeds, the seeds of which are ripe, and when the potatoes are dug, the whole piece will be actually fouler than it was last autumn.

In parenthesis, I beg to remark that it is a pity the custom obtains so generally of leaving the potato-land to itself after the horse- and hand-hoeing are finished. A woman's time, occupied in pulling the seed-weeds after the haulm dies, which it did this year in August, would be well expended.

To return: I object to planting corn or any other hoed and manured crop on the back of a grass-sod, because it may be laid down as an axiom in farming that hoed and manured crops should invariably follow the last limb of the rotation, which is, or should be, a grain crop after grass, the land being then at its poorest and foulest. Lastly: we should do well to consider the advantage derived from the early sprouting of all seeds; this must take place more readily, one would think, when, as in the drill system, a mass of moist heated matter underlies the seed-bed.

Agricultural chemist.—My friend M. J. de L. Taohé informs me that the Quebec Cabinet has appointed the Rev. Messire Choquette to the chair of Agricultural Chemistry in

the Seminary of St. Hyacinthe. I have prayed for this chair for eight years, and I trust that much good may be derived from this gentleman's labours.

Singling root-crops.—Mr. Tuck, of the Dawes' farms, tells me he has men who single a half-acre a day of swedes or mangels with ease. Wages here are \$1.25 per acre a day, so the job costs \$2 50 an acre, ten cents less than it costs M. Séraphin Guévremont. I can vouch for the work being well done.

St. Ige-corn.—The Messrs. Dawes are in the midst of an enormous harvest of corn. The average height of the maize is 11 feet; it stands very thick—thirty inches between the rows, and 6 grains to the foot—; the cobs are formed, and in the silk, but not much seed yet, though by the time the last piece is cut, a great advance will doubtless be made towards ripening.

A binder was sent, on trial, to cut this immense crop, but it was utterly incompetent, though a beautifully constructed implement. The work is being done by men with reaping-hooks, and a long job it will be. Three-fourths of the corn must be dried and stacked in some way, for, as I mentioned last month, there is only silo room for about 250 tons. The dairyman, a most intelligent French-Canadian, told me, last week, that, judging from the quantity of silage consumed last year by the stock, there would be, this year, on the 40 acres, enough corn to last the whole of the cattle—150 head of horned stock, besides more horses than I can count—for two years!!! The silage-harvest began August 29th. (1)

The acre.—Talking to a Scotch farmer the other day, he told me that, in his opinion, too little seed was generally sown here: "My father used to sow, in Scotland, eight bushels to the acre." My friend, however, did not seem to know that the Scotch acre is a very large one—five roods, whereas the imperial acre contains only four. The three superficies, commonly called *acres*, here, measure as follows:

| | |
|-------------------|---------------------|
| Scotch acre..... | 54,450 square feet; |
| English acre..... | 43,560 " " |
| Arpent. | 36,801 " " |

Thus, 8 bushels to the Scotch acre, would be $6\frac{3}{10}$ to the English or imperial acre, and $5\frac{3}{8}$ to the arpent.

But when my friend's father was in the habit of using this monstrous quantity of seed, he sowed it by hand: a good drill saves about a bushel an acre, and this lowers the seeding to 7 bushels or rather less. The climate of Scotland, too, does not push the growth of grain along as does ours in the South of England, and still less is it as conducive to early maturity as the Canadian climate; consequently, *tillering* is not desired in that bleak country, but the grain, sown thickly, runs through its different stages as rapidly as the season will allow, and the skilful farmers of the North, finding their profit in it, still sow thicker than elsewhere.

Stephens, in his *Book of the Farm*, almost the only work on agriculture I possess, speaking of this, says:

"The quantity of common oats usually sown is 6 bushels to the acre; and in deep, friable land in good heart, 5 bushels." Now my Scotch friend, argues very forcibly in favour of what seems to me to be, in this climate, an agricultural heresy, viz., that good land in good heart should be seeded thicker than poor land in poor condition. I, and Mr.

Tuck, a man of great and long experience in this country, hold with Stephens, that more seed is required on poor land than on rich, because the plant, all other things being equal, will tiller in the one case and will spindle up at once in the other. On land full of dung, as are the farms Mr. Tuck superintends, I conceive three bushels of oats to be sufficient for an imperial acre, stipulating of course that the seed be properly cleaned, and not used as it comes from the threshing-machine. Barley must be sown thick, if intended for the maltster, as the grain of it tillers always presents an uneven sample that does not grow equally on the floors. I should not advise less than $2\frac{1}{2}$ bushels an acre of the 4-rowed and 3 bushels of 2-rowed barley.

Stacks.—Twenty acres of second cut clover are now on the ground at the Décarie farm, rented by the Messrs. Dawes.

As every barn is full on all their farms, this must compel the putting of the hay, when made, into one or more stacks, a process I shall watch with great interest. As Mr. Tuck was born and brought up to manhood on a farm at Ware, Hertfordshire, within 25 miles of London, he cannot fail to know how to build a haystack. By the bye, a question was asked in an English agricultural Journal the other day, as to the greatest heat a stack of hay would bear without catching fire. The reply was, that up to 200° F. there was no danger, but that the heat should never exceed that. Individually, I should prefer 160° F. as the maximum. Hay is such an enormous crop this year that it will be low in price, though first-rate quality is never difficult to sell. Had I a lot of really good hay—more than I required for my stock I mean—I should feel inclined to keep it over the year, feeling sure that within eighteen months it would fetch its price. It is high time we learnt the value of *old* hay. (1)

Beans or haricots. I have just done harvesting my beans, and a troublesome job it was. Owing to the continued rain the haulm had elongated itself to as much as 9 feet in places, and the bother of separating the entanglement of the pods without pulling them off was very great. I persist in thick sowing: $2\frac{1}{2}$ bushels an acre, in rows 24 inches apart, and I am quite satisfied with the result.

