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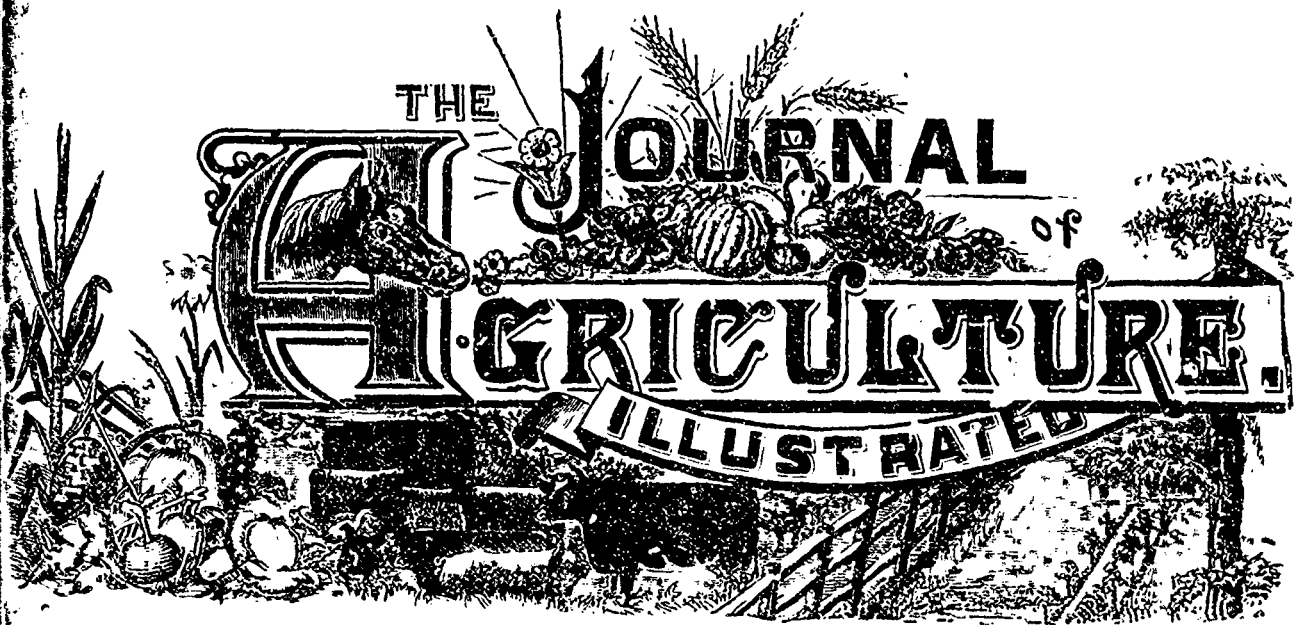
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Published for the Department of Agriculture for the Province of Quebec, (official part) by  
 EUSEBE SENECAI & FILS, 20, St. Vincent St. Montreal.

Vol. X. No. 1.

MONTREAL, JANUARY 1888.

\$1.00 per annum, in advance.

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

OFFICIAL PART.

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Council of Agriculture of the Province of Quebec.  
 Quebec, November 23rd, 1887.

**PRESENT:**—The Hon. Messrs. E. Dionne, L. Archambault, J. J. Ross, G. Ouimet, and Messrs. J. N. Blackwood, J. M. Browning, A. Casavant, E. Casgrain, A. Guilbault, S. Lesage, E. J. de Blois, Chas. Gibb, I. J. Marsan, L. H. Massie, Col. W. Rhodes, and J. Tarte.

M. Massie in the chair.  
 The Secretary read the minutes of the last meeting, which were approved.  
 The Hon. G. Ouimet, seconded by Mr. Blackwood, moved :  
 That M. Massie be reelected president of the Council for the present year. (Carried.)

The Hon. G. Ouimet, seconded by Mr. Browning, moved :  
 That Col. Rhodes be elected vice-president of the council for the present year. (Carried.)

Mr. Browning, seconded by the Hon. G. Ouimet, moved :  
 That the Committee on Horticulture be composed of the following gentlemen : Chas. Gibb, president; Col. Rhodes; J. Tarte; and E. Casgrain. (Carried.)

Mr. Browning, seconded by M. Casavant, moved :  
 That the Executive Committee be composed of the following gentlemen : M. L. Archambault, president; I. J. Marsan; L. H. Massie; A. Casavant; the Hon. G. H. Joly; and S. Lesage. (Carried.)

M. A. Guilbault, seconded by M. Archambault, moved :  
 That the Visiting Committee on Schools be composed of the following gentlemen : G. Ouimet, president; J. Blackwood; I. Tarte; E. Casgrain; A. Casavant; and S. Lesage. (Carried.)

The report of the president of the Committee for the establishment of a National Haras (breeding stud) was read, and Mr. Browning, seconded by M. Casavant, moved :

1. That the Council approves of the conclusions arrived at by the special committee appointed to report on the advisability of establishing a Haras in this province, and of the principles on which that establishment should be founded; 2. that it is the duty of the Council to request the government to take this important matter into its serious consideration, and to recommend the appropriation of a sum sufficient to establish a Provincial Haras; 3. that a special committee, composed of that already named, with the addition of Messrs. Rhodes and Lesage, be appointed to present this resolution to the Prime Minister, and to impress upon him the reasons that make for the foundation of such an establishment. (Carried.)

The report of the Visiting Committee on Schools was read :  
And the Council adjourned till 2 P. M.

SESSION OF 2 P. M.

**PRESENT** :—the Hon. Messrs. Archambault, E. Dionne, G. Ouimet, J. J. Ross, and Messrs. Browning, Blackwood, E. Casgrain, A. Casavant, A. Guilbault, I. Marsan, Massie, Lesage, Rhodes, Tarte, and Gibb.

The Secretary submitted and read the documents relating to the difficulties which have arisen in connection with the Agricultural Society of the county of Saint Maurice.

