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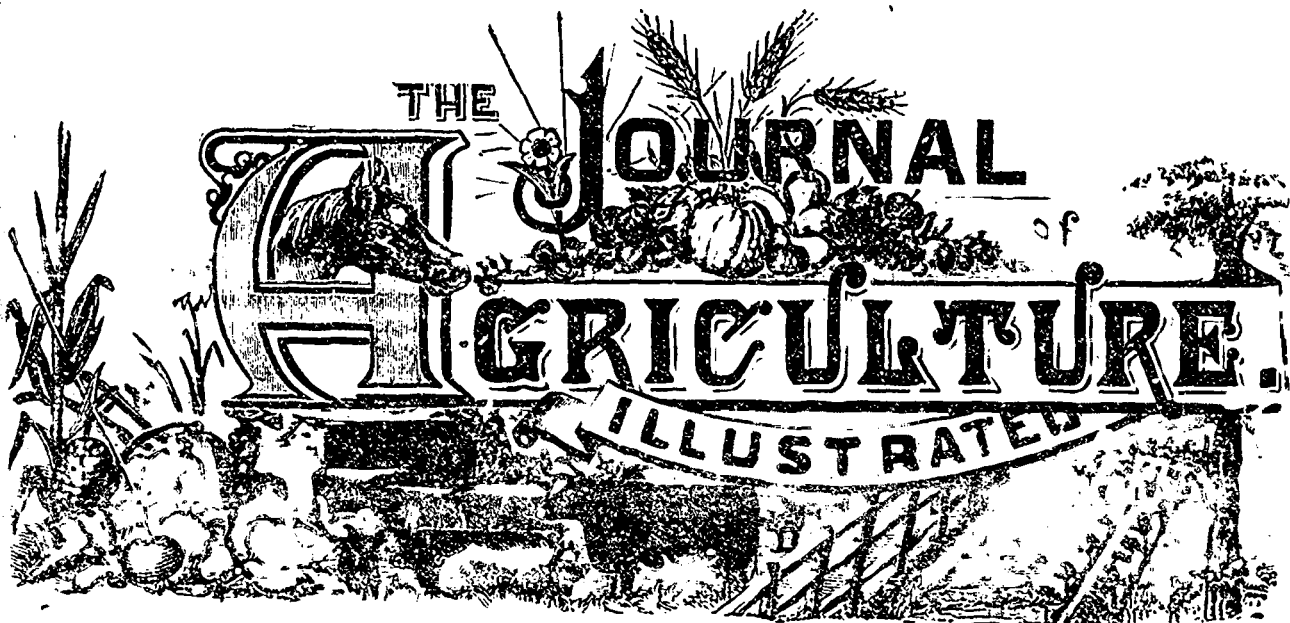
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NOTICE.—The subscription to the *Illustrated Journal of Agriculture*, for members of Agricultural and Horticultural Societies, as well as of Farmers Clubs, in the province of Quebec, is 30c annually, provided such subscription be forwarded through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

OFFICIAL PART.

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Deliberations of the Council of Agriculture of the Province of Quebec.

(Approved by the Lieutenant Governor in Council,
Oct. 28th, 1887.)

Quebec, May 3rd, 1887.

Present: The Hon. Messrs. Dionne, Ouimet, Ross, and Beaubien; and Messrs. Blackwood, Browning, Casavant, A. and E. Casgrain, de Blois, Gibb, Guilbault, Lussier, Martin, Marsan, Massue, Tarte, and S. Lesage, Asst.-Commissioner of Agriculture.

M. L. H. Massue in the chair.

The minutes of the last meeting having been read and approved, the president explained to the council why he had not convoked this meeting at an earlier date; and in support of his explanations, he read a letter from the assistant-commissioner of agriculture.

The Hon. G. Ouimet, reported that, in conformity with the wish of the council, he had examined the reports of the different agricultural schools, that he had remarked that some of them contain topics that do not properly belong to the operations of these schools, and which have the effect of extending the reports to a useless length, wherefore, in this connection, he would make the following motion:

Moved by the Hon. G. Ouimet, seconded by M. de Blois: That for the future, the reports of the agricultural schools should only contain that which has reference: 1st, to the school itself, as regards the buildings and the land, the instruction given to the pupils and their number, the date of their entrance and of their leaving; correspondence with the old pupils, if any has taken place and a condensed report of it; 2nd, a statement of the member of old pupils who have betaken themselves to farming, and the places of their abode; 3rd, an account of the labour done by the pupils, their wages, the extent of the farms and their cultivation in every particular, horticulture, arboriculture, &c.; 4th, a statement of the receipts and expenditure; 5th, an account of all the details of the farms and of the condition, &c., of the stock and of all that belongs to it. That all dissertations, remarks and observations which the directors or the professors may wish to lay before the council must be made by special reports, or by requisitions separate from the regular reports on the schools. That the reports sent be received and adopted.

Mr. Blackwood, seconded by M. Ouimet, moved: That the Government of the Province be requested to encourage those pupils of the veterinary colleges who have obtained, or who shall hereafter have obtained, brevets or diplomas for the practice of their profession, by passing a law to prevent any one practising the profession of veterinary surgeon within twenty miles of a place where such a practitioner shall be

established. And, in addition that those who have received their education gratuitously in either of the veterinary colleges be obliged to devote themselves to the exercise of their profession in this province during a period of three years from their leaving college, and give a bond to that effect.

M. Dionne, seconded by M. Tarte, moved, as an amendment: That the former part of the above motion be withdrawn, and that the motion itself read as follows:

This council holds that those pupils of the veterinary colleges who shall obtain brevets or diplomas for the practice of their profession and have received gratuitous instruction therein, be obliged to devote themselves to the exercise of their profession in this province during a period of three years from leaving college, and to furnish security to that end.

The amendment was carried on the following division:

For: Messrs de Blois, Gibb, Lussier, A. and E. Casgrain, Casavant, Dionne, Tarte, Marsan, Guilbault and Martin—11.
Against: Messrs. Blackwood, Browning and Ouimet—3.

The principal motion, as amended, was carried on the same division.

The secretary submitted to the council the report of the executive committee on the examination he had made of the programmes of operation of certain societies for the present year.

Argenteuil.—Approved, provided that the competitions of farms take place in accordance with the rules of the council.

Bagot.—Approved, on condition that this society, in addition to its parish-competitions, hold a county competition for the best cultivated farms.

Beauce.—Approved, on the same conditions as the Bagot society.

Bonaventure, No. 2, Div. A.—Approved.

Brome.—Approved.

Champlain.—Approved, on condition that the stallions bought by this society be thoroughbred, with a pedigree satisfactory to the council.

Charlevoix, No. 2.—Before everything, this society must hold a competition of the best cultivated farms; this having been done, the society may spend the rest of its funds at its pleasure, provided always that not more than half of the subscriptions of its members be laid out in the purchase of seeds.

Chateauguay.—The programme of this society is approved, on the express condition that, in accordance with the regulations of the council, it shall hold a competition for the best cultivated farms.

Chicoutimi, No. 1, Div. A.—Approved, on condition that the stallion purchased by the society shall be thoroughbred, with a pedigree satisfactory to the council and that the grant to the society be not paid before satisfactory proof be afforded that the stallion thus purchased be really a pure-bred one.

Gaspé, No. 2, Div. A.—The request is refused, as being contrary to law. The society may employ its funds either in holding an agricultural exhibition, or in the purchase of thoroughbred stock under the same conditions as Chicoutimi, No. 1, Div. A.

Gaspé, No. 2, Div. B.—Approved.

Iberville.—Approved.

Kamouraska.—Approved, except as regards the subscription, which must be paid in accordance with the Act of agriculture.

Laprairie.—Approved.

Laval.—This society is exempt from all competitions this year, and permission is granted it to employ all its funds in the payment for the Clydesdale stallion it purchased last year for two thousand dollars (\$2,000).

L'Assomption.—Approved.

L'Islet.—Approved.

Megantic, No. 2.—Approved, on condition that the society inform the council of the price of hire received for its bulls, mentioning the breed to which the said bulls belong.

And the Council adjourned until 2 P. M.

SESSION OF 2 P. M.

The same members being present, the secretary continued the report of the executive committee on the programmes of the agricultural societies.

Montcalm.—Approved.

Montmorency, No. 1.—Approved.

Napierville.—Approved.

Nicolet.—This society, under pain of deprivation of its grant, must hold a competition of the best cultivated farms. This having been done, the committee sees no objection to the society's holding its exhibition at Bécancour or at Three-Rivers. Only half of the subscriptions can be employed in the purchase of seeds. The committee cannot approve of the regulation of this society, by which it is made lawful to pay for the dinners of the directors and officers out of the funds of the society.

Pontiac.—Approved, provided that this society has been previously exempted from holding a competition of the best cultivated farms.

Portneuf.—Approved, with the exception that the society must hold a competition for the best cultivated farms.

County of Quebec.—This society may hold an agricultural exhibition, after having had a competition of the best cultivated farms.

St. John's.—This society must first hold a competition of the best cultivated farms, and afterwards may expend the balance of its funds in payment for its purchase.

Saguenay.—This society must not spend more than the whole of its subscriptions in seeds; the entire government grant must be expended for an agricultural exhibition.

Témiscouata.—Approved, provided always that the entire sum of \$150.00, as ordered by the council, be offered as prizes at a competition of the best cultivated farms.

Terrebonne.—Approved, if the prizes offered be distributed in accordance with the regulations of the Council of Agriculture.

Deux-Montagnes. Prayer granted, if the society conform to the law regulating the formalities to be taken to settle permanently the spot where the county-exhibitions are to be held.

St. Hyacinthe.—Approved, if the society hold the competition of the best cultivated farms, which is obligatory this year.

Yamaska.—Approved.

Hochelaga.—This society is exempt this year from all competitions, except a ploughing-match, to which this society invites all the ploughmen in the Dominion.

Resolved: That the council confirm and approves the decisions of the executive committee relating to the programmes of the agricultural societies.

Resolved: That a circular be immediately addressed to all the societies which have not as yet sent in their programmes of operations for the present year, requiring them to forward their programmes on or before the 1st of June next, under pain of being deprived of their grants; and that these societies must for the future conform more strictly to the rules imposed upon them by the council.

M. Marsan, seconded by M. Guilbault, moved: That in consideration of the observations made by M. Casavant, relative to the petition of and the grant to the agricultural society of the county of Bagot, there be named a special committee composed of M. Marsan, chairman; Messrs.

Browning, Casavant, Blackwood, and Tarte, to enquire into the results produced by the competitions for the best cultivated farms, imposed upon the agricultural societies, and to study the modifications which it may be useful to make in the regulations of the council in reference to these competitions, with a request that the committee report upon the matters at a future meeting of the council. (Carried.)

M. Lesago, the assistant-commissioner of agriculture, informed the council that M. P. B. Benoit had sent to the department his resignation as a member of the council.

Resolved unanimously: That this council learns with great regret the resignation of M. P. B. Benoit, who has always been one of its most useful members, both by his scientific and practical acquaintance with the art of agriculture.

In conformity with the notice of motion given by him at the last session of the council, M. G. Ouimet called the attention of the council to the memorial of M. J. C. Chapais, which is to be found in the report of the Hon. commissioner of agriculture, published in 1884, on the working of the agricultural societies of this province.