Fertiliser work.—Mr. Cooke, of Vermont, at the meeting of the American Agricultural College Association, last month, holds, with me, that the stations established in the U. S. for experimental purposes have wasted and are wasting a great deal of time and money in unfruitful work. "Mr. Chairman," said he, "while we are on this subject I would like to have somebody devise some way of getting rid of the everlasting fertilizer work which each State is going over, *the same thing again and again every year*. If there is any feasible plan of cooperation, I should think it might be tried on this question. A great deal of money is wasted in this work."—Am. Ag. Coll. Ass.

That an experiment station should always be ready to analyse samples of manures and cattle-foods for all applicants, is one thing, but that they should keep on publishing monthly or quarterly bulletins upon such subjects as we have seen treated lately, is another. Nobody reads these pamphlets, and even if they were read, they would convey but little information of value to the majority, the very great majority, of farmers. Below, will be seen a couple of specimens of useful work, done by the Chemist of the Royal Agricultural Society of England, Dr Voelcker (*fils*):

(1) Owing to the wet weather and to two or three break-downs of the cutter, I fear a good deal of this immense crop will be lost. The upper 20 inches of the first silo is damaged, having been left uncovered for days.
A. R. J. F.

(1) One-half of the 20 acres was carried in the most perfect order; the remainder, owing to the 6 days rain of the middle of September is spoiled.
A. R. J. F.

8. Mr. C. Warmington, of Graville Hall, Evesham, sent, on April 17th, 1889, a sample of "bone manure" for analysis, upon which Dr. Voelcker reported as follows:—

"May 15th, 1889.

| | |
|---------------------------------|--------|
| Moisture | 23.59 |
| *Organic matter..... | 16.48 |
| Phosphate of lime... | 9.63 |
| Carbonate of lime, &c..... | 40.08 |
| Insoluble silicious matter..... | 10.22 |
| | 100.00 |
| *Containing nitrogen | 1.03 |
| Equal to ammonia..... | 1.25 |

"This is not bone at all, but a refuse material, not worth a third of the price you are asked for it.

"J. AUGUSTUS VOELCKER."

Two tons of this manure had been purchased, at £4 5s. per ton delivered at Evesham, the vendor being Mr. John Busby, Rock Hill, Chipping Norton, by whom it was invoiced as "Bone Manure."

In reply to enquiries, Mr. Warmington made the following statement about the manure and the arrangement finally arrived at:—

"When it arrived I sent sample to you. On receipt of reply I wrote him (Mr. Busby), and he requested it to be put on rails again to his order, which I did."

9. Mr. Thomas Rogerson, of Heath Side Farm, Cheadle, Manchester, sent, on May 7th, 1889, a sample of manure described as "Bone Phosphate." The material had been purchased from the Manchester Phosguano Company, 41, Corporation Street, Manchester, who were the manufacturers; and when sending it for analysis Mr. Rogerson wrote:—"It was represented to me to be worth £3 10s. per ton, but owing to the local authority condemning the works as a nuisance, they were selling at 35s. per ton in order to clear out."

Dr. Voelcker gave the following analytical report:—

"May 24th, 1889.

| | |
|---------------------------------|--------|
| Moisture | 29.61 |
| *Organic matter..... | 6.64 |
| Phosphate of lime..... | 7.92 |
| Sulphate of lime, &c..... | 48.78 |
| Insoluble silicious matter..... | 7.05 |
| | 100.00 |
| *Nitrogen | .14 |
| Equal to ammonia ... | .17 |

"There is nothing to warrant this, a refuse material, being called bone phosphate; it has only 8 per cent of phosphate, and practically no ammonia. 10s., instead of £3 10s., would be more like its value; but I would prefer to have nothing to do with it.

"J. AUGUSTUS VOELCKER."

10. Mr. R. S. Ralden, of the Grove, Hanging Heaton, near Dewsbury (afterwards of Hollinghurst, Netherton, Wakefield), sent, on May 9th, 1889, a sample of oil cake for analysis. Two tons had been purchased from the Dewsbury Pioneers' Industrial Society, Limited, at £9 per ton delivered at the farm, and Mr. Balden said that he would probably receive a discount of 2s. 8d. in the pound at the half-year when the profit was declared. Mr. Balden could not obtain from the Dewsbury Society the name of the manufacturers, but stated that the cake was branded "D. S. Cake," and was made in Hull.

Dr. Voelcker's analysis and report were:—

May 24th, 1889.

| | |
|--|--------|
| Moisture | 11.65 |
| Oil..... | 9.73 |
| *Albuminous compounds (flesh-forming matter) | 25.25 |
| Mucilage, sugar, and digestible fibre. | 31.33 |
| Woody fibre (cellulose) | 11.43 |
| ‡Mineral matter | 10.61 |
| | 100.00 |
| *Containing nitrogen..... | 4.04 |
| ‡Including sand..... | 4.65 |

"A dreadfully bad cake, adulterated with rape and other seeds to an enormous extent, and having over 4½ per cent of sand.