M. Michel Bourassa and one of the directors of the said society were introduced, and explained to the committee how the above mentioned troubles had arisen, and after discussion, Mr. Browning, seconded by M. Casavant, moved :

That the Secretary of the Council of Agriculture be directed to pay over the grant for the present year to the Saint-Maurice Agricultural Society ; but at the same time to impress upon the said society that the Council does not intend thereby to establish a precedent ; and that, for the future the society must conform to the instructions of the Council or else lose its grant. (Carried.)

M. Marsan, seconded by M. Tarte, moved : That the President of the Council be authorized to pay over the annual grants to the agricultural societies for the purchase of breeding stock only on condition that the said societies furnish a certificate of pedigree, together with a certificate of approval, of the stock so purchased, signed by the Veterinary Surgeons appointed by the Council, viz. Messrs. Couture and McEachran. (Carried.)

Mr. Browning, seconded by M. Ouimet, moved . That, for the guidance of the members of the Council, the Secretary be instructed to prepare and cause to be printed a copy of all rules and regulations passed by the Council actually in force and relating either to the Council, to the Agricultural Schools, or to the Horticultural and Agricultural Societies of this province : that a complete index to the proceedings of the Council since its institution be also prepared, that, as it is most important that these rules and regulations be printed and circulated among the members of the Council without delay, the Secretary be authorized to procure all the assistance he may require to insure the prompt distribution of the said documents : that, as soon as these documents shall be distributed, the Executive Committee be requested to examine them, to give them serious attention ; and to make a report on them to the Council as soon as possible. (Carried.)

The reading of the reports of the directors of the agricultural schools at Ste. Anne, L'Assomption, and Richmond, for the past year, occupied the rest of the session ; and the Council adjourned till the next day, November 24th, at 9 A. M.

SESSION OF NOVEMBER 24TH, 9 A. M.

**PRESENT** :—Messrs. Archambault, Ouimet, Dionne, Ross, Blackwood, Browning, Casgrain, E. Casavant, Gibb, Lesage, Marsan, Massie, Rhodes, and Tarte.

Was read, the report of the President of the Committee on Horticultural Societies, showing the progress of these societies and the amount of good done by them since their foundation in advancing the cultivation of fruit in this province.

M. Ouimet, paid a just tribute of praise to these societies, affirming that, during his visit to the last Intercolonial Exhibition held in London, he was convinced that the fruit from Canada was immensely superior to that exhibited by the other colonies both in quality and quantity ; and that this superb collection, while it commanded the admiration of all skilled orchardists, contributed not a little to the enlightenment of the general population as to the advantages enjoyed by the Canadian soil and climate already known so advantageously

from other sources. M. Ouimet concluded by saying that he was sure that our fruit growers would find, both in England and on the Continent, a certain and profitable market.

The report of the Principal of the Veterinary College of Montreal was read, and M. Ouimet, seconded by Mr. Blackwood, moved :

That the report of the Principal of the Montreal Veterinary College be received, and that the grant made to the English Veterinary College of Montreal be continued by the Government, the Council recommending that the amount of the grant in question be equal to that allocated to the Quebec Veterinary School, the Council esteeming both these schools of equal value to the province.

Was read, a letter from the Rev. M. Marcoux and M. Daubigny, director and principal of the French Veterinary School affiliated to Laval University, asking to be put on the same footing as the other two schools, and to be placed especially under the patronage of the Council of Agriculture.

Mr. J. J. Ross, seconded by M. Dionne, moved : That the request of MM. Marcoux and Daubigny be referred to a special committee charged to study the question, and Messrs. Massie, Archambault, Ouimet, Tarte, Lesage, and the mover, constitute the committee in question.

This motion being put to the vote, was carried by the following divisions :

*For* . Messrs. Browning, Archambault, Casgrain, Casavant, Marsan, Dionne, Ross, and Blackwood. (8)

*Against* . Messrs. Ouimet, Tarte, Lesage, and Rhodes. (4)

A petition was read from the Abbotsford Horticultural Society, praying to be exempted from holding competitions, in order to employ the funds of the society in the purchase of Russian fruit-trees for acclimatisation and distribution throughout this country. (Carried.)

A petition, from the Agricultural Society, No. 2, of the county of Charlevoix, was read, stating that, owing to the efforts and expenditure made in order to its worthy representation at the provincial exhibition, this society had been unable to hold its County Exhibition this year, and in consequence the society begged to be allowed to retain the Government grant for this year, in order to hold a more important exhibition next year, and to augment the prizes for Canadian horses and cattle, both of which exist in this county in greater numbers than in any other county in the province. Petition granted.

Mr. Browning informed the County that it is the intention of the Montreal Horticultural Society to hold an important meeting at Quebec, to share in which all those interested in the cultivation of fruit in this province will be invited.

*Resolved* : That the Council learn with lively satisfaction that the Horticultural Society intends to hold its next meeting at Quebec, for the purpose of there discussing matters relating to the culture of fruit ; that, considering the great advantages of these meetings, and that, in the opinion of the Council, it is important to insure the presence there of the representatives of those parts of the province in which such culture is chiefly practised, the Council submits the above proposition to the favourable consideration of the Government, and recommends that a sum of \$200 be placed at the disposition of the said society, to be employed in part payment of the expenses of the delegates from the more distant parts of the province.

At the invitation of the Council, Mr. F. Lyster, President of the Agricultural School at Richmond, entered into certain explanations concerning the improvements made at the school, the course of study pursued there, and its general management.

The Hon. J. J. Ross, seconded by the Hon. E. Dionne, moved : That, in the opinion of the Council, the Richmond

Agricultural School should do its utmost to engage the services of a permanent well qualified principal for that institution, and that, on this condition and provided that the proprietors furnish to the Government sufficient guarantees for its existence, on a proper footing, for a certain number of years, the Council recommends that the same subsidy granted to the other schools be paid to the proprietors of the Richmond school. (Carried.)

*Resolved*: That the Government be requested to add the sum of \$1400 to the annual grant to the Council, to enable it to meet the subsidies payable to the Agricultural Schools.

M. G. Ouimet, seconded by M. A. Casavant, moved:

That the cultivation of the farms attached to the Agricultural Schools ought to be carried on in accordance with the agricultural instruction given in such schools, and that the manager (*professeur-gérant*) should have all the latitude necessary to direct the work in accordance with it. (Carried.)