After a long discussion on the subject, M. G. Ouimet, seconded by Mr. Blackwood moved:

That this council has considered the memorial of M. J. C. Chapais, in the report of the Hon. commissioner of agriculture for 1884, relating to the working of the agricultural societies of this province; that it would appear from this memorial that a great number of these societies do not conform to the rules and regulations of the council of agriculture. Wherefore, this council prays the Hon. commissioner to furnish it with means sufficient to secure the services of an inspector for this purpose, and that this officer be selected from the department of the Hon. commissioner, with a view to diminish the expenses as much as possible.

And the council adjourned till the following day at 9 30, A. M.

SESSION OF MAY 4TH, 9.30 A. M.

The same being present, the Chairman stated that the annual grants of the council to the agricultural schools amounted to \$1,800 each; that the only funds open to the council from which the sums necessary to meet these payments can be drawn are the 8% on the \$50,000 voted for the agricultural societies, producing a sum of \$4,000 a year; that there are three agricultural schools, each having a right to the \$1,800, which would amount to \$5,400 in all; leaving an annual deficit of \$1,400.

M. G. Ouimet, seconded by M. A. Casgrain, moved: That the Hon. commissioner of agriculture be respectfully requested to enter in the supplementary estimates, in addition to the ordinary subventions made to this council, the sum of \$1,400, to enable this council to supply the annual sum by which it is deficient on account of the fulfilment of its obligations to the agricultural schools. (Carried.)

M. Tarte, seconded by M. C. Casgrain, moved: That having seen the reply of the Hon. Premier to a question put by M. Tessier, which reply reads as follows "The government thinks it only right that the exhibition be held at Quebec this year, and trusts that the council of agriculture will be of the same opinion;" this council desires to second the views expressed by the head of the government. (Carried on division.)

M. Casavant, seconded by M. Guilbault, moved: That the government be respectfully requested to introduce, during the present session, a law like the one passed by the Ontario legislature, to prevent the spread of contagious diseases among horses. (Carried.)

At this period of the meeting, the council received a visit

from the Hon Messrs Mercier, McShane, and Garneau.

The Hon. Premier thanked the council for having seconded the views of the government by deciding that the next provincial exhibition be held in the city of Quebec. The Hon. Premier profited by his visit to congratulate the council on the important services it had rendered to the cause of agriculture, and expressed a hope that the support of the council would not be wanting to him in the future. He promised to have inserted in the supplementary estimates the sum requested by the council to enable it to meet the payments to the agricultural schools. The visitors then took their leave of the council.

The secretary read a letter from M. J. A. Couture, superintendent of the Veterinary Department of Laval University, stating that "The veterinary college of Quebec, desiring to be, as regards the council of agriculture, on the same footing with the veterinary college of Montreal, requests the council to have the goodness to take it under the council's protection."

The Hon. J. J. Ross, seconded by M. E. Casgrain, moved: That this council will with pleasure accede to the wishes of Prof. Couture, as soon as the government shall have given it the necessary powers, provided that the University of Laval shall consent. The secretary of the council is authorised to communicate with the government and with the authorities of Laval and to make himself acquainted with their views. (Carried.)

M. Bernatchez, chairman of the agricultural committee of the legislature of Quebec, was introduced, and entered into a detailed account of the report which that committee is about to present to the legislature.

M. Guilbault, seconded by M. Martin, moved: That Messrs. Dionne, A. Casgrain, E. Casgrain, Tarte, and the Hon. J. J. Ross, form a committee for the purpose of studying the proposed establishment of a *Haras* in this province, and to report thereon; the report to be submitted to the council and to the government. (Carried.)

Resolved: That a committee be appointed, composed of M. Tarte, chairman, and Messrs. A. and E. Casgrain, to study the project of establishing a Stud book for Canadian horses, in conformity with the act. Vict. 48, ch. 7, of the statutes of this province, and to report thereon.

M. E. Casgrain, seconded by M. Martin, moved: That considering the representations that were made to me, as one of the former judges, by the exhibitors of the province of Quebec at the last exhibition, as to a rule which allowed an exhibitor to carry off more than one prize in the same class where there are several exhibitors in the said class; and considering that a great number of exhibitors are of opinion that, for the advantage of every one, that clause of the list of prizes should be changed, it is resolved: That the council advises the permanent exhibition committee to modify its rules in such a manner as to forbid a competitor to take more than one prize in a class where there are several exhibitors; this rule not to apply where there is only one exhibitor in the same class. (Carried.)

And the Council adjourned.

(Signed)

GEORGES LEOLÈRE,

Secretary.

(From the French.)

The above report did not reach me in time for publication at its proper time. A. R. J. F.

DE OMNIBUS REBUS.

Box 109, Upper Lachine—Jan. 6th, 1888.

A curious question is asked by the Editor of *The Rural New Yorker* of Jan. 7th, whether in joke, or with a real desire for information, I know not: Is the practice of sowing

millet in the potatoes at the last time of cultivating, to keep down the weeds, and provide fodder for the cows, good farming or bad farming? The question, I believe, refers to a letter in a previous part of the same issue, which runs as follows :

To my potatoes I gave level culture, kept them clean as long as I could work them with a horse, and the last hoeing sowed oats thickly among them to keep the weeds down, but the barn grass grew fastest and when I commenced cutting, it stood about four feet high all over the piece, but it makes very good feed out green. As I was three weeks cutting and feeding it began to get ripe towards the last and was not relished so well. I do not think it would make good dry feed.

I do not know what barn-grass is, but I can conceive nothing so absurd as to sow oats among potatoes "to keep the weeds down." My favourite definition of a weed is, a plant growing in a wrong place. For instance, a tulip in a wheat-field is a weed, and so is a blade of wheat in a bed of tulips. Just so, an oatplant in a potato field is a weed, and the crop of potatoes, with the oats and barn-grass four feet high growing amongst it, must have had small chance of coming to anything. Really, if agriculture has made no greater advance in such a district as Chautauga county, New York, I do not wonder that so many farmers are selling off and going West.

Sheep vs. dogs.—A very sensible proposal has been made in the Western States, that all dogs found roaming about the country without muzzles may be destroyed by any sheep-owner. Nothing is so crafty as a dog accustomed to kill sheep. He will watch his opportunity for hours, and it is very difficult to catch him in the act. At Lachine, there are two farmers who keep sheep close by my house, and they do not seem to be troubled by dogs, though *Tom Irving* told me some time ago that he had to give up keeping sheep altogether; but then, he is nearer town, and that makes a difference. How do two or three dogs agree to go sheep-killing together? They do agree somehow. I remember when I lived in Mountain Street, Montreal, there were four dogs who used to beat the rounds regularly every moonlight night in search of cats in the stables and sheds. I tried over and over again to catch them, but invariably without success, though they made plenty of noise at their work.

Holderness cattle.—The engraving on page 41 is a portrait of what the proprietor of the subject calls a "thoroughbred American Holderness cow." He seems, to judge from his advertisement, to have a high opinion of his stock. To me, the cow seems, barring the horns, to be a cross between the Shorthorn and the Ayrshire, but she does not in the least resemble the great roomy beasts of whom we used to see such a number in the London dairymen's stalls. The neck is Ayrshire all over, and the carcass Shorthorn; but the cow is a good one if the portrait is a correct one, and if the breed has been for a long time in Mr. Cole's hands, I have no doubt the bulls would make a valuable material for crossing with Jerseys or Guernseys.

Thoroughbred American Holderness Cattle.—I now offer for sale a few young animals of both sexes. Heifers in calf, and young Bulls, all direct descendants of Adelaide 17th, and her precise counterpart in color and marking. For milk and butter they have no superior. To compare them to any of our foreign breeds of cattle is simply like comparing our country to theirs. There is a fortune in every one of them.

T. A. COLE, Solsville, N. Y.

Christmas fat-stock Shows.—The Smithfield Club seems to have had a most successful exhibition last month. The total entries were about 100 more than last year. There was

a wonderful pen of Lincoln owes shown, which averaged 394 pounds a head, live weight, equal to, I fancy about 260 lbs. for the carcass. What use could be made of these monsters I cannot say, but heaven defend me from eating any part of one except the leg. The sheep in general seem to have been very good, and it is remarkable how well the crosses of my darling Hampshire-Downs came out. The Champion prize was awarded to the Oxfords, a cross originally, as all my readers know, between Hampshire-Downs and Cotswolds, but one report—that of the London Agricultural Gazette—says that the prize-pen was got by a Hampshire-Down ram out of Oxford ewes. The pen weighed $7\frac{1}{2}$ cwt. = 840 lbs., and would probably turn out 180 lbs. of carcass each. The second prize was awarded to a pen of regular Oxfords of the original strain of Druce of Eyusham, the three, like the former, were yearling wethers under 20 months old, and weighed, together, 1 cwt. more than the others = 317 lbs. apiece = 206 lbs. of carcass. The prizes for cross-bred sheep almost invariably go to a Hampshire cross, and, I may almost say, never to a South-down cross, which, considering that $\frac{2}{3}$ of the sheep fed in Norfolk 30 years ago were bred by a cross of Southdown ewe and Leicester ram, seems curious. Observe, please, that the Champion prize is given to the best pen of sheep, size not being considered, in the whole show.

The Country Gentleman remarks, with sound judgment: "With American farmers, the breeds that will produce the best results when crossed upon our common sheep have the greatest practical value." Well, if the breed in question is not found in the Hampshire-Down, then all I can say is that the yearly contests at Norwich and London have taught no lesson worth learning.

Mr. Clement Stephenson again wins the Champion prize for cattle with another Poll-Angus, Bellona, of the Erica tribe. A pretty lot of money she takes with her: \$125 for best Scot; \$250 for best female in the show; \$500 and gold medal for best beast in all the classes; which, with her previous winnings at Birmingham, amounts to about \$2,000! The reserve animal for the Champion cup was also a Poll-Angus. Bellona is not to be slaughtered, but, after having been reduced in flesh, she will be used for breeding.

Pig-feeding.—Mr. Wm. H. Bonner, of Gordon County, Georgia, informs the Country Gentleman that he has just killed a Berkshire 9 months and 12 days old pig that weighed, alive 466 lbs., and when slaughtered, 436 lbs., loss of only 30 lbs. from gross to net weight, = $6\frac{3}{4}\%$. A marvellous hog indeed! In 222 days this pig increased at the rate of all but 2 lbs. a day. I have bred a good many hogs in my time, but I never got them to behave like this. The individual in question was fed on bran, milk, and meal—corn-meal, I presume—mixed, which, Mr. Bonner says, had the effect of making muscle and lean-meat in place of pure fat. I thought that *lean-meat and muscle* were convertible terms—I know they used to be, and I really do not see any great muscle-forming food in his mixture, unless the greater part of it is bran and milk. The addition of pease or beans would make it a very different thing. After all said and done, nothing can beat the food our old English farmers used to give their bacon-hogs: pease, milk and barley-meal.