"J. AUGUSTUS VOELCKER."

No actions at law can possibly arise from such statements as the above, for no malicious motives can be attributed to the analyst. An immense amount of good has been done by them, particularly in the article of cake.

Sorel.—My old pupils at Sorel, I see by The Sorelois of that city, have distinguished themselves very much in the late Concours Agricole. Out of ten first-prizes, they took seven, besides seven other prizes. Wheat, barley, pease, oats, mangels, and carrots, all fell to my friends, and M. Séraphin Guévremont writes me word that he and his cousin have not forgotten the lessons I taught them when I was at Sorel, their harvest this year—60 acres of grain and 20 acres of roots—being highly satisfactory.

Clover.—The cavalier way in which some of the correspondents of the American papers settle questions which are still *sub judice* in the minds of our greatest English agronomes, is highly amusing: Lawes can form, as yet, no idea of the cause of the failure of the clover-plant, but J. W. I., of Sugar Run, Pa., does not hesitate for a moment to declare that he knows all about it!

"Farmers talk about land getting "cloversick"—The land is not sick—it is impoverished and hungry. Let them give it a good top dressing of rotten manure, then sow their clover seed and see how quickly it will get well and produce clover again. Clover gathers up the fertility in the soil and makes it available. Its long roots penetrate deep into the subsoil and bring back the fertility that has escaped beyond the reach of most other plants; but clover roots cannot reach the sewers of London or Liverpool and bring-back the life-blood of the soil that has been shipped away in the wheat, corn, butter, cheese, pork, beef and lard that have been exported."

Sugar Run, Pa.

Country Gentlemen.

J. W. I. will perhaps be surprised to hear that in the counties of Essex, Cambridge, Hertford, &c., in the East of England, where farming has been carried on for years with an expenditure for manure and imported cattle-food, which may be fairly called lavish, many bullocks eating 14 lbs. of cake a day, the failure of the clover-plant, if grown more frequently than every eighth year, is as sure as it is on the worst and most impoverished farm in Pennsylvania.

Horse-keep.—I got found fault with for "misleading people," the other day, in underrating the cost of ploughing, and other operations on the farm. I am sure the cost is usually put too high, and I see that a good deal of discussion is going on in the English agricultural papers about this matter. I suppose every one will allow that 10 lbs. of oats, 12 lbs. of hay, and 12 lbs. of straw, form a sufficient day's

ration for an ordinary farm-horse. What are these articles worth on the farm? The straw is valueless, hay is bought anywhere in the country for \$6.00 the 100 bundles, and from that must be deducted profit and carriage to get at the price on the farm; oats at 1 cent a pound to sell, must bear a like diminution. Altogether, it seems to me that from 12 cents to 15 cents is about a fair thing. And how long does a horse get fed, on our average farms, in this extravagant way? Four months? And part of this time he will be at pasture. Finally, I cannot see how a horse fairly fed, with a decent allowance made for interest, shoeing, wear and tear, &c., can cost a farmer more than one dollar a week—\$52.00 a year.

Thus, the man's wages, &c., being taken at \$1.00 a day, the weekly cost of a team and their driver will be \$8.00, to this let another dollar be added for wear and tear, &c., of the plough, harness, &c. (5 cents would be plenty), and supposing a fair day's work to be $1\frac{1}{2}$ acre, the cost to the farmer would seem to be exactly one dollar an acre.

"Cost of horse-keep.—On this subject I notice there is a great difference of opinion, and this is likely to be the case so long as the leading item, viz., the cost of horse labour, is supposed to vary from nothing to 3s. a day.

As is usually the case, the truth lies between these two extremes. More than twenty years ago I was taught to value the work of a farm horse at the latter figure. During almost all these years I have farmed in a northern county, where farm horses as a rule are well kept; mine looked at least as well and as fit for work as my neighbours', and I have often calculated their cost, and, including everything, I never could get beyond £18 a year, or a fraction under 1s. a day. I know I shall be jumped on for not deducting Sundays and non-working days, but I prefer not to do so, as it at once admits an uncertain element into the calculation, and the absolute certainty remains that I am obliged to keep and feed each horse 365 days in each year. I adopted the usual practice and turned my horses out for five or six months, according to the season, during which time, when doing hard work, they got corn in the daytime, and when not wanted, as, for instance, when all hands were turnip singling, and sometimes in hay and corn harvest, when all the horses were not employed, those that were idle were much better in the field at grass, in my opinion, than standing in the stable. Anyhow, the system worked well. I had from sixty to seventy acres of fallow every year, including forty to fifty acres of roots, the strongest land bare fallow. I kept four pairs and an odd horse. This shows that I was not over-horsed, and further details are unnecessary. I do not wish to lay down the law as to what the cost of horse labour should be. This will vary, like the cost of anything else, according to circumstances.

I only wish to protest against these loose and misleading estimates of cost, as applied to agricultural operations in general, of which horse-labour is a good instance. To charge a profit on hay and corn, and in various ways make out that a farm-horse cost £50 a year, can lead to no good result."

JAS EDWARDS.

Hampshire-downs.—I see by the English papers that this breed of sheep is still keeping up its reputation. At Britford fair, August 8th, prices were \$3.00 a head higher than last year. Seventy thousand sheep were penned, and all were sold. Mr. Pinniger's best hundred ewes fetched \$17.00 a head, and the best and second best rams in the fair—lamb's of the year, if you please—sold, respectively for \$500.00 and \$350. The average for Mr. Moore's nine lamb-rams was \$206.00! Mr. Coles' rams averaged \$203.00 a head, the top-price being \$460.00. (1)

(1) At Salisbury fair, August 18th, wether-lamb's fetched \$13.00 a piece.