Certified true copy.

GEORGES LEOLERO, Secretary.

Quebec, 30th November, 1887.

(From the French.)

The London Chamber of Commerce offers a prize of £50 for the best sample of tobacco grown in England or the Colonies. Great efforts are being made in England to encourage the growth of this plant. The opportunity is worth taking for Canadians to be among the first occupants of the English market. The samples should be sent before the 1st December, 1888, to the Chamber of Commerce, tobacco section, London, England. For further directions, address Mr. Kenrick B. Murray, Secretary of the Chamber of Commerce, Botolph Street, Eastcheap, London E. C., England.

*Le Courrier du Canada*—7th Dec. 1887.

(From the French)

Should any of my readers care to try for the above prize, I shall be very happy to answer any questions in connection with the growth of the different qualities of tobacco. According to my experience, the small Canadian pointed leaf sort, with a queer-looking bent stem, sown in a hotbed in the first week of April, pricked out into a cold-frame in May, and finally set out in the open about the 10th of June, would be as likely to win the prize as any. Observe that quality, not size of leaf, is the desideratum.

ARTHUR R. JENNER FOST.

#### DE OMNIBUS REBUS.

Box 109, Lachine—Nov. 1st, 1887.

The *Montreal Star* which does not often concern itself with agricultural matters, has, in its issue of October 31st, a very sensible article on the neglect of growing roots in the province of Quebec.

After observing that "in Great Britain and Ireland the failure of the turnip-crop is looked upon as almost a national calamity," but that "here in Quebec they do not give the roots a chance to fail, as they do not sow them," the writer goes on to say that "those establishments of very dubious utility, our agricultural schools, do little or nothing to inculcate the knowledge of growing turnips or other root-crops, and agricultural societies in rural districts, as a rule, quite ignore the poor roots, or give them such a decided back-seat on their prize-lists, that they have not the heart to vegetate."

All perfectly true, and the reason of this neglect is perfectly clear: the farmers, in the French-Canadian districts especially, have never learnt how to grow roots, and, as far as I can see, they have nobody to teach them—the schools of agriculture have not, certainly, done this duty; and to tell

the truth, the absurd way in which those who have tried, from their own heads, to cultivate root-crops, and the enormous sums they have expended in hoeing, singling, and other operations, have long ago convinced me that until a "travelling tutor" is sent over the province, with instructions to afford information on this important subject to all inquirers, the less the French-Canadian farmer has to do with root-growing the better.

For example: M. Pierre Guèvremont, of Sorel, tells me that, up to the year 1885, he had given up *trying* to grow roots. He had made several *coups d'essai*, but as he found that the expense of hoeing came to at least \$14.00 per acre, he had retired beaten from the field. Now, however, he will not hear of the manual labour costing more than from \$2.50 to \$3.00!

M. l'abbé Chartier, *procureur* of the Seminary of St. Hyacinthe, puts the cost of the cultivation of mangolds at \$12.00! This, of course, is for singling and hand-hoeing!

M. Séraphin Guèvremont, of Sorel again, will not hear of the hoeing and singling of root crops costing more than \$3.00 an acre.

There is no earthly reason why, when the people understand how to set about it, the cost of cultivating roots should exceed the cost of growing them in England by more than the difference between the wages of the two countries. In Kent, where the day wages of farm-labourers have always been high, I used to pay 7s. 6d. (\$2.00) an acre for two hoeings, the crop to be left singled out at 12 inches apart (swedes or mangolds), and the land perfectly clean. Piece-work wages in Kent were 72 cents, (1) which would, allowing for the difference represent 80 cents here, quite as much as the average day-labourer earns; so that an acre of roots ought to be singled and hoed here for \$2.66, which, as we saw above, is about what they do cost when the work is done by these who understand how to do it.

In Scotland, a woman will single, with the hoe, half an acre of turnips in a day, and Mr. Henry Stephens, in his "Book of the Farm," relates that he, with twenty women, singled 82 acres of turnips in 8 days! As, when he wrote, women in Scotland only earned 20 cents a day, this would make the cost only 40 cents an acre. Pretty cheap work!

"The barn of the average Quebec farmer," continues the *Star*, "is a veritable *hortus siccus*, and his young cattle, as they stagger into the fields in the spring, after their six month's regimen of sapless straw, look like a lot of very acute angular frames, with exceedingly old and shabby buffalo robes tacked over them. All this would be changed if he got into the way of growing turnips enough to give his stock even an occasional feed." True again, but then how are they to be persuaded to get out of the rut in which they have been travelling all their lives? I really do not see, except, as I said before, by travelling missionaries being sent round the country. And it will be more difficult than ever to persuade French-Canadians to grow roots, now that some of their leading men have been building silos, and growing fodder-corn to fill them.

Lastly, the observation of the *Star* that "if a few intelligent farmers took the matter up over the province, and grew an acre or two of roots, we should soon see their example followed by every man who had the acumen to note the improved appearance of the root-fed stock, and the sense to know the reason why,—this I consider to be a most sensible proposition. The only thing against it is, that except these "few, intelligent farmers" follow their more unintelligent neighbours to their very hearths, and din their advice per-

(1) I mean that a man expected to earn 72c a day when at piece-work.

petually into their ears, they stand very little chance of being listened to or of having their example followed.

**Barley.**—A correspondent wishes to know why I recommend thick sowing for the barley-crop. The question is a sensible one, as at first sight the quantity of seed I recommend— $2\frac{1}{2}$  bushels per acre—does seem large. The reason of my advising so much seed for this crop is derived from my knowledge of the business of malting. In this work, before all things it is necessary that every grain should be of equal ripeness. Now, if thin sowing is practised, the plant, soon after its appearance above ground, begins to throw out side-shoots—to tiller, as we call it in England—and as the ears proceeding from these side-shoots are some days longer in maturing than those from the first-shoot, it follows that the latter start to grow from 36 to 48 hours sooner than the former, and when the whole is put on the kiln and dried, the sample of malt is uneven, and the extract from the mash-tun is wanting both in flavour and in quantity. If barley is to be used for cattle or pig-food, less seed will answer as the equality of maturing does not in that case signify. It may, too, be cut greener; whereas, for malt, barley must be dead ripe, and the straw when the grain is in that condition is of very little value for food.