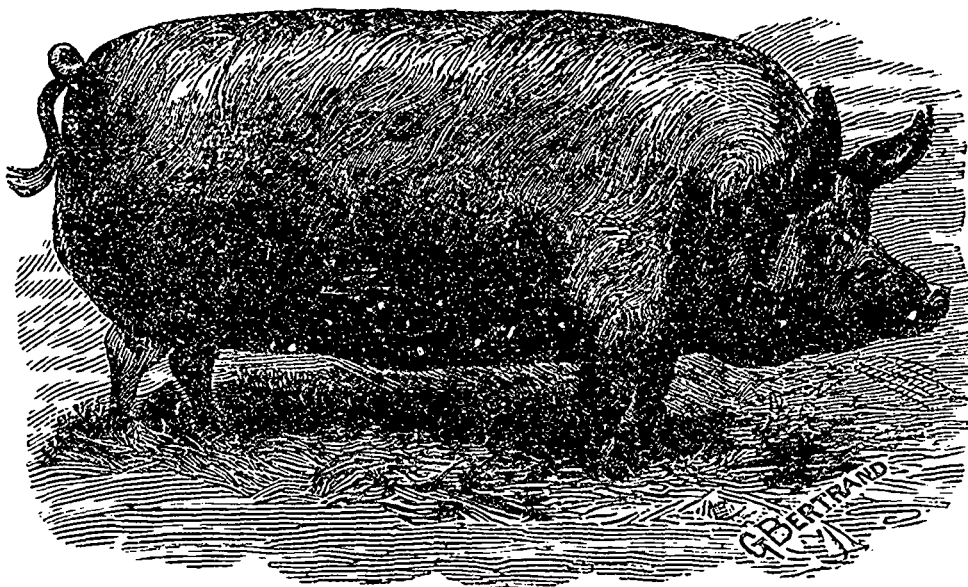
Mr. Bonner, in conclusion, "feels confident that the farmers would do well to keep sows, and let them raise only one litter of pigs annually, and have no hogs to feed during the winter. Let the pigs come in March, force them to early maturity, and kill early, say in November, or first in December, and save the time and trouble of winter feeding, and thereby increase the profits and have less trouble." All right, as far as having less trouble, but how about increasing the profits? If a sow farrows and rears 9 pigs in March, she

can, equally as well farrow and rear 9 more in the latter end of August. Now an August pig well done by, should weigh, at an increase of only one pound a day—not two pounds like Mr. Bonner's hog—from 70 lbs. to 80 lbs. by the first of December, would be in the best possible condition for pickled-pork, and, at 6 cents a pound, the 9 would sell for about \$36, and this would, in my opinion, be far more likely to increase the profits than letting the sow lie idle for twelve months. In a cold climate like ours, and in the general run of farm-buildings that we see every day, sows ought not to farrow much before May; for there is nothing so tender as a baby-pig. But in a country like Georgia, and even here, when the piggeries are in a warm stable, it would be a waste of time and money to follow Mr. Bonner's advice

Scours in calves.—A moderate dose of milk of lime—say a dessert spoonful in a quart or so of new milk, is one of the

castrating lambs, calves, and colts. As for losses from the operation, if the art is understood, as it is by our Kent and Surry caponizers, and by the Normandy peasant-farmers, they are very few. The difference between a 6 months old capon and a 6 months old cockerel is too great to be appreciated without tasting the two together.

Turnips.—Col. F. D. Curtis, an authority of some weight in the States, holds my opinion pretty strongly. We should grow much larger quantities of turnips he thinks. Mr. Ed. Knapp, on the other hand, thinks turnips an uncertain crop, and ensilaged corn the cheapest food in the world for any purpose, to which Col. Curtis replies: "Turnips are a sure enough crop, if you manage right. They want barn manure on the surface, lightly dragged in, and the growth must be stimulated all along, so as to get ahead of the fly." I should say, plough in the dung, and stimulate the plant to grow out



TAMWORTH BOAR, DICK.

best remedies for diarrhoea in calves. A piece of quick-lime, the size of an egg, and a quart of water should be put into a vessel of any kind, and after effervescence has subsided, the clear liquid will be a saturated solution fit for use. Since the above was written, Mr. Tuck, Messrs. Dawes farmer, tells me that he had succeeded in putting a stop to the loss of calves from scour. After losing 14 Jersey calves he tried—three vets, having utterly failed—*Dwight's cholera mixture*, and this cured the complaint at once. (But the calf was a Hereford.)

CAPONS are in good demand in the markets. It seems impossible to overstock the market with a prime article. Caponizing is an art, and a cruel one. So far as our observation goes, not one man in 10 can do it without killing many birds. It is cruel business, say what you will of it. R. N. Y.

The above extract from the Rural New Yorker is not bad. On a previous page, of the issue from which the above is taken is a long paragraph speaking, without blaming it, of the system of dehorning cattle! Caponizing is about as cruel as

of the fly's reach by moderate dressings of a good superphosphate.

Ploughing in rye.—At the meeting of the Farmers' Institute at Albany, the question of the advisability of ploughing in green rye being put, Col. Curtis said he disapproved of the practice; he would prefer to pasture it in spring with sheep and young cattle, getting afterwards a good crop of grain. Other speakers concurred, while some had had remarkably good crops, particularly of corn, from fields on which rye had been ploughed in. Secretary Woodward, who hit the right nail on the head, remarked that ploughing under a crop could not really add anything to the soil. To those who think differently to Mr. Woodward, I recommend an attentive perusal of Sir John Lawes' article on carbon as manure, reprinted in the February number of this publication.

Manure.—Mr. Woodward would rather have two loads of dung spread at once in winter, whether on the snow or on

bare ground, than three in spring, no matter how it was kept; "manure is most valuable the day it is made." The Secretary is quite right as to the principle involved in the sentence within the inverted commas, but there are one or two things to be considered: is there danger of the manure being washed away, in the first place? and, secondly, can you insure its perfect freedom from the seeds of weeds? I own I should not like to spread dung on the top of three feet of snow, or on a less depth of snow on a side-hill; and, where there are, as is almost universally the case, more or less seeds in the dung, I prefer turning it up into a heap, and letting it heat well before applying it to the land. When turnips or other roots are grown, rotting the dung is absolutely necessary; for if it be applied in the long state, the hoers will be in eternal difficulties with it.

Permanent pasture.—The general opinion of the meeting seemed to be, that pasture is benefited by a change in the kind of live-stock kept upon it. I do not think the form of expression is quite right. What the meeting meant probably was, that the grass is more completely utilised by a variety of stock than where only one kind is fed on it. Horned cattle bite high, horses and sheep bite low. The chief thing in feeding pastures is to keep a level surface. Sheep will eat and destroy wild carrots and daisies, and "their treading has a wonderful effect on the physical condition of certain light lands, giving them much needed firmness:" I fear the effect of the sheep's foot on pasture land will hardly be efficacious; it is on arable land, when feeding off turnips, rape, tares, &c., that the benefits are felt. (1)

The way in which pastures are fed, whether closely or otherwise, has much to do with their permanence. Nothing is easier than to ruin a promising pasture in one season. Keep the stock always at it, and the grasses will get into a dwarfed habit of growth; let sheep follow the horned stock on a well eaten down pasture, they will nibble out the heart of the clovers; let the grass be understocked, the freer growing will run up to seed and die. The meeting seemed to think that grass-seed should be sown without a grain-crop, but that is an error if laid down as a positive rule. Many a good permanent pasture, on soils well suited to the growth of grass, has been made with a seeding of grass in a grain-crop. "Moderate feeding may be allowed whenever there is sufficient growth" is a sound position, and contains the key to judicious pasturing, but what on earth does this mean: Sprinkling manure to act as a ferment, &c.?

Run-out Farms.—A paper was read at the meeting—How to restore a run-out farm. Rape and tares, feeding them off with sheep eating cake and grain—English, if you like, in its origin, but universal in its application.

Clover.—Some two or three years ago, my friend Dr. Hoskins, then Agricultural Editor of the Vermont Watchman, stated that up to the then present time, there had been no instance of a refusal to grow on the part of the red-clover plant. This was in reply to an article of mine warning the readers of the Country Gentleman not to trust to certain correspondents of that paper—who were impressing on them the duty of sowing red-clover continually on the same land—and showing how, after some years of this sort of treatment, many a farm in England had refused to produce that most valuable crop at all. I felt pretty sure that my generalisation—that what had happened in England, in numberless instances, would happen on this side of the Atlantic if a like practice

(1) I object very much to hear sheep spoken of as the "scavengers of the farm." They are a great deal too valuable for such an office.

A. R. J. F.

was persisted in under the same conditions—was correct, and it turned out to be so:

Mr. J. H. Baker is much pleased with Alfalfa as a substitute for red-clover, which was formerly a staple crop in Central New York but is now failing!

Well, the complaint is a mystery; neither Lawes, nor any one else, seems to know anything about it. The only thing to be done is to sow clover less frequently, allowing at least eight years to elapse between the seedings.

Ayrshire milk.—Col. Curtis eulogizes Ayrshire milk, particularly for children and calves. I do not know why children should thrive better on milk that is supposed to contain a greater proportion of casein than other kinds: I should think it would be more indigestible. Calves, whose digestion is probably more powerful than that of children, would benefit by the abundant albuminoids.

Ensilage.—A rather amusing contest arose between the backers of turnips and the backers of ensilage. Some members maintaining "that you can't raise them once in ten years, and that they are good for nothing when you do raise them. Others, with good experience, thought otherwise, and cited the English example, to which it was replied that the English farmers is now pretty near bankrupt, except when he has adopted ensilage." According to Dr. Hoskins, the New England farmer is not in a very flourishing condition, as I remember seeing a proposal in the Rural Vermonter the other day, that Old England farmers should come and buy the worn-out farms of the Eastern States, which could be had for less than the original cost of the buildings. The truth is, the fall in the value of farm-produce is universal, and the farmers are suffering all over the world in consequence. It is only on the turnip-growing soils of England that the arable tenant-farmer is doing well: on the heavy land, where turnips, even if grown, cannot be fed off by sheep, the landlords have been at their wits' end to find takers for their farms. As for ensilage having saved tenants from bankruptcy in England, there are, as far as I hear, only a few men who send milk into the towns who have siloes. I do not think the ordinary farmer would build siloes on his own account, and the landlords, as a rule, have no funds to spare for the purpose. The farmers in the States who talk about the English turnip-growing system, do not seem to be aware that three-fourths of the turnips are consumed on the spot where they grow. The carting and spreading of the manure is thus saved, and the land is all the better for the treading of the flock.

The general opinion of the meeting seemed to be that corn, for ensiling, ought to be drilled or hilled, and not sown broadcast. There can be, comparatively speaking, no after cultivation of the land where corn is broadcast, or where it is drilled at narrow intervals, and we must not forget that ensilage corn is emphatically a fallow-crop. As to weighting the silage, experts state that if the mass has been allowed to attain a temperature of from 120° F. to 140° F., no pressure is necessary.

Pacey's perennial ryegrass.—It will be remembered, perhaps, that in my list of grasses for permanent pasture I especially recommended Pacey's perennial ryegrass. I cannot refer to the page because, unfortunately, my copy is at the bookbinders', and when I shall get it back goodness only knows. In another part of this number of the Journal will be found a letter from Mr. Batchelor to the Country Gentleman: in this he speaks of the grass in question as being perfectly hardy, dwarf in habit of growth, and an excellent nutritive pasture grass. If people will sow the common ryegrass,

which is an annual, they must not be surprised if it soon vanishes from the scene. The Country Gentleman recommends Italian ryegrass to be sown in a mixture intended for permanent pasture, which considering that grass is at most a biennial, is curious. See Country Gentlemen, Feb. 2nd, 1888.