A. R. J. F.

Canadian mutton.—While Dutch and Danish mutton runs English mutton very close, it seems Canadian sheep are a long way behind. This will always be the case as long as we persist in sending over Leicesters and Cotswold—long-wools in fact—which as the subjoined extract says, "only affect our third-rate values." The Kents, mentioned in the report, are a medium sized, white faced breed, kept hardly anywhere else except on Romney Marsh. They are, as indeed they must be to endure the bleak winds of that desolate flat, very hardy, and being "rich and juicy in flesh," are great favourites in the country for a couple of months in the heat of summer, after lambs are gone out of season. In the winter months they are not much regarded.

"Sheep have sold remarkably well for all descriptions short of fat ewes, which are now coming on to the market. In the Metropolitan Market on Monday the supply was short, and choice 60 to 70 lb. Down wethers made up to 9 $\frac{1}{2}$ d., whilst this advance of $\frac{1}{2}$ d. per lb. was general for all useful wethers and maiden ewes. There were 1,770 Canadian sheep on offer which sold slowly at about 7 $\frac{1}{2}$ d., whilst the 520 Danish sheep made up to 9d., a good clearance was made and the trade was brisk throughout. At Deptford there were 2,720 Dutch sheep, which met a good trade at from 8 $\frac{1}{2}$ d. to 9d., and in some cases 9 $\frac{1}{2}$ d. was paid, which shows how keenly these sheep compete with our best stock; whilst the Canadian things, which have the advantage of our open market, can only affect our third-rate values. These Dutch sheep are of the character and quality of our Kents; and being like them, grass sheep pure and simple, they are now just coming into their best season; they offal considerably, in comparison with Downs, but the flesh is rich and juicy at this time of year, and the bone is small. At Ashford on Tuesday there was a fast trade at from 9d. to 9 $\frac{1}{2}$ d. for choice Downs, and up to 8 $\frac{1}{2}$ d. for Kents, with 7 $\frac{1}{2}$ d. paid for useful ewe mutton. Later markets have been very firm."

One special feature in the leading sheep markets of England seems to have entirely escaped the observation of writers on agricultural matters on this side of the Atlantic. I mean the value attached to size—inverse ratio, of course. While a neat Down is worth 9 $\frac{1}{2}$ d. = 19 cts a pound, a lumbering Cotswold or Lincoln will not bring more than 8 $\frac{1}{2}$ d. = 16 cts. Neat, small joints, putting aside quality, are most in request. The perfect leg of mutton—I do not mean the gijot, i. e. the leg and part of the loin—weighs 9 pounds.

Permanent pastures.—I often remarked in this publication, as well as in conversation with inquirers, how curious it was that our English Downs, on the chalk, though fed off by sheep for centuries, show no signs of exhaustion. A question was put lately to the editor of our leading English agricultural paper, the Agricultural Gazette, the purport of which was as follows:

"Would old pasture land, stocked with sheep and horses, as their sole provision, improve or deteriorate?"

The answer, condensed, was, "that the pasture would improve, though the improvement would be much slower than if the stock received cake, corn or hay in addition."

Laws has shown that there is a steady increase of nitrogen in pasture-lands, probably accumulated from air and subsoil. Pasture is in a condition of comparative rest. The Vale of Aylesbury grazing lands, which for centuries have turned out innumerable fat beasts of the largest size, unaided by adventitious food, show no signs of deterioration and our own Gloucestershire pastures which, without manure or imported adjuncts, send out tons of cheese and hundreds of calves every year, are still flourishing, though they are known to have been in grass for at least five hundred years.

What Breed of Sheep shall we keep?

In the last number of the Journal, I spoke of a certain correspondence published in the French edition from the pens of MM. Coulombe and Casgrain, a translation of which (condensed) will prove interesting to my readers.

M. Coulombe writes to the editor of the Gazette de Berthier as follows:

Sir.—In agriculture, there exist two kinds of men: the *amateur* and the *practical* man. We cannot all be of the first kind, but every one should endeavour to be of the second. To the amateur I am grateful, for he often discharges a duty useful to the other, for he spends largely, and one always learns something from his mistakes. Thus, I read with interest the account of M. E. Casgrain's perplexity, as developed in the French Journal, in a reply to M. Mousseau à propos of the question, "what is the best breed of sheep for our climate;" and I observed, not without astonishment, that no doubt out of consideration for his friend, he gave the preference to the *Shropshires*, though he confessed that he was not very well acquainted with them; and, as one generally falls on the same side to which one leans, he felt unable to break the bonds which attached him to the *Southdowns* he had up to the time in question, always supported.

Well, I prefer the Cotswold and for the following reasons: its wool is white, and can be converted by my family into a variety of valuable articles, such as blankets, flannels, &c., &c., which cannot be made from wool of shorter staple and of grayer colour.

2. Because the Cotswold yields a fleece of 8 lbs. to 13 lbs. of clean, dry wool.

3. Because the meat is equal if not superior in quality to that of any other breed.

4. Because its cross with Canadian ewes produces lambs far superior to any other cross.

5. Because it is far more profitable than any other breed. For my part I am happy to say that a single Cotswold ram has given me a net gain of \$110.00, in addition to the improvement he made in my flock.