**Jerseys.**—I see that at Mr. Valancey Fuller's sale last month, Jersey stock sold at reasonable prices. Fifty to a hundred dollars was about the figure for good cows and heifers. So we may say that the days of absurd prices for this breed are about over.

**Slag.**—This seems to be a by-product of the Bessemer steel-works. "The slag is ground," says a contemporary, "and so treated that a phosphoric lime (*sic*) is produced, which contains 16% of phosphoric acid, 50% of lime, 12% of iron, and 7% of silicic acid. This material has been found to be a strong fertiliser, which operates twice as well as Peruvian guano, six times as well as bone-dust, and somewhat more than one and a-half as well as superphosphate."

Now, really, these rash statements are very dangerous. The writer evidently knows nothing of agricultural chemistry, nothing at all. Good Peruvian guano is worth to-day in the English market \$60.00 a ton. In slag, the only constituent worth a cent is the phosphoric acid, of which it contains 16%, and mineral superphosphate of lime containing the same percentage of phosphoric acid—soluble, mind—is selling in England for £2.5 a ton. Therefore, if the slag is worth twice as much as Peruvian guano, and one and a-half times as much as superphosphate, it follows that \$120.00 = \$16.50—*which is absurd*. Any one can easily see that the 50% of lime cannot possibly pay for the carriage, and the iron and silicic acid are absolutely valueless, the one being the common rust of all our soils, and the other sand. If the slag can be brought here at a reasonable rate, say \$8 to \$10 a ton, it may be worth using as a cheap source of phosphoric acid; but with our *apatite* and its 35% of phosphoric acid, and our *old char*, and its 30% of the same constituent, I do not think slag will be much in request here.

**Siloes.**—The brewery of the Messrs. Dawes, in this village, has no difficulty in getting rid of its grains at a remunerative price from the middle of October to the first of June, but during the rest of the year they rather hang on hand, as might be expected. This, as there are four brewings a week made throughout the summer = 800 bushels of malt, is not a trifling matter. I strongly recommend the proprietors of the brewery to build siloes to hold a large portion of this valuable food, feeling sure that it will keep well, and turn to good use

during the hard weather. In the neighbourhood of Burton-on-Trent, many of the farmers store away from 2,000 to 4,000 bushels of grains when they are low in price, and find it answers their purpose. This form of proceeding has been carried out for many years; long before M. Goffart invented the modern plan of ensiling green-meal.

By the bye, talking of siloes, an ardent siloist informs me that he has just secured  $10\frac{1}{2}$  arpents of Canadian white corn in his silo. The ears, he says, are quite ripe. Of ensilage such as this, no one can find anything but good to say; but is there anything gained by ensiling it? Would it not be as well if it were simply harvested, husked, and shelled, the grain ground, and the fodder cut into inch lengths? If not, why should we not cut up and ensilo all our feed-crops, and, especially, pease? I say *especially*, because pease always ripen late in this province—rarely before the tenth of September—and the autumn rains and heavy dews generally cause mildew enough to nearly ruin the pease-haulm. I should think that pease-ensilage, cut when barely ripe, would be capital food for all kinds of stock, and sheep would do splendidly on it.

"*Early maturity*" is a phantasm which has helped mightily to injure the interests of the pork-maker. The term has no sensible meaning. It crept into men's minds and into the language at an age when animals were in a partially wild state, or before the more rapid growth following domestication had been fully developed. As the term is commonly used, it simply means fat. There is scarcely a breed of hogs but that will respond to this claim. They will all get fat and keep fat if they have food enough. This must be what is meant by "early maturity," or is it a condition of fatness so as to be helpless? Some breeds will fill this conditions more than others, and just in proportion as they do, they are unfitted for human food. Of course there is very little offal for such an animal has little bone or substance, and if put into an old fashioned trying-pot would about all run to lard.

F. D. CURTIS.

Early maturity a phantasm, is it? To me it seems a very pleasant reality. Sussex steers 20 months old weighing 160 lbs. a quarter, ten months old Hampshire-downs (not show-lambs) turning out 22 lbs. a quarter; 16 weeks porkers fit for the West-end of London trade; and a dozen other things of the same sort, are by no means phantasms. If a farmer has not got sense enough to regulate the feeding of his "early maturity" pigs in compliance with the demands of his market, that is his look out. Feed these precocious pigs on corn, and the delicate palates of his town-customers will reject the mass of adipose tissue with loathing; but treat them with a proper mixture of skim-milk, pease, bran, with a little corn, and not too much even of such lean-meat making food as this, and he will have no difficulty in selling his porkers for the highest market price.

**Gloucester Show of the Royal.**—By some mistake or others, in an article on *Shropshires*, the date of this show was given as 1883: it should, of course, have been 1853. I ought to have seen the error, more particularly because as I have been in Canada for more than 29 years, I could not have been in Gloucester in 1883!

**Fat or lean pork.**—It is very certain, as I have before observed in this Journal, that people of easy means will no longer consent to eat the greasy slabs of meat that are now, and have been for many years, exposed for sale in our pork-butchers' shops, and it for the purpose of showing my readers the real difference between properly and improperly fed meat

that I have caused to be engraven, tho, at first sight, unattractive representations of pig-carcaases on the present and following pages. The cuts are taken from the fourth Annual Report of the University of Wisconsin, Agricultural Experiment Station, and the feeding of the animals has been carried on under the superintendence of Professor Henry, Director of the Station.