OUR ENGRAVINGS.

Shropshire sheep.—*v. infra*.
Kerry cow.—*v. infra*.
Tamworth boar.—*v. infra*.
Holderness cow.—*v. infra*.

The accompanying engraving is intended to represent a group of Shropshire sheep—a ram, Brecon Hero, the property of Mr. John Dryden, Brooklin, Ontario, and two ewes belonging to Messrs. J. Talcott & Son, Rome, N. Y., who purchased them from Mr. D last fall. Daisy, the ewe in the foreground, was bred by Peter Everal of Shropshire, England, and Queen, the other ewe, by William Ward, Shrawardine, England. Daisy and another one of seven ewes imported by Mr. Dryden and sold to Messrs. Talcott, were in the pen of five which took first prize at Wrexham, England, and were also prize-winners at Toronto last fall. The ewes are all served by Brecon Hero. — *Country Gentleman*.

What are styled by their breeder, Mr. T. A. Cole, Solville, N. Y., "American Holderness" cattle, have been bred by him continuously for many years with great care, especially with a view to their capacity at the pail, and our past volumes contain letters from several correspondents, who have seen and examined Mr. C.'s herd, speaking in the highest terms of the results of his skill and judgment as a breeder. A letter on the subject from Mr. Lewis F. Allen, the veteran Short-Horn breeder, and author of "American Cattle," was published in the COUNTRY GENTLEMAN of Sept. 11, 1879.

We give herewith a portrait of Mr. Cole's cow Adelaide 17th, now sixteen years old. She has had thirteen calves, six bulls and seven heifers, and has a record of over 300 pounds of butter per year for 14 years, at a total value of more than \$1500. She has taken seven first premiums. More than 100 thoroughbreds trace to her, and over 500 grades, from bulls used on common stock.

The little Kerry cattle of Ireland have many admirers, and the London Live Stock Journal says that at the recent Dairy Show at Islington, no class attracted more attention. Our contemporary gives an illustration representing a group of them, one of which is shown in the accompanying engraving — Irisine, the winner of numerous prizes both in Ireland and England, including second prize in her class at the Dairy Show above referred to. She belongs to Mr. M. J. Sutton of Reading.

A number of importations of Kerry cattle to this country have been made at different times, but we do not now recall the locality of any existing herds. — *C. Gentleman*.

Tamworth Boar Dick.

The animal shown at p. 37 won the first prize at a recent English Royal Show. He was bred by the Aylesbury Dairy Company, at their farm at Horsham, Sussex. The managing director of this company, Mr. Allender, has devoted great attention to the improvement of this variety of pig, in the relief that it was unequalled for the production of lean meat; and his example has been followed by many other breeders, so that the Tamworth is now largely bred in England, and has also been adopted by breeders of other countries, with

good results. Our engraving is taken from the London Live Stock Journal.

Perennial Rye Grass for Pasture.

I noted in the COUNTRY GENTLEMAN of the 19th inst. a bulletin from the Guelph (Ont.) College Farm, in which Prof. Brown treats very convincingly on an experiment made with sheep-feeding on permanent pasture. The professor fully shows the great pecuniary advantage that would result from the adoption of his methods. But of that plainly demonstrated success, I have no more to say; what attracted my attention was the fact, as stated by the gentleman, that among the many grasses he found growing in the pasture, there was but "little Italian rye," and "no perennial rye." There could not be much of the Italian in an old pasture, for that grass is a biennial. That there was no perennial rye, is to be attributed to the fact that the *Lolium perenne* is too tender for the climate of Ontario. In the successive years of 1875-6-7, I sowed every season, on the late Samuel Campbell's land, in Oneida county, N. Y., perennial rye grass seed in prepared borders. The grass grew well and vigorously, and always went into the winter with a thick sod, and came out each succeeding spring dry and dead, root and branch. The same result followed an attempt made five years ago at the New York Agricultural Experiment Station.

It is true that I have occasionally seen this grass in meadows of densely-grown mixed grasses, and I think that Prof. Brown, in an annual report, five or six years ago, named this grass among others then growing in the college meadows. Many writers on grasses seem to copy their formulas of mixture from English authorities, and thus make the mistake of recommending perennial rye seed to be used in meadow and pasture mixtures for the Northern States and Canada. Tons of the seed are imported every season, nearly all of which might just as well be sown in the Atlantic ocean as on the meadows of our Northwestern States and Canada. There is, however, a variety of *Lolium*, known as Pacey's rye grass, (1) which is quite hardy, but it is a dwarf grass, and consequently not adapted to grow in meadows, and come on to the hay harvest with timothy, red-top and tall fescue. Pacey's rye grass stools well, is deep rooted, and admirably adapted for lawns when sown in mixture with other fine grasses. It is also an excellent nutritive pasture grass. (2)

DAN'L BACHELOR.

Utica, N. Y.

IMPROVED CHEESE MAKING.

Professor Robertson, of the Ontario Agricultural College, one of the highest authorities on dairying in America, has just published the following rules for the production of the best Cheddar cheese: ED. A. BARNARD.

1. Use every endeavor to educate your patrons how to produce milk of the best quality, with the most profit.
2. Give each one a copy of "Points for the attention of Patrons of Cheese Factories."
3. Carefully inspect the milk cans, especially the seams inside the covers, once every week; any offensive matter appearing yellow when wet with milk is most dangerous to the flavor and keeping qualities of the cheese.

(1) Which is precisely the kind I recommended in my essay read before the Dairymen's Association at Three-Rivers. A. R. J. F.

(2) The tons of seed imported from Britain are probably composed of the common annual ryegrass. In Kent it is usually sown at the rate of a peck an acre, with 7 pounds of red-clover. Both clover and ryegrass grow well together till mowing time—about the first week in June—and after that the ryegrass is seen no more, the second-cut being pure clover. A. R. J. F.

4. Insist on a careful straining immediately after milking.
5. Send a circular or note to every patron two or three times a year, urging care in the airing of all milk.
6. Visit promptly the farm, pasture, stable, milking-yard, milk-house and milk stand of every patron whose milk comes tainted, after he has been notified of its bad quality; some apparently trivial matter that has escaped attention will generally be found as the cause.
7. Where whey is returned in the milk cans, urge the owners to empty them as soon as received, and not to feed the whey near a milk stand, milking yard, or other place where milk is kept.
8. Examine carefully the inside and outside of the opening from the weighing can into the milk conductor; and just after using look into the conductor very closely for any traces of the yellow matter referred to in No. 3.
9. Do that every day.
10. Entertain a 'creepy dislike' for the use of a strainer, cloth, dipper, pail or thermometer which feels greasy, or that has a miser's store of matter-out-of-place in the corners.
11. Lift the pans of the milk vats out of their places for a thorough cleaning of the water-pans once a fortnight.
12. 84° or 86° Fahr. are satisfactory setting temperatures when the milk is in good condition.
13. Over-ripe or acid milk may with advantage be set as high as 96°, according to the degree of its ripeness. See also 26.
14. Let the milk be well matured by the retention or application of heat before the rennet is added.
15. If the milk is delivered to the factory in too sweet a condition, it should at once be heated to 94° and frequently stirred.
16. According to the degree of its sweetness it may be left to gradually cool down to 88° during 2 to 4 hours.
17. The addition of sour whey to hasten the maturing is most objectionable and should never be resorted to.
18. Old milk, which has become well ripened, and nearly sour to the taste, may be added, but loppered or thick milk should never be used.
19. In the use of coloring, the annatto extract should be diluted to the extent of one gallon of water to every vatful of milk, and then thoroughly stirred in.
20. Pure rennet extract or powder of known strength is indispensable.
21. The quantity used should be regulated according to the condition of the milk.
22. Rennet should be diluted to the volume of at least one gallon of liquid for every vat before being added to the milk.
23. The first discernible action of rennet is to coagulate the milk into curd.
24. To perfectly coagulate the milk from fresh calved cows, more rennet is required than later in their milking season.
25. The more rennet there is used, the more moisture will there be retained in the cheese under similar conditions of making.
26. The more moisture there is retained in the cheese the

more quickly will it cure under equal conditions of temperature and atmosphere.

27. For spring cheese, as much rennet should be used as will thicken for cutting in from fifteen to twenty minutes at a temperature of 86°.

28. For summer and fall cheese forty-five minutes should be allowed for the same process, with milk in good condition.

29. The second evident action of rennet is to effect a separation of moisture out of the curd particles.

30. The raising of the temperature up to 98° Fahr. provides increasingly favorable conditions, and thus promotes the rennet action.

31. When milk is over-ripe or acid, a proportionately increased quantity of rennet should be used to effect a sufficient separation of the moisture from the curd (often termed "cooking.") before the presence of lactic acid is perceptible to the taste or smell, or is discernible by the hot iron test. See also 13.

32. Observation of the foregoing would remedy many so-called mushy curds, and avoid the danger of "leakers."

33. Rennet should be diluted to the volume of at least one gallon of liquid for every vat before being added to the milk. (1)

34. It should be thoroughly mixed by vigorous stirring, otherwise coagulation will be very imperfect.

35. The results of late investigations recommend an allowing of the curd to become fairly firm before commencing to cut, except in the case of a quick curd.

36. More moisture is retained in the cheese, and a better yield is thus obtained. See also 21. (2)

37. The horizontal knife should be used first, lengthwise, and then followed by the perpendicular knife, crosswise, after the whey has separated to half cover the curd.

38. The mesh of the knives should be so close that three cuttings would suffice, except in the case of a quick curd, which should be cut unusually fine.

39. The knives should be moved fast enough to prevent much disturbance of the curd by pushing.

40. After coagulation is perfect, the curd should be cut finer during the fall than during the summer months.

41. Gentle and slow stirring should begin immediately after the cutting is completed.

42. The hand should be used to free the sides and bottom of the pan from any curd that may have adhered.

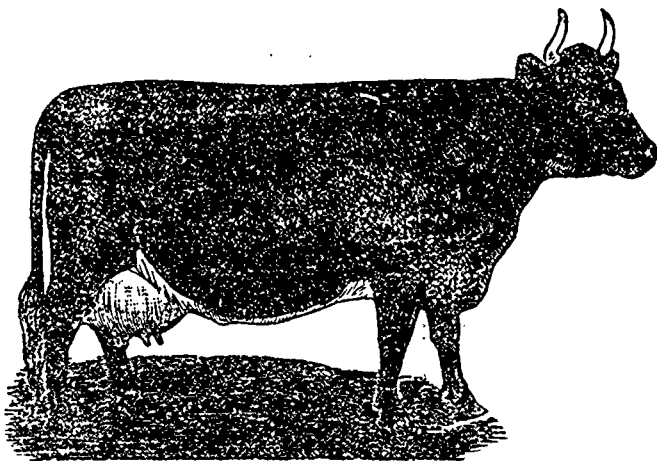
43. The application of heat should be delayed for fifteen minutes after stirring is commenced.

44. The heat should be applied through the medium of warm water to avoid scorching of the curd.

45. The temperature should be gradually raised to 98° Fahr. at a rate not faster than one degree every four or five minutes.

46. In the case of a quick curd, Nos. 43 and 45 may be disregarded.

47. Pains should be taken to make the curd particles so



PRIZE KERRY COW "IRISINE."

(1) This is noted in 22.