6. Every ewe, too, gives more profit; some of mine have yielded me as much as \$80.00 of income (*revenu*).

7. One of my neighbours, only last fall, refused \$40.00 for two ewes derived from my flock.

8. A certain breeder complains that the lambs are weak, and want more care than the lambs of other breeds. To him I reply: change your rams oftener, even though of the same stock—say, every two or three years—and you will at once get rid of this trouble. The weakness and tenderness of which you complain come from using the same ram too long.

9. The Cotswold is well suited to our pastures and our climate.

J. O. COULOMBE, St. Norbert.

M. Casgrain's reply.—Sir,—I send you a few lines in reply to an article by M. Coulombe, of St. Norbert, who feels offended by a letter I wrote to your paper in reply to M. Mousseau on the subject of the breed of sheep best suited to our climate. In the first place, allow me to say that the article in question is so far misleading in that the writer states that I admit that I do not know much about the *Shropshires*, and that he observes, not without surprise, that I give the preference to that breed out of complaisance to my friend M. Mousseau. If M. Coulombe will read my letter over again, he will see that I made no such statement. This is what I said at the conclusion:

"To day our preference leans towards the *Shropshires*, but, lest too much importance should be assigned to this avowal, we feel bound to say that we have a high opinion of

the *Hampshire-downs* though we have never bred them; and that, on the other hand, we should not at all like to abandon our fine *Southdown* sheep." Any one can see that when I wrote the words "we have never bred them," I was speaking only of the *Hampshire* downs.

My *Shropshire* flock I have had for seven years. It derives from sheep bought of the Hon. M. H. Cochrane, and from Messrs. Pomroy, Miller, Fuller, and Morkill.

My last *Southdown* ram was imported from Mr. Stanford, England. His sire was by "Leeds," who was sold in England by Lord Walsingham for 200 guineas.

I kept *Cotswolds* from 1871 to 1886; long enough to learn their merits and to become disgusted with them. I had *Leicesters* and *Cheviots* at the same time. According to my opinion, the hardiest sheep I have bred are the *Shropshires*, *Southdowns*, *Cheviots*, *Leicesters*, *Cotswolds* being the least hardy of all.

To prove what I advance, I will quote a few authorities: Professor Brown, formerly of the Agricultural College, Guelph, Ontario, Messrs. Hall and Rawlings, also of Ontario, all of whom give their opinion, as regards the hardness, the precocity, and the value of meat and wool: the opinion were given, observe, as long ago as 1881.

Nowadays, *Southdowns* and *Shropshires* are much more abundant than at that date, if one is to judge from the importations of the last few years. In the summer of '88, at the invitation of Dr Couture, vet. superintendent of the quarantine, I inspected the largest importation of sheep that had ever been made: there were a thousand in the place, 900 *Shropshires*, 60 *Southdowns*, 20 *Oxfords*, and 20 *Cotswolds*! Among the *Downs*, were several prize winners at the Royal. Some of the rams had cost as much as from \$200.00 to \$400.00.

The Ontario Journal of Agriculture speaks of 25 breeders of *Shropshires*, 15 of *Southdowns*, 9 of *Oxfords*, 1 of *Hampshire-downs*; that is 50 breeders of *Down* sheep to 12 of *Cotswolds*, 9 of *Leicesters*, and 2 of *Lincoln*, equal to 23 breeders of long-wools. So, you see, *Cotswolds* have considerably diminished in number and value in the provinces of Quebec and Ontario.

If I expressed myself with moderation in my former letter, so much so as to lead you apparently to distrust my opinion, it was out of delicacy towards the proprietors of other breeds. I am too old a hand at sheep-breeding to deceive myself so grossly as M. Coulombe tries to make out. I have devoted myself specially to this style of breeding that I might be of use to my fellow countrymen.

Keep a few good *Shropshires* with your *Cotswolds*, treat them equally, and you will soon judge of their respective value and, like every body else, be converted from your errors.

I proceed to bring forward the authorities I have to quote in defence of my position that I am in agreement with the chief flock-masters of the Dominion.

In Ontario Agricultural Commission, Report, &c., Professor Brown says:

"According to my experience, the *Leicester* takes on most flesh in the shortest time. As to early maturity, the breeds stand in the following order: *Leicester*, *Southdown*, half-bred L. and S., *Oxford*, and last of all the *Cotswold*."

Preference for the meat of the Down-sheep.—Mr. Hall says:

Buyers of mutton for the table do not regard the wool. They look at the head of the sheep, and if that is black or gray, they are content. Lambs, too, with white faces are not in favour, but the *Down* kinds are preferred. Butchers sometimes leaves the skin on the legs of the sheep to show of what breed it is, seeing that if they are *Down-crosses*, they are worth so much the more per pound."

Mr. Rawlings—p. 321, of the same report, says :

" I wish to say a few words about sheep. I bred Cotswolds and Leicesters for some years. The sheep I recommend are the Shropshires and the Hampshire-downs. They do as well here as in England, their meat is worth two cents a pound more in Europe, and they are also better fitted for exportation. I should advise the use of any of the Downs for crossing with our Canadian ewes. I prefer for that purpose the Shropshires and Hampshire-downs, since they weigh more and give more wool than the other Downs, though that wool is a shade coarser. There is a difference between the Southdown and Hampshire-down in point of size."