From a litter of eight pigs, six were selected for the trial, 15 weeks after they were born. The pigs were cross-bred Jersey-Reds and Poland Chinas: not a bad selection, as the former breed has a tendency to grow muscle, and the latter, fat. Both lots of these had, up to the commencement of the experiment, been kept on the same food, viz: a mixture of shorts, corn-meal, skim-milk and butter-milk. At the beginning of the trial, lot A was given a ration consisting of one part of dried blood, six parts of shorts, and fourteen parts of sweet skim-milk—all by weight. Lot B received all the fine-

The digestible matter in the two lots of food stands as follows:

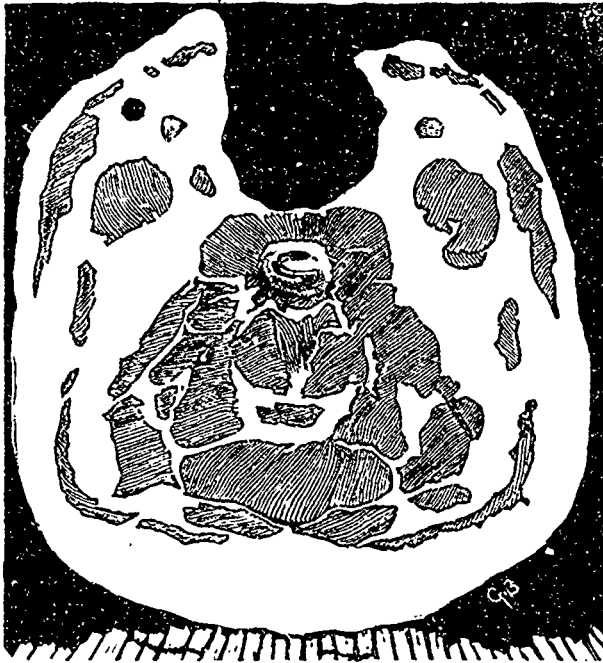
	Albuminoids.	Carbohydrates.
Total digestible matter—Lot A...	428 lbs.	833 lbs.
“ “ “ —Lot B...	153 “	1193 “

B/A  
B/A

Here, my readers will observe that Lot A got rid of 1261 pounds of food and Lot B of 1346 pounds, a difference of 85 pounds only, but the difference of the quality of the two rations is very great. I need not tell my readers that, speaking in general terms, carbohydrates produce fat, and albuminoids produce muscle or lean meat.

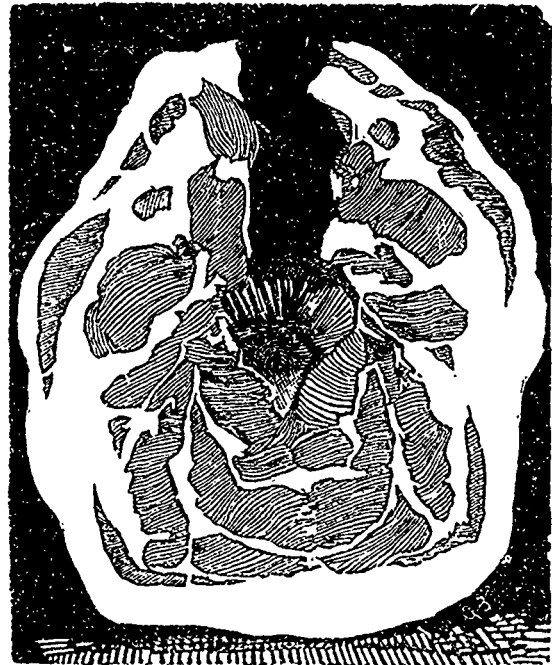
The hogs were slaughtered Nov. 8, 1886, and every precaution was used to preserve every particle of the blood, entrails, &c. Upon being taken to the block, when cold, each hog was laid on the block, the head was severed, the body was cut square across between the fifth and sixth ribs, and again at

PLATE I.



Fed for Fat.

Lot A, No. 1, Carbohydrate fed.



Fed for Lean.

Lot B, No. 1, Protein fed.

Plate I shows in cross section the proportional size of the muscles (lean meat) in the necks of hogs No. 1 of each lot.

NOTE.—The lean meat is striped black and white; the fat is shown in clean white. The cuts are made from the dressed hogs lying on their backs.

ground corn-meal the pigs could consume, and both lots had plenty of fresh water, and a small yard to run in for exercise. The experiment was continued for 136 days, and all the pigs did well upon the food. The following condensed form shows the amount of food consumed during the trial:—

the loin. The places of separation were both photographed and painted by an artist.

THE ILLUSTRATIONS.

It will be seen that the illustrations afford the following lessons:

The albuminoid-fed hogs have more lean meat than the hogs whose food consisted chiefly of carbohydrates. In the loin-cut, the muscles of the former are almost twice as abundant as the muscles of the latter. The bones of Lot A were stronger than those of Lot B in the proportions of 5 to 3, nearly. (1)

B/A

(1) A very curious fact indeed, showing, I fancy, that the nitrogenous food of Lot A strengthened the bones by furnishing ampler supplies of gelatine.

B/A

B	LOT A, FED FOR LEAN.	lbs.
	Skim-milk.....	3302
	Shorts.....	1415 1-7
	Dried blood.....	235 6-7
A	LOT B, FED FOR FAT.	lbs.
	Corn-meal.....	1690

## IMPORTANT CONTRASTS IN WEIGHTS.

	Lot A. Fed for lean.	Lot B. Fed for fat.
Total live weight.....	669½ lbs.	561½ lbs.
" dressed weight.....	541¼ "	451 "
" external fat.....	150 "	156 "
" lean meat.....	244 "	178½ "
" weight of kidneys.....	27 oz.	19 oz.
" weight of spleen.....	16 "	12 "
" weight of livers.....	146 "	109 "
" weight of blood.....	296 "	186 "
Breaking strain of 5 thigh-bones..	4550 "	2855 "

And this table, reduced to per centages for the sake of affording an easier view, shows as below, that :

1. The live weight of Lot A is 19 % greater than Lot B.

12. The bones of A were 23 % heavier than B's, and the thigh-bones of A were 62 % stronger (with the testing machine) than B's.