(2) Which has nothing to do with it.

dry, before the development of acid is perceptible, that after being pressed in the hand and released they fall apart when slightly disturbed.

48. Stirring should be continued till the curd is properly "firmed" or "dried."

49. The temperature should be maintained at 98° until the whey is drawn off.

50. When the hot iron test shows fine hairs, from $\frac{1}{4}$ to $\frac{1}{2}$ of an inch long, the whey should be removed. (1)

51. If acid be discernible by the hot iron test before the curd is so properly "firmed," the whey should be immediately removed and the stirring continued till that firm condition is brought about.

52. In both cases the dry curd should be kept at a temperature above 92° Fahr.

53. The presence of too much moisture in the curd, while the acid is developing, is the cause of tenderness of body and pastiness in cheese.

54. If the temperature be allowed to fall below 94° the development of acid is retarded and excessive moisture is retained in the curd during its development.

55. The presence of such extra moisture in the curd at this stage will leave the cheese with a weak or pasty or tal- lowy body, according to the degree of acid development permitted.

56. A rack placed in the vat seems the simplest and most effective provision for keeping the curd warm without risk of scorching.

57. Just after the removal of the whey the curd should be hand-stirred till the free moisture has drained off.

58. After the curd is dry or firm enough, but not before, it may be allowed to meet into one mass.

59. It should be frequently turned and packed close, till the layers of curd are four or five deep.

60. Whey should never be allowed to gather in small pools on the curd at this stage.

61. The close packing in layers four or five deep with frequent turning prevents the outside of the matted pieces from becoming chilled or more deeply colored than the rest of the curd.

62. The conditions of the curd, as to when ready for cutting and salting, are best ascertained by the use of the senses. The usual order of reliability for that purpose is by touch, smell, taste and appearance.

63. The proper degree of change has taken place when the curd feels mellow, velvety and greasy; smells like new made butter from sour cream; tastes aromatic rather than sour; and shows a texture passing from the flaky or leafy into the stringy and fibrous.

64. When the curd is gassy or very porous, souring should be allowed to go further before it is arrested by the cutting and salting.

65. If the curd be too moist or soft it should be out or

ground at a rather earlier stage, and hand-stirred some time before the addition of salt.

66. In both of those cases it should also be well aired by stirring before being salted.

67. It is generally beneficial to stir the curd for ten minutes after cutting or grinding before the salt is applied.

68. The results of the tests made last season (1886) for the Western Ontario Dairymen's Association indicate that Canadian salt is better for cheese-making purposes than English salt

69. One pound and three-quarters of pure salt per 1,000 pounds of milk is a maximum quantity for April and early May cheese.

70. From two pounds to two and three-quarters pounds of salt per 1,000 pounds of milk is the range for summer use on fairly dried curds, and from 3 to 3 $\frac{1}{2}$ lbs. during October and November.

71. Where extra rennet has been used or where the curd is sloppy; a corresponding increase of salt should be applied.

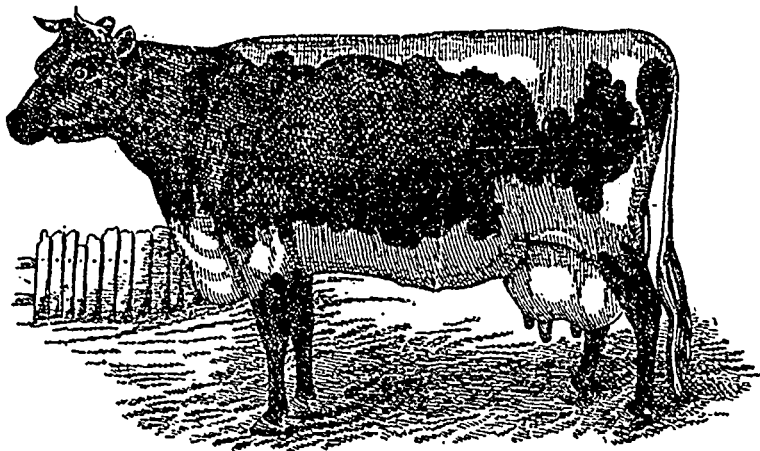
72. One important action of salt is to dry the curd and cheese, and thus retard the curing.

73. The curd should be hooped and pressure applied within twenty to forty-five minutes after the salt is stirred in.

74. Delay at this state, or coldness of curd destroys the desirable rosy flavor and imparts to the cheese the bitter taste of the salty white whey.

75. Immediately after the application of salt the pieces of curd becomes harsh and gritty on their surface; then in from 15 to 25 minutes the harshness gives place to mellow- ness and the salt causes the whey to separate freely.

76. Pressure in the hoops should be conti- nuous, at first light



HOLDERNESS COW.

and gradually increasing.

77. The following should be loose-fitting, and canvass press rings used.

78. Particular care should be taken to use only pure, warm water when turning the cheese for bandaging, before the rinds are fully formed.

79. Greasy water is sure to percolate into the body of the cheese and leave nasty flavours.

80. The curd-cutter or grinder must be thoroughly cleaned every day; wretchedly bad flavors are frequently sown into cheese from neglect of this.

81. Curd sinks should be furnished with racks having slats bevelled to an edge from both sides.

82. The racks need thorough scrubbing on both sides every day, and should be turned out for airing over night.

83. A sack cloth that shows clogging by yellow matter should be burned at once.

84. Occasional soaking over night in a strong sal-soda solution is beneficial.

85. The curd whisk has been a fruitful scatterer of bad flavors, a hair brush is more easily kept clean.

86. The hoops and press tables require to be rinsed with hot water every day, and scrubbed on both sides twice a week.

(1) The copy reads thus: $\frac{1}{4}$ to $\frac{1}{2}$, but that is probably a misprint. From $\frac{1}{4}$ to $\frac{1}{2}$ is, most likely, what is meant. A. R. J. F.

87. All cheese should be turned in the hoops in the morning to give finish to the shape and body.

88. The press cloths should be left on for a fortnight, or till within a few days of the time of shipment.

89. No cheese should be taken to the curing room till the shape is true and the edges well made.

90. The cheese should be turned on the shelves once a day till at least three weeks old.

91. The curing-room floor should be frequently swept, the shelves thoroughly cleaned after each shipment, and the air kept pure by suitable ventilation.

92. The curing is effected by fermentation, while heat up to 70 degrees makes a favourable condition, and cold under 60 degrees an unfavorable condition for its operation.

93. A temperature of from 70 degrees to 75 degrees Fahr. should be maintained for curing spring cheese.

94. From 65 degrees to 70 degrees Fahr. is the best range of temperature for the curing of summer and fall cheese. It should be maintained within that range continuously.

95. In the curing room a temperature of from 65° to 70° should be maintained continuously.

96. Where the room is heated by a stove, the following simple device will help to equalize the temperature over the whole, and save fuel:

97. A tin jacket should be so placed as to surround the stove at a distance of eight inches all around.

98. Let the jacket stand eight inches from the floor and extend 8 or 12 inches above the stove according to its size.

99. A light rope attached to the jacket and then passing around a pulley fixed to the ceiling will provide for its being lifted out of the way when fresh fuel is being added.

100. The air between the stove and the jacket on being heated at once ascends, the colder air from below is drawn up, and a continuous movement of warm air along the upper part of the room is established away from the stove, with the complementary circulation of colder air, near the floor, towards the stove. (1)

101. When press cloths are stripped off, use warm (but not hot), pure, sweet flavored grease on the rinds.

102. Just before boxing summer cheese grease them, and apply scale-boards while the grease is still soft.

103. Mark the weight of each cheese in neat figures on the hollow side of the box.

104. Let there be two scale boards on each end of the cheese in the box.

105. The edge of the box should be level with the cheese, and the cover should fit close.

106. The band of the box cover should be at least 1/4 of an inch thick to give additional strength to the package.

107. Insist on the teamsters using only clean waggon or sleigh boxes in which to take cheese to the railway station.

108. See that the flues of the steam boiler are cleaned out every week.

109. Finish all of every day's work each day, in the very best way you can.

110. Keep everything in and about the factory scrupulously clean.

111. Keep a correct and detailed record of every day's make.

112. Occasionally compare the working of your factory in all its details with the forgoing recommendations.

Grasses for Permanent Pasture.

The following Bulletin reaches us from the Agricultural College at Guelph, Canada, and is by W. Brown, C. E., Professor of Agriculture:

(1) Very good indeed. Might be applied to all hall stoves.

A. R. J. F.

We have been trying for twelve years to impress our farmers with the fact that one of the prominent weaknesses of Canadian agriculture is unappropriated land and nonproduction of wool and mutton. The country is really doing nothing in this respect in comparison with others, and what we could do by improvements, what by ordinary management, and what we are only doing now, may be thus illustrated:

	<i>Canada Annually.</i>
Present wool and mutton.....	\$9,280,000
By ordinary attention.....	20,000,000
By improvements.....	30,000,000

These have no reference to production of pure breeds as a specialty, but the use of them with the common sheep of the country in order to realize annual crops from our so-called comparatively worthless possessions, in addition to pasture connected with arable.

If the 3,793,800 acres of ranches already rented in our Northwest Territories are equal to the ordinary hill grazings of Britain, they will maintain 1,250,000 head of sheep in place of the present 75,000 cattle, 6,318 horses and 16,431 sheep (see Dr. McEachran's report just issued). These represent about 100,000 sheep, (1) hence, were these natural runs improved, it is safe to estimate they would carry over 2,000,000 head, in addition to cattle, and would thus stand at an annual revenue of \$8,500,000 in wool and mutton alone.

We are not believers in an equal revenue being realized in wool and mutton by any breed per acre from our best cropping soils, as compared with, for example, dairy products, and so the object of the experiment now to be submitted was to test the ability of improved pasture on such soil to maintain so many sheep per acre per annum, and compare with cows and store cattle.

For this purpose we chose a four year-old acre of permanent pasture, the make-up, condition and management of which are now familiar to all interested. Divided field in two equal parts, and on May 5th put on five shearling ewes—Oxford, Shrops and Cheviot—that weighed an average 107 lbs. On May 23rd put two others to keep down roughness of pasture, that averaged 139 lbs. As these seven sheep were unable to do this, we added seven stock rams on June 9th, thus making fourteen in all. Of course these were kept separate, and rotated from field to field. Removed the rams on July 2nd, and on August 3rd also removed the two extra ewes, when the extraordinary dry season was telling. No grain or extra food of any sort was allowed.

At this critical time of grazing we made the following observations on the appearance of the grasses and clover that composed the pasture in question:

Meadow fescue.....	Most plentiful of any.
Alsike clover.....	A large quantity.
Canadian blue.....	Considerable quantity.
White clover.....	Medium in quantity.
Orchard.....	Medium.
Timothy.....	A good average.
Red-top.....	Good.
Red clover.....	A small quantity.
Italian rye.....	Very little.
Yellow oat.....	Very little.
Perennial rye.....	None. (2)

(1) Surely, Prof. Brown underrated this! I make the cattle = 8 sheep per head and the horses = 10 sheep per head which + the 12,431 sheep, = 676,000 sheep. Horses pay the mischief with grass, and are always, when kept on agistment, as it is called, charged higher for than cattle.

A. R. J. F.

(2) Observe what is said about ryegrass at p. 39.