Messrs. John Miller & Son, Brougham, Ont., who for years have been breeding every sort of sheep, long-wool and short-wool alike, that has ever been imported into the Dominion, write to me as follows :

Dear Sir,—We have received with pleasure your letter, and hasten to reply to your questions in the most impartial manner possible.

As you observe, we have for many years been importing Cotswolds and Shropshires. Southdowns, we have not imported much, but many of them have been brought into our neighbourhood. Oxfords and Leicesters we have also imported. The Southdowns are too small, and degenerate quicker than any other breed in this country. Crosses, too, from them are small and carry but small fleeces. We have made impartial experiments with the above breeds of sheep and we find that the Shropshire keeps in good condition with less food, that he is less dainty, hardier, and that the ewes rear a greater number of lambs, than any other sheep. So satisfied are we with them that we keep a much larger flock of them than we have ever kept of any breed whatever. All our present flock, except a few yearling rams, are imported. I know of no one who, having begun to breed Shropshires, has changed to another kind of sheep. The Shropshires are the only breed that is in general estimation throughout Europe. They are rapidly taking the place of the Merinoes in Michigan. Our long, dry winters agree with them just as well as the damp winters of England. Neither cold nor wet seems to be able to penetrate through their wool to the skin. We would willingly pay \$10.00 for every pure-bred lamb of this breed next August, as we have an order for 100, and we cannot find so many for sale in Canada. We have a hundred imported ewes to lamb down in spring, all splendid sheep and served by the magnificent rams imported for the use of our own flock."

JOHN MILLER & SONS.

(Mr. Casgrain then quotes some observations of mine in the March number of the Journal, in which quotation he makes a great mistake. If he will look at the paragraph carefully, he will see that instead of saying that "la meilleure qualité des Shropshires est leur grande précocité," it was of the Hampshire-downs he was speaking. Perhaps, I had better transcribe the passage.

... "And then he (M. Casgrain) goes on to say that the main virtue of the Hampshire seems to lie in their great precocity, since they not infrequently weigh 80 lbs., net, at the age of ten months. (To which I add) I have often seen them scale that weight at seven months." See March Journal, p. 1.—The Shropshires are by no means early maturing sheep. On the contrary, at the same page as above, speaking of the lambs exhibited at the Smithfield Club show in December 1888, I remarked: *The Shropshire lambs were, as usual, by far the lightest of all the short-wools*, though the shearlings were very good.

Shropshires are good enough for anything; but there is no use to attribute to them a quality to which they have not the least claim.

A. B. J. F.)

Here, Sir, I conclude, convinced that I have written enough and cited authorities enough to show whether it is I or M. Coulombe who is in error.

E. CASGRAIN.

CORRESPONDENCE.

Warden, Que.—Aug. 30, 1889.

ARTHUR R. JENNER FUST,

Dear Sir,—I am a young farmer, a constant and much interested reader of your writings, in the *Journal of Agriculture*.

I am trying to solve some of the mysteries of successful farming, and there are many points upon which I should like to get your valuable opinion but dare not trouble you so much.

There are two matters just now in which I am especially interested and upon which I am sure you can give me some useful information.

I saw, some time ago, some remarks of yours commenting upon the appearance of some Shropshire sheep on exhibition, to the effect that you would like to have prepared them for the show. I have I think some of the best Shropshires in this county and I wish to exhibit them at our local fair.

If it is not asking too much, would you kindly give me a detailed explanation of the manner in which I should prepare them for the exhibition. The other question I would like your opinion upon is what artificial manures would you advise me to experiment with in order to decide the requirements of my land and where to obtain the cheapest supply.

I have used for two years the Brockville phosphate but it seems to be too dear. My land does not seem to require potash as wood ashes has but little effect. I dare say it requires nitrogen and phosphoric acid.

If you can take the time to answer this I shall esteem it a great favor and will feel greatly obliged. Yours truly,

C. W. CURTIS, Warden, P. Q.

Answer.—Mr. Curtis is welcome to all the information I can give him. On the point of preparing sheep for exhibition, as well as to the other question about fertilisers, I wrote to him fully on receipt of his letter. The manure I recommended will be found everywhere described throughout the few last numbers of the Journal. Potash is seldom of any use in this newly cleared country, but the way to find out whether it is wanted or not is to make the land analyse itself as described by Ville. See Journal for March, 1887 :

" Ville's plan for settling the question: What sort of manurial constituents does my land require? is the right one. He divides a piece of land into five plots, and treats them as follows.

| Plot. | Manure. |
|------------|--|
| One | Superphosphate, potash, nitrogen, plaster. |
| Two..... | do do — do |
| Three..... | Nitrogen, no minerals. |
| Four | Farmyard dung. |
| Five..... | No manure. |

The superphosphate must of course be the simple form of mineral phosphate of lime dissolved in sulphuric acid.

Drummondville, P. Q., 14 August, 1889.

A. R. JENNER FUST, Esq.,

Editor *Journal of Agriculture*.