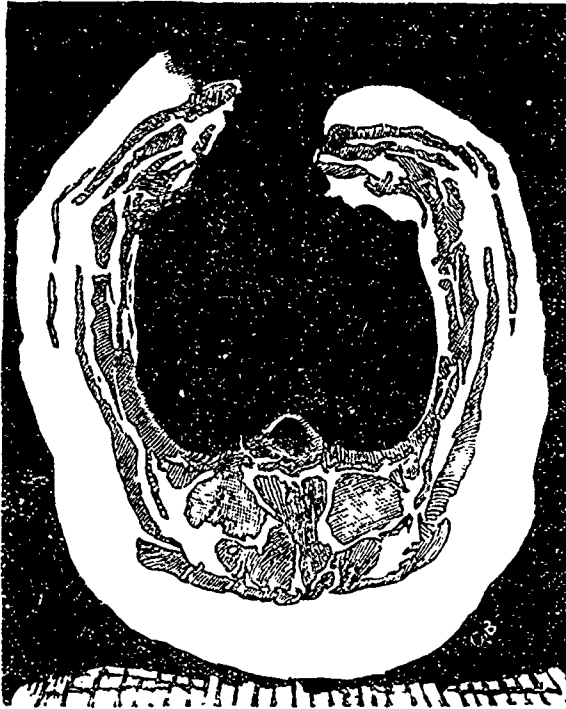
Curiously enough, I had written the little note on "Early maturity," at p. 4, a few days before I received the advanced sheet of Professor Henry's report.

## LAWES ON AGRICULTURAL CHEMISTRY.

(Continued from p. 130, vol. IX.)

Owing to the space occupied in this periodical by the reports, list of prizes, &c., pertaining to the Provincial Exhibition at Quebec, I have been unable to find room for the continuation of the subject I began to treat in the September number, namely, the experiments of Lawes and Gilbert on

## PLATE II.



Fed for fat.

Lot A, No. 2, Carbohydrate fed.



Fed for Lean.

Lot B, No. 2, Protein fed.

Plate II shows in cross section the proportional size of the muscles (lean meat) over the heart of hogs No. 2 of each lot.

NOTE.—The lean meat is striped black and white; the fat is shown in clean white. The cuts are made from the dressed hogs lying on their backs.

2. The dressed weight of A is 21 % greater than B.
3. The kidneys of A are 42 % heavier than B. (1)
4. Spleens of A 42 % heavier than B.
5. A's blood 59 % heavier than B's.
6. A's livers 32 % heavier than B's.
7. A's hair 36 % heavier than B's.
8. A's skin 36 % heavier than B's.
9. The large muscles of the back of A 64 % more than B's.
10. The loin muscles of A 38 % more than B's.
11. Of all the meat that could be cut from the carcasses of lot A, 38 % was fat; of lot B, 46 %.

(1) Kidneys, my readers know, are almost entirely lean meat or muscle.

A. R. J. F.

the manures best suited to wheat and turnips, so I must take up my dropped stitches at the point where I left off.

We shall see that, whereas Liebig's manure, in spite of the surreptitious (1) introduction of a certain amount of ammoniacal material, it professing to be entirely composed of the constituents of the ashes of the plant proposed to be sown, had only the power to extract 3 bushels more wheat from an acre of land than was yielded by the continuously unmanured acre, 224 lbs. of sulphate of ammonia, alone, caused a yield of about ten bushels more. Thus, in the harvest of 1846, we have the following selected results :—

(1) I do not attribute the surreptitious introduction of the ammoniacal matter to the late Baron Liebig, but to the manufacturers of the patent manures.

A. R. J. F.

Description and quantities of manure per acre.	Dressed grain per acre in bushels and pecks.		Total grain per acre in pounds.	Straw per acre.
	bush.	pecks	lbs.	
Section 1.				
Plot 3. No manure.....	17	3½	1207	1513
Plot 2. 14 tons of farmyard dung.....	27	0½	1826	2454
Section 2.				
Plot 10 b. No Manure.....	17	2½	1216	1455
Plot 10 a. Sulphate of ammonia 224 lbs	27	1½	1850	2244
Section 3.				
Plot 5a1. Ash of 3 loads of wheat-straw	19	0½		1541
Plot 5a2. Ash of 3 loads of wheat-straw, and top-dressed with 224 lbs. sulphate of ammonia.	27	0		2309
Section 4.				
Plot 6a. Liebig's wheat manure 448 lbs.	20	1½	1400	1676
Plot 6b. Liebig's wheat manure 419 lbs. with 112 lbs each of sulphate and muriate of ammonia.	29	0½	1967	2571

torsted motives, nobody could believe him to be actuated by them. However he was not satisfied, and he even went so far as to send his son over to England to see that the experiments were really such as they had been represented to be. I believe the great chemist died unrepentant, believing to his last hour that his mineral theory was the correct one.

In table V, which is rather too long and too intricate to give here, the experimenters compare the produce of the unmanured plot, with that of another which, except in the year 1844, when superphosphate of lime and silicate of potass were used (giving, however, less than one bushel of increase), was manured every season with ammoniacal manures alone. The average yields for the years from 1845 to 1850 of these plots (unmanured, and manured with ammoniacal matters) were as follows:

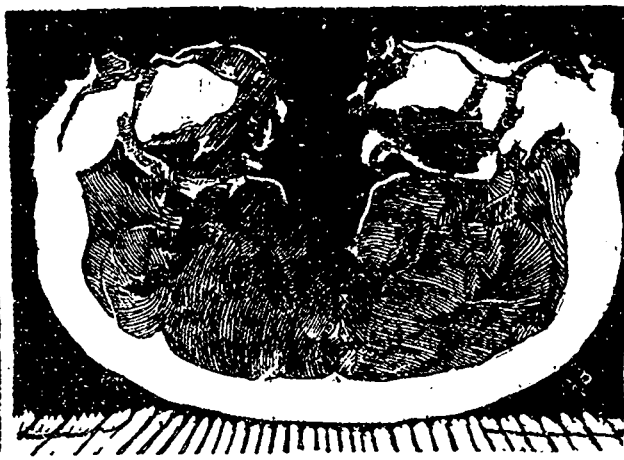
	Unmanured.	Bush. pecks.	Straw.	Increase from manure.	
				per acre.	Straw.
Mean per annum....	17	2½	1756 lbs.	Bush. pecks	
Ammoniacal manures.					
Mean per annum....	25	3½	2698 lbs.	8 0½	933 lbs.

PLATE III.



Fed for Fat.

Lot A, No. 3. Carbohydrate fed.



Fed for Lean.