A. R. J. F.

The experiment with these sheep was closed on Oct. 1st, as they were required for distribution to service. At this time the pasture looked well, a good bite having been left; hence other sheep were put on and grazing continued until snow came, on Nov. 20. It is not necessary to take advantage meantime of this subsequent depasturing.

The average grazed during the term from May 5 to Oct. 1 was fully seven head per acre; (3) the increase to weight was 22 lbs per head. That is the statement; what does the Canadian farmer think of it?

Some will say, "Only \$7 value of wool and mutton per acre per annum after all." True in that respect, though the animals were pure bred, and up-keep of vigorous growth their case and not one of immediate consumption. The grazing of sheep is not usually looked upon as worth more than \$1 a summer in Ontario, but unfortunately the average is not a very bright thing, and usually requires one acre per head. (4)

The correct criticism is to compare the result with something more familiar and under equal conditions. We had this immediately alongside the acre in question as given in Bulletin XX. There, during 1887, 4,010 lbs. of milk were obtained per acre, and consequently a value of about \$40. Then, again, it is usual to say that from four to five sheep are equal to one cattle beast upon pasture; in this comparison, therefore, we have this pasture representing actually one and one-half cow per acre.

But apart from these facts, we are gratified in placing on record for the use of our people the continued prominent good conduct of our mixture of grasses and clover under very severe circumstances, as a piece of temporary or permanent pasture in association with crop-growing. We have now demonstrated beyond doubt that such pasture produces milk, beef and mutton in quantity three times more than the present average of the Province of Ontario.

THE POULTRY YARD.

RAISING BROILERS IN A NUTSHELL.

P. H. JACOBS.

The incubator; temperature of incubator and brooder; feed for chicks; warmth; bowel disorder; warm water; more animal food needed early by some breeds than others; choice crosses; cost and growth; sale of broilers; best soils for a broiler farm; body lice.

To conclude the subject of broilers, and to enable those interested to have a handy number for reference, I will endeavor to condense my experience in a small space, believing that the inexperienced will find it useful in many ways:

1. Any kind of an incubator that will permit of keeping eggs at the proper temperature will hatch them if attention is given to it by the operator, observing, of course, the proper conditions for moisture.

2. The temperature for hatching eggs is 103 degrees and the temperature of a brooder should not be under 90 degrees the first two weeks, nor under 80 degrees until the chicks are six weeks old.

3. No food is required for the first 24 (or even 36) hours. Then keep granulated (pin-head) oatmeal in a little trough, always within their reach, giving soaked bread and milk three times a day, until they are three days old, when they may be given a little chopped meat once a day.

4. An excellent bread may be made for them by combining equal parts of ground oats, corn meal, middlings, and

(3) Equal to nearly a cow per acre.

A. R. J. F.

(4) Only last week, a correspondent of the R. N.-Yorker said that he turned his 12 sheep into a 25 acre lot, and kept them there all the summer!!!

A. R. J. F.

ground meat, baking the mixture in an oven. Stale bread of any kind, crackers, or other cereal food are also excellent.

5. As soon as the chicks are able to eat wheat and cracked corn they will require but little labor in feed, as it will be necessary only to give them a morning and night meal of soft food. The soft food may consist of corn meal, ground oats and ground meat, equal parts, scalded; but any variety, such as cooked potatoes or turnips, chopped cabbage or onions, milk or anything they will eat, may be given with the soft food or at noon.

6. Warmth is the most essential requisite in raising chicks. They must never become chilled at any time.

7. When the chicks crowd under the brooder or under the hen, it indicates that they do not get sufficient warmth, and when they are found dead, without apparent cause, under the brooder in the morning, it indicates insufficient heat, the deaths occurring from crowding.

8. If too much warmth is given, the chicks will sleep along the edges of the brooder. It is better to give too much than not enough.

9. If chicks have bowel disease, and become "clogged," they have at some time been chilled. If the bowel disease is more prevalent among those chicks that are shooting out feathers very rapidly, it indicates that a meal of chopped raw meat is needed once a day, as the debility occurs from lack of sufficient nitrogenous matter to produce the feathers. The young of all birds require animal food until they are feathered, and chicks are no exception.

10. Give water in vessels so contrived that the chicks can wet no portion of the body. Dampness is fatal. Warm water should be used at all times if possible.

11. Hard-boiled eggs will cause bowel disease, but a raw egg mixed with the food for 25 chicks, three times a week, will invigorate them.

12. Adult fowls and chicks should never be in the same building, as lice always come from the adults to the chicks.

13. Never allow chicks in the open air in damp weather until they are a month old, and not then unless they are strong and active.

14. Dorkings, Leghorns, Games and Houdans require more animal food when very young than Brahmas, Cochins, Plymouth Rocks and Wyandottes, and they begin to feather earlier.

15. The chicks that appear almost naked until well grown, are usually easy to raise, as they do not feather fast enough to become debilitated.

16. The cross of Wyandotte or Plymouth Rock cock with Brahma or Cochins hens, produces hardy chicks that grow rapidly and large; but the most breast and plumpest carcasses are produced by crossing Dorking, Game, or Leghorn cocks with hens of any of the large breeds. (1)

17. Contrary to claims against the cross, one of the best crosses for broilers is the Brown Leghorn with the Brahma or Cochins. The carcass has a plump breast, and yellow legs and skin. Such chicks, however, should be sold for small-sized broilers, as the combs appear too soon to permit them being sold when older.

18. Broilers are sold entire, the feathers only being removed. They must be dry-picked, the pin feathers removed, and the skin free from bruises or rents. Pack in boxes or barrels, and ship by express. They cannot be sent to market alive in cold weather, as they would perish.

19. The cost per pound of broiler, for food only, is five cents; but the cost of the eggs for hatching, fuel and warmth, labor and interest on investment must be considered in the cost.

(1) Fancy crossing Dorkings to gain size!

A. R. J. F.

20. If well fed, the chicks will double their weight every ten days until they are forty days old. If forced, they will weigh a pound each when six weeks old, and two pounds at ten weeks.

The space used on the broiler farms under shelter is 47½ feet, with yards 5x16 feet, for 100 chicks. They never leave this space until they are sent to market. The brooder is one yard square. As the brooder house is warmed by the heat that escapes from the brooders, if the chicks grow too large for the brooders (by which time they are usually well fattened) they do not all go under the brooder.

22. The first broilers usually come into market about February 1st, and they should weigh not over a pound. Then follow those not over 1½ pound, in March; April and May demand sizes not over 1¾ pound. The prices vary from 25 to 60 cents, and occasionally more, per pound, being highest in April and May.

23. The best market is New York city early in the season, but Boston prices equal those of New York later. Chicago prices equal those of New York, but the demand is a little later than in New York for the early lots.

24. Sandy soils that cannot be devoted profitably to agriculture, make the best locations for the broiler business, as such soils dry immediately after a rain, while the water dissolves and carries down the filth, thus preventing cholera and gapes.

25. Whenever the chicks droop, though receiving the best of care, look on the heads and necks for the large body lice, and if any are found, rub a few drops of lard on the heads and throats, but do not grease the bodies.--R. N. Yorker.

Manure from Crops returned to the Soil enough.

A. B. L., Greysville, Ohio. — I have 160 acres of land, divided into 16 ten-acre fields; upon this I raise a rotation of crops, consisting of corn followed by oats and this followed by wheat, when it is seeded down. In this way I have under cultivation each year 10 acres of corn, 10 of oats and 10 of wheat. Each field is plowed in turn, making a regular rotation. I raise good crops and neither buy nor sell any grain, feed or fertilizer. I save the manure judiciously, hauling what is said to be 200 loads; but this I doubt. Anyway, everything raised on the farm goes back to the soil. What will be the condition of my farm 25 years hence, or am I returning as much to the soil as I am taking off? I should like a scientific answer to this and think it would be of interest to others as well as us, as there is a great question involved.

ANSWERED BY HENRY STEWART.

“Out of nothing nothing comes.” So that if all crops are fed to farm animals and the manure so made is returned to the soil, something is taken from the soil by which the growth of the animals is made up. When young stock are reared the loss to the soil is more than when mature animals are kept, the loss consisting of phosphoric acid, lime, and nitrogen chiefly, of which the bones and flesh are in greater part made up. The carbonaceous portion of the food need not be taken into account, as this is largely if not wholly, (1) contributed by the atmosphere. A certain portion of the nitrogen is also thus contributed, (2) equal to about sufficient to produce a crop of seven or eight bushels of wheat per acre only. But this is something, and when full grown animals are kept for fattening and all the manure is put on the land, this atmospheric contribution will leave a gain. If, however, cows are kept for

(1) Wholly. A. R. J. F.
 (2) To the soil, not assimilated by the plant from the free nitrogen of the atmosphere. At least, there is no proof of the latter theory. A. R. J. F.

milk, or young stock are reared, this atmospheric nitrogen will not supply enough for the growth of the animals or for the milk produced and there will be a considerable loss.

But the soil contains a very large amount of undeveloped or reserved plant food, which is gradually made available by tillage and manuring, and will last many years under the conservative system described. (1) A good arable soil has been found to consist of the following substances, which contribute food for the crops in one acre, and nine inches deep:

Silica.....	2,307,700	pounds.
Alumina.....	255,000	“
Oxide of iron.....	132,000	“
Lime.....	60,900	“
Magnesia.....	79,800	“
Potash.....	34,200	“
Soda.....	36,200	“
Phosphoric acid.....	19,000	“
Sulphuric acid.....	1,830	“
Chlorine.....	1,800	“
*Organic matter.....	70,000	“
*(Containing of nitrogen.....	1,120(2)	“

Total.....3,000,000 pounds.

Of these the crops of a usual rotation take from the soil the following amounts per acre.

Pounds of	Wheat.	Clover Hay.	Grass Pasture.	Corn.	Oats.	Total.
Nitrogen.....	45	102	49	56	52	304
Sulphur.....	7.8	9.4	5.7	14.7	8.0	45.6
Potash.....	27.9	87.4	56.3	58.0	38.1	267.7
Soda.....	3.4	4.1	11.9	2.0	7.2	28.6
Lime.....	10.2	36.1	28.1	15.7	11.8	151.9
Magnesia.....	7.7	30.9	10.1	12.3	9.2	70.2
Phosphoric acid..	22.7	25.1	12.7	25.1	1.89	101.5
Chlorine.....	1.9	9.4	16.2	—	5.5	33.0
Silica.....	111.1	6.8	57.5	54.5	94.1	324.0
Total.....	237.7	361.2	247.5	238.3	244.8	1329.5

or, in all, 1,329.5 pounds out of the large quantity before mentioned. The nitrogen contained in the soil is seen to be sufficient for nearly 40 rotations, or for 200 years, without taking account of the atmospheric supply and that supplied by the manure spread upon the land, and so on all through the list.

But the greater part—in fact nearly the whole of the most important elements of plant food are unavailable because they are insoluble and exist in more or less fixed and inert combinations and are gradually developed and made available by culture. The amount thus set free year by year is called the reserved fertility of the soil.