Sir,—I have in front of my house a lawn, artificially raised, with a carriage drive around it, which, I have reason-

to believe, has never been touched in any way since it was made, nearly fifty years ago, either by disturbing the sod or applying manure: at all events, I can answer for the last thirty years, since it has been in my possession. The soil is a light sand and the natural grass that grows on it is a stunted red-top, so stunted that it never requires mowing. Last spring, finding the grass very thin, I applied a dressing of hard wood-ashes, and in a very short time I found the whole covered with white clover, which certainly never showed itself previously. Now can you or any of your readers either practical or scientific explain to me where the white-clover seed came from? It certainly did not come from the ashes as they had never been exposed since they came from my furnace. Neither will the old theory of the seeds lying dormant apply to this case, for if the seeds were sufficiently near the surface to vegetate, it is certain that they must have germinated long ago, as the sun, and moisture are sufficient to cause seeds to germinate, even should they not be able to grow afterwards for lack of some of the necessary constituents of the plant in the soil. Had the clover only shewn itself in spots, I might have presumed that birds had carried the seed there, but it is inconceivable that a whole lawn should have been sown in a month or so by this agency alone. The matter yours, remains a mystery to me.

E. J. H. HEMMING.

Dr Hemming's question resolves itself into this: There was no sign of any clover on his raised bed of light sand, and yet when a dressing of wood-ashes was applied, white-clover, which certainly never showed itself previously, sprang up profusely.

My own solution of the question is this: The seeds of the white-clover were in the soil, but, though when rain came they sprouted, the want of proper food prevented the tiny plants from developing themselves, and they perished in consequence. After the dressing of wood ashes, other plants finding their peculiar sustenance—potash and phosphoric acid—ready for them, seized upon it, and thrived abundantly. I can give no other reason.

ARTHUR R. JENNER FUST.

The new farm machine "The Strawsoniser" claims to be able to deal with insects pests in a manner not before attempted. Certainly, it is worth attention; for whether in the spreading of liquid or of pulverized matters, in big or small quantities, its results are quite phenomenal; while easily drawn by one horse, it will broadcast 30 to 40 acres of barley a day, will spray the same area of turnip land with paraffin or other insecticide, covering every leaf and blade with a fine dew, will work equally well through a hop plantation, throwing clouds of spray twenty feet into the air, and will distribute soot, and especially powdered lime, over a great area and with superhuman precision and evenness. (1)

T. BOWICK.

Price of grain.—To read in the market-reports, in the Montreal Star, that "oats are worth 85 to 90 cents a bag of two bushels, and pease \$1.00 a bag, is rather startling. Pease at 50 cents a bushel must be rather cheap food for cows, bullocks, or sheep, and I should be inclined, if I could get them at that price to begin a stock for my horses. Fancy pease at \$16.50 a ton! But of course the reporter made a blunder between bushel and bag. Pease, I regret to say, will be very dear this year; the haulm, even on the high ground, keeps on growing and growing, the flowers are produced, but the

pod do not set. Cotton-seed-cake will be the cheapest food for cows, as a bad year for pease is almost always a bad year for linseed, except on the lightest soils. (1)

Hoskins on Dodge.—The following, from the Vermont Watchman, has been mislaid since February—it is too good to be lost. The report of poor Mr. Dodge placed the average potato crop of the United-States at 83 bushels an acre!

"TROUBLE ABOUT OUR POTATO STATISTICS.—Our friend Jenner Fust of the *Montreal Journal of Agriculture* has been for some time suffering distress over the unfortunate condition of American potato-growers, as set forth by that wonderful statistician, Mr. Dodge of the Washington bureau. According to Dodge, as figured out in detail by Jenner Fust, the potato-growers of America must suffer a loss on the average, at thirty cents a bushel, of not less than \$16.50 per acre—"to be recovered from the succeeding crops of the rotation." "What does it mean?" inquires our friend. Brother Fust, did you never hear of the bad boy who puzzled some of his mother's visitors by propounding a problem, as follows: "That boy in the garden is the son of my mother's sister, but he is no relation to me." A good deal of mental strain on the part of the ladies, but no satisfactory result, until the maternal parent entered, and settled the matter at once by remarking that "the boy lied." Just so with Mr. Dodge. Any "statistician," no matter how full his skull may be of figures, who declares that the potato crop is grown at a loss in the United States fails to state facts as they are. The potato is unquestionably one of the two or three most profitable farm crops grown on this continent; and if the figures gathered at Washington do not so show it, those figures are wrong."

Continuous Winter Stabling for Cows.

JOHN GOULD, OHIO.

Last winter I practiced the advance idea in dairying, and kept the cows in the stables for 120 days without letting them out, and never before wintered my cows so cheaply and well. Never before did they "come through" looking as fine, and so free from ailment. The barn is very warm, the thermometer never but once going below forty-five degrees above zero, the air pure and fresh, and the stable abundantly supplied with light. A large covered tank in the stable supplied from a deep, rock well afforded the best and finest of water. The idea that a cow giving milk, needs exercise to keep her in health and vigor, I now think a mistake. No one thinks of driving his fattening hogs or steers around for exercise, and the secretion of milk is a similar process to secreting fat.

I do not confine my cows with stanchions, but chain them in pairs, in half box stalls, giving them plenty of freedom so far as movement is consistent with safety. A good bed under them and plenty to eat before them, has made them perfectly contented, so far as I could see. They showed no inclination to want to go out, and I finally made up my mind there was no necessity for it. They could lie down at their ease, and the neck-chain was long enough to enable them to sleep with their heads on their sides if they wished. To me it was far nearer an ideal way of wintering cows, than to turn them out into stormy or zero weather to make them hardy, or contract constitutional vigor. I am now fully satisfied that it does not pay to attempt to warm barnyards with cows, or to use hay and grain to warm ice-water inside of a cow's hide. The cows were fed silage, brass, and a little clover-hay, and gave summer messes of milk all winter. I have this summer made calculations

(1) I mean to apply for an agency to sell this invaluable machine.
A. R. J. F.