Lot B, No. 3, Protein fed.

Plate III shows in cross section the proportional size of muscles (lean meat), of the hogs No. 3 of each lot, cut through the small of the back. NOTE.—The lean meat is striped black and white; the fat is shown in clear white. The cuts are made from the dressed hogs lying on their backs.

In this table we see that the yields of the unmanured plots are so nearly alike that for all practical purposes they may be taken as equivalent; that the dressing of 14 tons per acre of farmyard dung raised the produce by nearly ten bushels an acre; that three loads of wheat straw burned increased the yield of the acre by the insignificant amount of one bushel, but that the addition of 224 lbs. of sulphate of ammonia to the ashes of the wheat straw added eight bushels to that yield; that 224 lbs. of sulphate of ammonia alone caused the crop to mount up to ten bushels more than the yield of the unmanured acre, and, lastly, that whereas Liebig's patent manure only gave an increased yield of 2 bushels and a peck more than the unmanured acre, the addition of 112 lbs. each of muriate and sulphate of ammonia to the much vaunted manure caused an increase of almost 10 bushels an acre.

It is really very wonderful, when one comes to think of it, that Baron Liebig would not be convinced by these, to an impartial eye, most satisfying experiments. He was too great a man to be suspected of wilful blindness, and as to in-

Now let us look at another table, in which are displayed several varieties of manures applied together; and the yield compared with the unmanured crop. To show the idea Lawes and Gilbert wished to convey to the reader, I will quote an example of the mixed manures:

	lbs.
Pearl ash.....	300
Soda ash.....	200
Sulphate of magnesia.....	100
Bone-ash.....	200
Sulphuric acid.....	150
Muriate of ammonia.....	200
Sulphate of do.....	200

Yield per acre of unmanured plot, 15½ bushels; yield of manured plot, 33½ bushels.

If the same series of experiments, the amount of ammoniacal manures being reduced from 400 lbs. to 65 lbs., the yield of the manured crop fell to 20 bushels per acre.



Well, I do not think I need bother you any further with the tables. We have seen enough to satisfy ourselves that the true manure for wheat must depend, for its value, on the quantity of its ammoniacal constituents. There remain, then only a few observations.

From the unmanured plot were taken from the land seven successive crops of wheat, and this without any return of manure. Yet, no signs of diminished fertility appear, the average yield of the seven crops being  $17\frac{1}{2}$  bushels per acre, with about 1700 lbs. of straw, the crop depending upon the season, whether it was a good or bad "wheat-year." The difference which the season made was sometimes very great, as, for instance, in the year 1845, a good wheat-year all over England, the yield of the unmanured plot was  $23\frac{1}{2}$  bushels, with 2712 lbs. of straw; the yield of the same in 1848 being only  $14\frac{1}{2}$  bushels, with 1712 lbs. of straw, a difference of  $8\frac{1}{2}$  bushels of grain, and 1000 lbs. of straw, attributable solely to the variation in climatic influences. So we see clearly, that in land which has been properly cultivated for a number of centuries, I may say, like the soil of England, where grain and meat constitute almost the exclusive exports from the farm, the straw of the grain, and the dung of the animals fed upon the farm, finding their way back to the fields in the form of manure; we may see, I say, that even after seven successive crops of the same plant without any return, the soil still contained, relatively to the ammonia available from natural sources, an excess of the necessary mineral constituents.

But do not imagine for a moment that all soils, even in England, will go on producing  $17\frac{1}{2}$  bushels of wheat and 1700 lbs. of straw for ever. On the contrary, light soils which, under high farming, will yield great crops of grain in favourable seasons will soon fall off if neglected. As every Canadian farmer knows, heavy lands do possess a *native fertility*, or how can we account for the price at which land at Saint-Hugues sells as compared with the value of the land at Sorel, for instance? The one goes on yielding from 8 to 12 bushels of wheat per acre and other crops in proportion, and this without the sight of a dung-cart; the other, treated in the same way for a couple of years, would yield next to nothing, but well farmed and frequently though not copiously manured, will turn out most remunerative crops of anything you like to sow there. No; we cannot go on selling all our produce off the farm and making no return to it in manure; but what we can do is this: if there is any truth in the experiments we have been considering, we can feel safe in cultivating our farms in accordance with the ordinary methods of practical agriculture, and if at any time our crops in the spring show signs of a want of vegetative power, we know that a moderate top-dressing of nitrogenous manures will enable them to start again into vigorous growth, and to utilise the mineral constituents which we are well assured will be, in such a case, in excess.

The following is the condensed history of one plot:

First year.—Mineral manures give one bushel more than the unmanured plot;

Second year.—Ammoniacal manures give  $8\frac{1}{2}$  increase;

Third year.—After the heavy ammoniacal dressing of the previous year, and the heavy crop caused by it, the cessation of manuring reduces the produce to slightly less than the continuously unmanured plot;

Fourth year.—Ammoniacal salts alone increase the produce by one-half;

Fifth year.—A complex mineral manure, supplying nearly every mineral constituent in excess, and this combined with ammonia, gives an average produce even rather less than was obtained in the previous year without the minerals, and the proportion of increase over the unmanured plot is very little greater.

When mineral manures are added to the ammoniacal dressings, as in ordinary farming in England is always done at least every fourth year in the usual farm-yard dung, we have added to the soil everything that plants can demand, but in the case we are considering it is worth while looking at the effects of this treatment with artificial manures. Thus, at Rothamstead the yield was:—

	bush.	straw	lbs.
1845, sulphate and muriate of ammonia, 168 lbs. each.	31 $\frac{1}{2}$	4266	
" do do 112 lbs. each of do with minerals.	33	3819	
1846, same ammoniacal dressing alone	27 $\frac{1}{2}$	2244	
" do do with minerals	30 $\frac{1}{2}$	2784	
1847, with ammoniacal manure only	25 $\frac{1}{2}$	2891	
" do do and minerals	31 $\frac{1}{2}$	3852	
1848 was a failure altogether			
1849, with ammoniacal manure	32 $\frac{1}{2}$	2854	
" do do do and minerals	33 $\frac{1}{2}$	3858	
1850, with ammoniacal manure	27	3089	
" do do and minerals	29 $\frac{1}{2}$	4034	

Here we see that, although the plot in which ammoniacal manures alone are used, gives a considerably higher return than the unmanured plot, in every case in which both ammoniacal and mineral manures were employed, there was a considerably larger increase still.