Now, while it is impossible to say particularly how much is returned to the soil in the manure made, because this depends upon several important conditions, it is enough to say that if all the vegetable products are fed and only the animal products are sold, and the manure is carefully saved, none of the liquid being lost and none wasted by exposure to the weather or by over-heating in the heap, the land should gradually gain in fertility by this careful and conservative method of culture and the longer it is cultivated the more productive it would become up to the maximum ability of

(1) A great point, very seldom appreciated. A. R. J. F.
 (2) A misprint, I presume, for 12,000. The figures are rather incorrect. A. R. J. F.

each crop. At the end of 25 years, starting with fairly good soil and with favorable seasons, the land should produce 30 to 35 bushels of wheat; two to three tons of clover hay; pasturage for one cow for the summer, 60 to 80 bushels of corn and 50 bushels of oats, all per acre."

THE FERTILITY OF SOILS.

BY SIR J. B. LAWES, LL. D., F. R. S.

EDS. COUNTRY GENTLEMAN.—A writer in your issue of Dec. 23 has requested me to make some further remarks on the fertility of soils. Quoting from an article of mine published in your paper in April last, he says, "taking the two propositions together it would seem that sooner or later the earth must cease to yield, and the human family starve."

It will perhaps be advisable for me to quote the two propositions which led to such terrible conclusions, more especially as I see no reason for altering or modifying anything which I have previously said. Nor do I see anything in them to

limit the multiplication of the human race. In the writings of the apostles it is true that we find sentences which point to a somewhat early destruction of the earth, and I think the same idea is frequently expressed in the writings of theologians. Still, when we bear in mind the vast period of time which must have elapsed before this beautiful earthly residence was adapted to become the abode of man, and how much work he has yet to perform before he is worthy of such an abode, my own ideas would certainly lean toward a continuation of the human race upon the

earth to very remote periods of time; and as food is an absolute necessity of our existence, I should not adopt any views which would indicate that the earth would cease to yield her increase. The quotations referred to are as follow:

"In agriculture the soil generally loses fertility, or under certain circumstances its fertility may be kept stationary by imports of fertility from other soils, but the restoration to an arable soil of its *lost fertility* * * * can only be effected by operations too costly for adoption."

"The restoration of the fertility which a soil has lost during a long period of arable cultivation cannot be profitably carried out."

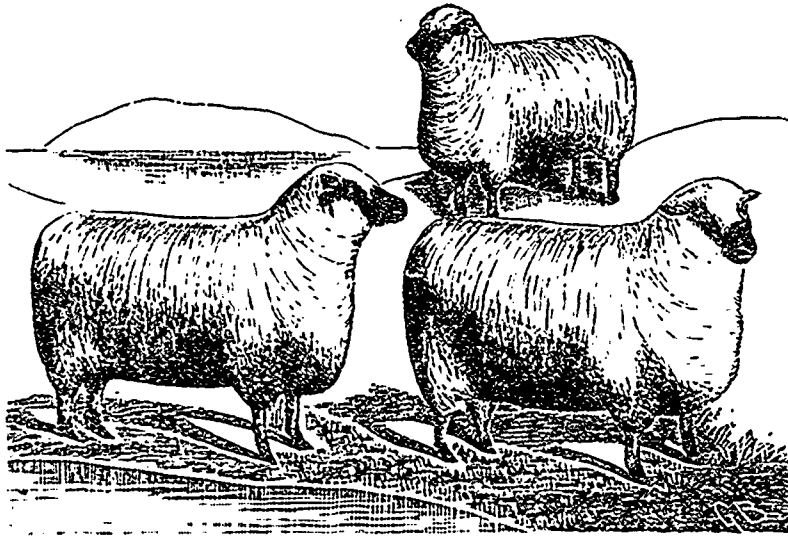
Let us assume that a farmer in the States breaks up a pasture and begins to grow corn or wheat, probably burning the straw, and he continues to do so for, say, fifty years—the period is immaterial. After a time he finds that his crops are not so good, and he then sows clover, and by plowing the clover under he rests his land for a year, by which means he gets much larger grain crops. Some one suggests to him that his clover will be improved by the application of a little plaster. He applies it and finds that his crop of clover is doubled, and his corn crops largely increased. It is possible

that half a century may elapse before a change becomes necessary, but sooner or later cattle are introduced; the straw of the corn crop is made into manure, and although the amount of the fertility of the soil is drawn upon, still, under judicious management, such a process may go on for generations upon some soils without any sensible decline in the crops.

If, however, the composition of the prairie soil had been examined by a competent chemist when it was first broken up, and again examined after a century of arable cultivation, a very large reduction in the stock of fertility would be certainly apparent, and carbon, nitrogen, phosphates and potash, would be found in much smaller quantities.

From the analyses we have made of various prairie soils, and judging also from the difference in the composition of my own pasture and arable land, I should think it quite possible that the first nine inches of soil on an acre of land might have lost 20,000 pounds of organic matter, and 2,000 pounds of nitrogen. Upon my own arable land there can be no doubt

whatever that a loss of considerably more than this amount of organic matter and nitrogen, has taken place. Still we can, by artificial manures, grow 36 bushels of wheat and 48 bushels of barley every year. But in doing this we do not restore the lost fertility to the soil, and at the end of 40 years of this treatment we are not in a position to say that the soil is any richer in fertility than when we commenced. The prospects for the human race in the distant future would be bad indeed if, in order to produce good crops, the fertility of the soil had to be kept up to



GROUP OF IMPORTED SHROPSHIRE SHEEP.

its original standard. All we can hope to do is to grow equally good crops upon a poorer soil, by the judicious use of more active manures.

It is a somewhat remarkable fact that upon our *unmanured* rotation, the two crops which may be called the backbone of British agriculture—turnips and red clover—have ceased to grow in less than 40 years, while wheat and barley continue to yield fairly good crops. There is still a large amount of fertility existing in this soil, but it has ceased to be available for these plants. By the application of phosphates the turnips could again be grown, and by the application of *potash* and phosphates, the clover would grow. Or, if the land was left undisturbed for a century or two, it might be again in the position to grow a rotation of crops; still, the failure of two crops out of four in so short a period of time, shows that the available food in a fairly good soil is, for some crops, less than many would be disposed to believe.

The question whether the soil in a laboratory or a mine has already been discussed by us in one or two publications. Whether the microscopic dust which comes to us from other worlds furnishes us with any phosphate or potash I do not know, but apart from this, I believe that every pound re-

moved by stock or crops is so much taken from the amount in the soil, and in consequence so much reduction of its fertility. In regard to the nitrogen the matter is still unsettled, as ammonia in a small quantity is furnished every year by the rain, while several men of science *have endeavored to prove* that plants or soils, or both, obtain large supplies of nitrogen from the atmosphere.

Last summer Dr. Gilbert attended a meeting at Berlin, when several papers were read on the subject, and he himself read a paper showing that on a soil in one of our fields, where no manure containing nitrogen had been applied for nearly forty years, a crop of lucern during the last five or six years had from some source obtained about 800 lbs. of nitrogen, or between 100 and 200 lbs. per acre per annum. Dr. Gilbert stated that within the range of the roots of this deeply rooting plant the acre of land contained 20,000 lbs. of nitrogen, and that there was no evidence to prove that the nitrogen contained in the lucern did not come from the soil. That wheat, growing in the same field and almost touching the lucern, cannot obtain more than about 15 lbs. per acre of nitrogen, while the lucern can obtain more than ten times that amount, is a fact of the greatest practical importance, and *shows us the immense value of the leguminous plants to the practical farmer.* To him it is a matter of indifference whether the source of the nitrogen in these plants is the atmosphere or the soil; it is quite sufficient for him that his surface soil is enriched and his corn crops are increased.

Perhaps it may be said that it equally matters little whether we restore our soils to their former state of fertility, or whether we, by other means, grow as good crops as formerly upon our comparatively impoverished soils. It is, however, as well that the distinction between the two should be kept in view. My previous article was in answer to one written by A. P. S., a gentleman with whom I have had much correspondence. He is a strong advocate for the restoration of the fertility of our soils by putting back the organic matter which they originally contained; and at the same time he has an utter contempt for nitrogen, whether it be as ammonia, nitrates, or animal refuse, such as blood.

A. P. S. appears to be fortunately situated in regard to his farm, and has plenty of waste land from which he can obtain fertility. Every one is not so fortunate in this respect, and if he were, it is by no means clear that such an operation would be profitably carried out by a practical money-making farmer. While, therefore, it must be admitted that in breaking up new land, and in its arable cultivation, there is a large destruction of fertility, still, this destruction can no more be avoided than we can avoid the waste which takes place in every coal pit. We cannot restore our exhausted coal pits, nor can we restore our exhausted fertility, but we can find a substitute for both, and I may mention in connection with substitutes, that in my own memory a wheelbarrow might have held all the mineral phosphates which were known to exist.

The world is full of what may be called, as a distinguishing term, artificial fertility, and the source of this fertility has hardly yet been tapped. Natural fertility is so much cheaper, and is still so abundant, that artificial fertility plays quite an insignificant part in the agriculture of the world: but in the distant future a much larger portion of our crops must be grown by artificial fertility. The Falls of Niagara, and the wasted power of our streams, may some day be employed in the manufacture of nitric acid from the nitrogen of the atmosphere. An abundant and cheap source of nitrates for the temperate portion of the earth, and irrigation for the tropical portion where the rainfall is deficient, would increase the crops of the world to an almost unlimited extent, and

these are operations which we may fully expect to be carried out when the fitting time arrives.

NOTE.—American readers will bear in mind that the word "corn" is always understood in England as including grain in general, and by no means restricted (as in this country) to Indian corn.—EDS. (1)

FARM MEMORANDA.

THE WOBURN EXPERIMENTS.

On Thursday a party of members of the Royal Agricultural Society, and of English and foreign visitors, went to Woburn to inspect the field experiments carried out there since 1877, accompanied by Dr. Voelcker, chemist to the Society, and Mr. Carruthers, the Society's botanist. The primary object of the experiments was to test the accuracy of the estimated values of manure obtained by the consumption of live stock of different kinds of purchased foods. These manure values had been given in a table published by Sir John Lawes. Sixteen acres in Stackyard Field, the soil of which is a light loam, are devoted to rotation experiments. Seeds, wheat, roots and barley, one acre to each are grown. To half the plots manure made from feeding cotton cake and maize meal respectively is applied, and on the other half artificial equivalents of the manurial constituents of those foods were used. For several years there was practically no difference in the results, and if only the manures made by feeding the cotton cake and maize meal had been applied, it might have been supposed that the chemists' estimates of manurial values were entirely wrong; but as there was also no difference in the results from the application of the artificial equivalents, although that of the cotton cake contained six times as much phosphoric acid, nine times as much lime, nine times as much potash, and more than four-and-a-half times as much nitrogen, the only possible conclusion was that the field was so much enriched by the former manure as to yield its maximum produce, more than which could not be forced by the richer manure. Measures were accordingly adopted for exhausting the excessive fertility of the soil. At the same time the acre plots were divided, one-half of each being manured less liberally than before and the other not at all. The result last year was that in three out of four cotton-cake plots a considerably larger yield of wheat was obtained than on the corresponding maize-meal plots, while it was equal in the remaining pair. In the case of barley, the cotton-cake plots gave the greater produce in all four comparisons. This year the cotton-cake plots of wheat and barley look like beating the maize plots again, the superiority being especially observable where manure at all has been put on for either the present or the previous crop in the rotation. The pea crop also shows very distinctly the superiority of manure from cotton-cake. In the tares there is but little difference to be distinguished by the eye.