(1) Potatoes, which fetched, here, 50 cts a bag in May, are now \$1.00, and poor ones too.
A. R. J. F.

to provide more silage, put the cows into the stables earlier in the season, and keep them there later in the spring, and if possible feed silage once per day through the balance of the year. Farming to pay must be so ordered that the farmer can command 365 days of summer in each twelve months, and silage, a warm barn, and cows in the barn for 165 days at least, will give him that advantage.—*Country Gent.*

The Strawsonizer.

Probably the implement which attracted the most attention at the Royal Show was the "Strawsonizer," the invention of Mr. G. F. Strawson of Newbury, Berkshire, who as a chemical manufacturer has faced the question of devising some machine which will distribute fine solids or liquids, and in this way meet the insect pests which now are more dreaded by the farmer than even American competition. The fan within the machine works at the rate of three thousand revolutions a minute.

Mr. Strawson, in conversation with the representative of one of our London daily papers, tells how he has been led to the invention. He says that for years he has worked with the object of checking the ravages of turnip fly. He began by seeking for remedies, and learned that it was necessary to have substances extremely fine, or otherwise it would take tons to cover the acre, which would be both costly and less effective. He then thought of a liquid as capable of infinite subdivision. Next came the question of distribution, and the present machine is the result. The machine, which is very simple, is capable of a multitude of uses, as it can distribute its contents in almost any form and place, either along the ground or to the height of several feet. The ground or trees are covered with a film, not unlike that of the hoar frost, and so completely is the work done that all parts are covered. By its means 20 to 25 acres can be covered with lime in an hour, and with paraffine one gallon is sufficient for an acre. It is anticipated that its use will be even greater in France than in England, and trials are to be made by the French government, with a view to its adoption in all the vine-growing districts. It is further valuable for distributing artificial manures and sowing seed, and anything from the finest seeds up to maize can be sown by it, and it scatters from 6 to 8 yards. It is also applicable to use in towns for sanitary purposes and the distribution of disinfectants. Those best able to judge, declare that this is one of the most important inventions of recent times, both because of its applicability to agriculture, and its use all over the world. The importance of dealing with the turnip fly is great, for the losses every year are enormous.—*S. B. London, July 1.*

Our correspondent sends a cut showing this machine in operation, but we have not had it re-engraved for use. It shows simply the rear of a cart throwing out clouds of spray from nozzles projecting diagonally to right and left, but has nothing to explain the piping with which the nozzles connect, or the force used in throwing out the liquid.—*Country Gent.*

Special Fertilizers.

We have attempted for many years to point out the unlike effects of special fertilizers on different and unlike soils. Superphosphates, for instance, which produce a great increase of the crop on some soils, have afforded no sensible effect in other places. We have known the wheat crop to be doubled by its use in one locality, and in others not ten miles away, the slightest improvement in the crop was not produced. Yet even at the present time, some agricultural writers do not appear to have understood this difference, and directions are repeatedly given for promoting the increased growth of crops by the use of superphosphates or of potash, evidently taking

it for granted that all soils and all crops are alike benefited. Fertilizers specially fitted for certain crops are largely advertised for sale, and we have "potato manures," and "corn manures" offered for these respective crops, as if they would operate alike on all soils.

But scientific men have not all fallen into this error, and we quote a few as a matter of caution to those who use commercial fertilizers without first proving on a limited scale their fitness and utility when employed and without first determining by trial whether the benefit produced, where they do not fail, will pay cost.

Dr. Voelcker stated: "On some soils, more especially on poor, light pastures, the effect of bone-dust has been truly marvellous, while in other localities they do not show any marked effect. I would advise making field trials on a limited scale before heavy expense is incurred. Bone meal is often wasted on cold clay soils." Again: "Soils vary much in composition, and hence the same manures which effect a radical improvement in one locality, are often found of little use in another." A writer in the Journal of the Royal Agricultural Society says: "I have seen bones applied and produce no good whatever, and on the other hand I have seen them used with immense advantage. I have seen guano produce a splendid crop; while the year following the crop was worse than before the guano was applied."

Hence the mistake sometimes made at Experiment Stations, in reporting tests of fertilizers on the circumscribed localities belonging to the stations, and which are often quite unlike the soils of other parts of the country, the owners of which they are intended to instruct.

Dr. Voelcker said: "Where good farmyard manure can be obtained at a reasonable price, I believe it will be found the most efficacious and economical manure." Another writer in the Journal of the Royal Agricultural Society said: "It is impossible to give any definite rules without knowing the kind of land to be manured."

The preceding remarks and quotations are not mere theory on our part, but we have made for many years similar tests in several instances, and witnessed like results from the experience of others.—*Country Gent.*

NON-OFFICIAL PART.

FOR SALE.—Percheron, Norman and Breton Horses, Ayrshire cattle, Berkshire pigs, Plymouth Rock poultry, apply to Mr. Louis Beaubien, 30 St. James Street, Montreal.

APPLE-TREES FOR SALE.

12,000 *fameuses* and divers varieties perfectly acclimated.

Address to PAUL S. LACOMBE, Nurseryman,

Côte des Neiges, near Montreal, P. Q.

CONSUMPTION CURED.

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

W. A. NOYES, 149 Power's Block, Rochester, N. Y.