In another set of experiments, wheat and barley have been grown year after year for ten successive years with the aid of various manures, as at Rothamsted, and the results so far have, in the main, confirmed the conclusions derived from the experiments at that place. Mineral manures alone have produced very little effect, while nitrogenous manures, either alone or in combination with minerals, have never failed to bring forth an extra yield of corn, as compared with that of the unmanured plots. It is also to be noticed, by way of commentary upon the impression that the soil is exhausted

(1) The italics through out this article are mine. A. R. J. F.

by the application of nitrate of soda or sulphate of ammonia, that plots on which these manures alone have been applied every year have yielded largely increased crops, and the soil as yet shows no sign of exhaustion. In some seasons nitrate of soda has given the best results, and in other sulphate of ammonia—the former doing best in a dry season, and the latter in a wet one. This year the crops of wheat and barley grown from nitrate of soda are far superior to those produced from sulphate of ammonia. Year after year, on plots from which the nitrogenous manure previously applied has been withheld, the yield of corn has been greatly reduced, in spite of the continued application mineral manures, such as superphosphate of lime and sulphates of potash, soda, and magnesia. This season neither wheat nor barley is as good as it has been in many previous years, the light soil at Woburn having been in great need of rain. The barley especially is light. Still, the effects of the various manures are clearly enough to be seen, and the same lessons are taught as in previous years. The nitrogenous manures give striking results, while plots manured with minerals only have little, if any more wheat, and not a great deal more barley on them than the unmanured plots. As usual, the best results of any are attained by the use of very liberal dressings of nitrogenous and mineral manures in combination.

In some experiments intended to test the durability of various clovers, English white has stood best, alsike next, and cow grass third. Dutch white has not stood nearly as well as English. Common red clover has died off in a few years, in spite of any manuring, and Mr. Carruthers concludes that none of the manures yet tried can cure what is known as "clover sickness" in land, and he doubts whether it can be cured by manuring at all.

At the luncheon, Mr. Wells, in thanking the Duke of Bedford for the advantages enjoyed on the Woburn Estate by the Royal Agricultural Society, said that the expense to the Duke was about £1,000 a year. Some of those present visited Woburn Abbey, which, with the park and grounds, is always thrown open on the occasion of the annual excursion.

Ensilage—Growing and Storing.

Yield per acre.—From our weighings this year I am led to think the yield per acre of ensilage corn has usually been overestimated; as also, though to a less degree, the capacity of silos. A ton of ensilage is estimated to occupy fifty cubic feet; and we are told that 30 tons per acre of ensilage is not an unusual crop. With us the green fodder weighed about 30 cwt. to the load, and the same amount of fodder when dried in the stook 30 days weighed only 12 cwt. to 14 cwt. per load. Most of our corn, from causes already mentioned, was considerably dried in shock before it was drawn in. On the average, as we judge from weighing every load that went in, it had dried down to one-half its original green weight. But by estimate, our three silos as now filled should hold 250 tons of green, or slightly wilted, mature ensilage. We put into them, by actual weight, of this half dried ensilage just 189,995 pounds, that is 5 pounds less than 95 tons.

Now, until our corn began to tassel it was all an exceedingly rank, healthy, heavy growth, except the turf ensilage, some 8 acres. The regular hill corn was a "full stand," too, of three or four stalks per hill. While the corn was tasseling and earing, the chinch bugs injured it considerably. And still 24 acres of hill corn and 6 acres of ensilage drill corn went into the "capacious maws" of those three silos! I had supposed half of the area would fill them. It was cut close to the ground, and weighed and cut into the silos ears and

all, and yet 30 acres of it weighed a little less than 95 tons actual weight—a little over three tons per acre of nearly cured corn and fodder. I do not think it would have weighed much over 6 tons per acre green weight, or 8 tons if the chinch bug had not attacked it; possibly 15 tons per acre for the heaviest acre of the ensilage corn in drills, weighed green. If any one has actually weighed on the scales an entire field of ensilage corn, measured the land accurately with chain or tape line, and got a yield of 30 tons per acre. I wish he would report the exact facts in these columns. Weather and bugs permitting, we hope to raise the maximum crop next year on rich, heavily manured land, weigh it all exactly as this year and report facts.

W. J. CHAMBERLAIN.

REMARKABLE BUTTER RECORD!—It seems there are sceptics on both sides of the Atlantic, and the following is how one of them burlesques the extraordinary stories which he reads occasionally in his own American papers:—

The Jersey heifer Maria Jane of St. Sheepert 284.621 A.J.C.C.H.R.S. was dropped January 18th, 1868, and is, therefore, a little over nineteen years old. She is closely related to the Poke Stogis family of Jerseys, her sire having been brought over on the same ship with Poke Stogis 17, while her ancestress on the maternal side is a great-granddaughter of Poke Stogis of Hohenlinden, imported by that great Jersey breeder, Mr. Scooper. The test was from December 6th to 12th inclusive, conducted by the Swampville Jersey Breeders' Association, with every precaution necessary to secure absolute accuracy. The following is the record:—

Date.	No. Milk-ings.	Lb. Milk.	Lbs and ozs. Butter (salted.)
December 6.....	2	124½	5 15½
December 7.....	2	123¾	6 1½
December 8.....	2	121½	5 15½
December 9.....	2	127	6 2½
December 10.....	2	126	6 0
December 11.....	2	125	5 13½
December 12.....	2	119½	4 15½
Total		867½	41 10½

The feed of Maria Jane during this remarkable test was three baskets of pine shavings per day—requisite colour having been given to them by placing green goggles on the cow's eyes—and two buckets of mingled sawdust and cottonseed meal in the proportion of 16 to 1. During two days of the test the thermometer was 37 deg. below zero, and in the remaining days the cow seemed to be labouring under a mild attack of flatulency. Under favourable conditions, I have no doubt Maria Jane will raise her record to 50 lb. Of course, my object in making this remarkable yield known through the columns of your valuable paper is not to advertise the stook in my possession, although I may remark in passing that Maria Jane is due to calve Jane 16th, and if she drops a bull it goes to Mr. Scooper for the sum of 126,840 dols.

Ag. Gazette—Eng.

Liebig's Great Fertilizer.

- (1) Dry peat, twenty bushels.
- (2) unleached ashes, three bushels;
- (3) fine bone dust, three bushels;
- (4) calcined plaster, three bushels;
- (5) nitrate soda, forty pounds;
- (6)

sulphate ammonia. thirty-three pounds; (7) sulphate soda, forty pounds. Mix numbers one, two and three together; then mix numbers five, six and seven in five buckets of water. When dissolved add the liquid to the first, second and third articles. When mixed add fourth article. The above was prepared by Liebig as an artificial guano, which every farmer can manufacture himself. The farmer if he wants good fertilizers must make them himself. In following the above receipt he must be careful not to change the ingredients, as they have important chemical effects upon each other. Nothing, for instance, will take the place of muck, on account of its carbonic (1) acid being a powerful solvent. The great trouble about people preparing these things is that they do not adhere strictly to the receipt, thinking either that they know more than Liebig or that a small departure makes no difference. All these ingredients are easily obtained. Any farmer who makes this himself will save upon the cost of a ton the cost of a ton of phosphate and have twice the value of the phosphate for his money. The cost of Liebig's preparation is estimated to amount to from \$15 to \$20, and it will go over five acres. (2)

Vineland Weekly.

Jersey Milk for Calves.

The milk is tested constantly by the only true test—*i. e.*, the churn, and the average in summer is 1 lb. to 7½ to 8 qts., in winter 8½ to 9 qts. Claribel, when giving 1½ qts., made 12½ lb. in seven days, afterwards she gave 17 qts. daily. Star and Venus both 16½ qts. daily. H. Bee made 9½ lb. butter, after having milked fifty-two weeks with her first calf, and within six weeks of calving. Lady Clay lost many calves with scour, and found this came from the first milk of these very rich milkers being so purging, the acid destroyed the coats of the stomach. Since feeding new born calves from cows calved some time Lady Clay has had no further trouble. The calf is tied up so that the mother can lick it, but she is milked dry. The cows are fed 6 to 8 lb. Bibby's cow meal during winter, in summer about 2 lb. For roots kohlrabi is used entirely during winter for the dairy cows; silage was fed for two months last winter, and the butter was yellow as in summer.

Jerseys are chiefly noted for their butter-producing qualities. They give a moderate amount of milk, rich in butter fat, and individual animals have produced more butter from a given quantity of milk than cows of any other breed. The Jersey is strictly a butter cow, and her usefulness is limited to that peculiarity. Her milk is not as suitable as some others for family use, on account of the rapid rising of the cream globules and their rapid concentration into a tough, leathery mass, which will not again easily mix with the milk, and Jersey skim milk is a thin, blue, and not particularly appetizing-looking compound. Another peculiarity of Jersey milk, and one which is a source of great trouble to breeders, is the effect it has on young calves, causing them to scour nearly all the time during which it is furnished them for food. Any one who is familiar with Jersey calves will have

(1) Meant, I suppose, for carbonic.

A. R. J. F.

(2) I should really like to know where this receipt is to be found. I cannot recommend such infinitesimal doses as 2.75 lbs. of nitrogen and 26 lbs. of bone-meal to the acre! The cost of the whole would not exceed four dollars.

A. R. J. F.

noticed the unthrifty appearance which they present while being fed on the milk of their kind. I will here relate a little incident about a Jersey calf. A friend of mine had one shipped to him from the neighborhood of Philadelphia. On getting it home, he was very much disappointed with it on account of its unthrifty appearance, and mildly wrote to the shipper, asking what he fed his calves on, or whether he fed them at all. The characteristic reply came back, that Jersey calves were always thin, it was a peculiarity of the breed. My friend decided to try if he could cure this "peculiarity," as far as this particular calf was concerned, and put it on an Ayrshire cow. In a few weeks it was as plump and sleek as anything in his barn. This idea has not, I believe, been patented, and Jersey breeders are at liberty to use it freely.

Ph. Stock Journal.

NON-OFFICIAL PART.

Complimentary Notice.

THE GARDEN.

For the management of vegetable gardens and practical instructions concerning the culture of flowers—for hints and information concerning all kinds of seeds, planting and cultivating all vegetables and flowers, D. M. Ferry & Co.'s Seed Annual for 1888 will be found as complete as any work of a similar character ever issued. The variety and extraordinary range of the information given renders their Annual worthy the special attention of every one interested in having luscious vegetables or beautiful flowers. D. M. Ferry & Co. make the growing and sale of Onion Seed a leading specialty, and give so much information on onion culture as to make their Annual of permanent value to all onion growers and gardeners. The Annual can be had for the asking. Address D. M. FERRY & Co., Detroit, Mich.

THE AMERICAN AGRICULTURIST.—The Publishers of the *American Agriculturist* announce in an advertisement elsewhere that that periodical, now nearly fifty years of age, begins the new year with a change in form, though the old staff which has been with the paper for thirty years remains. The Publishers are bringing out the first reproduction in this country of "Christ on Calvary" which, together with "Christ before Pilate," is offered to subscribers.

Consumption Surely Cured.

To the Editor:—

Please inform your readers that I have a positive remedy for the above named disease. By its timely use thousands of hopeless cases have been permanently cured. I shall be glad to send two bottles of my remedy FREE to any of your readers who have consumption if they will send me their Express and P. O. address.

Respectfully,

DR. T. A. SLOOM, 37 Yonge St., Toronto, Ont.