The effect of mineral manures, then, for the growth of wheat is in these cases clearly shown; but what are the circumstances under which this result is obtained? It is only when, after taking from the land the whole of "produce of a rotation without return, we provide ammoniacal salts alone, in such quantity as to yield crops year after year larger than the average obtained in the country in which the experiments were tried under the ordinary course of rotation treated with farmyard dung, and the produce obtained by these ammoniacal salts alone was very nearly equal to that obtained by the annual supply of 14 tons of the best manure, a dressing that nine English farmers out of ten would suppose sufficient to "lay" the crop and cause it to produce nothing but rotten straw and "chickens' victuals."

Now, if we consider the effect of these annual dressings of dung we shall be rather surprised. The seven years of the experiment saw 98 tons applied to the acre, and the produce of that enormous quantity was only 73 bushels of wheat more than the produce of the unmanured land. This is equal to only  $\frac{1}{2}$  of a bushel of wheat for every ton of dung supplied! A ton of such manure as that we are speaking of would probably contain nitrogen equal to about 18 lbs. of ammonia, so that it took that quantity of ammonia to produce  $\frac{1}{2}$  of a bushel of wheat, an absurdity on the face of it, as we see that 224 lbs. of ammoniacal salts, containing probably, 55 lbs. of ammonia, produced, in 1845, 9 bushels of wheat more than was produced by the unmanured land, and that, therefore, 6 lbs. of ammonia, in the form of sulphate and muriate, produced one bushel. It is evident, then, that in the dressing of farmyard dung there must have been an enormous expenditure of nitrogen beyond what the wheat plant was capable of absorbing, and that the mass of carbon, amounting to somewhere about 220 lbs., was absolutely useless, except as a mechanical agent in lightening the land, and, by darkening it, enabling it to absorb more readily the rays of the sun and bring the crop more rapidly to maturity.

I presume all my readers will agree with me in thinking that the experiments we have been studying prove the incorrectness of Baron von Liebig's theory, that: The crops on a field diminish or increase in exact proportion to the diminution or increase of the mineral substances conveyed to it in manure.

ARTHUR R. JENNER FUST.

**London Dairy-cows Milking trials.**

In the open milking trials at the Dairy Show which closed this week, one of the most noticeable things is the fact of a Shorthorn cow, the property of Mr. Evens of Lincoln, proving the champion of the meeting.

This wonderful dairy performer has a slender build of forequarter, light neck and graceful head, with red hair of soft quality, and fine, polished horns. She is refined in bone, and displays a remarkable udder and wealthy milking indications. She has produced four calves, is six years and three months old, and at 224 days period after calving has yielded milk as follows, in pounds:—

	Morning.	Evening.	Or Daily.
First day. ....	27.8	20.7	.....
Second day.....	28.7	20.2	.....
Average.....	25.2	28.4	48.6

This milk contained, per cent:—

	Morning.	Evening.
Solids .....	13.4	15.0
Fat.....	3.5	5.3
Solids other than fat.....	9.9	9.7

A pound of the milk contains (1) : Of fat, 0.280 ; of solids other than fat, 0.792.

The "points" claimed for her are:—

For time since calving.....	18.0
For weight of milk.....	48.6
For weight of fat in the milk.....	41.4
For weight of solids other than fat.....	19.1

Total points..... 127.1

Another victory for the Shorthorns! When will some true patriot import a herd of the real shorthorn milk breed?

—A. R. J. F.

**OUR ENGRAVINGS.**

*Pork.*—Fat and lean pork. See pp. 5, 6 and 7.

*Flower stands.*—See p. 11.

Abstract of address by Prof Geo E. Morrow, before the Illinois Wool Growers Association, in Chicago, Nov. 15, 1887.

The wool growing interest is depressed. Prices are low. Many growers are discouraged. No extraordinary change is expected soon. We are in an era of low prices and small profits in agriculture. There is little probability of an increase of tariff duties. Possibly there may be reduction of those existing. This is the discouraging side.

There is a brighter side. This interest only shows the depression common to most lines of agriculture. Wool is not relatively lower than wheat and beef. There is good prospect for some improvement. There has already been some. The reduction of flocks by some disheartened owners will help others. American wools are of higher quality and will remain in good demand. Economy of production has been well learned. The average quality of many flocks has been improved by sale of inferior animals.

Wool growers are sheep owners. Constant recognition of this fact will help to profit. Sheep have three great purposes—to reproduce their kind; to produce mutton and grow wool. All three should be kept in mind in breeding. Breed for specific purposes; not always for a specific purpose. Good

(1) I do not understand this

A. R. J. F.

size and form are not opposed to a large fleece and good wool. The best wool is produced when the sheep are continuously well fed. It is not wise for the friends of any breed of sheep to neglect their mutton producing capabilities.

Mutton is a healthful, nutritious, palatable food. Recent low prices have tended to increase its use. Americans are great meat eaters. The use of pork is almost universal. There is reason to believe mutton may yet rank alongside beef. There is an increasing demand for good early lambs. Sometimes it will be wise to cross breeds to secure large lambs, but it will be a mistake to give up any of our well established types of sheep. (1)

The sixth annual meeting of the National Swine Breeders Association held in Chicago on the 16th inst., was in every way a success. The officers for the ensuing year are as follows:—President, Dr. L. Thomas, Rushville, Ind. Vice-President, S. H. Todd, Wakeman, Ohio. Secretary, Phil. M. Springer, Springfield, Ill. Treasurer, E. R. Moody, Eminence, Ky. Executive committee, L. N. Bonham, Oxford, Ohio; C. W. Jones, Richland, Mich.; N. H. Gentry, Sedalia, Mo.; B. R. Vale, Bonaparte, Iowa. A copy of the proceeding in full will be sent to each member soon as published.

PHIL. THURFTON.

**Hampshire Downs at West Stratton.**

The *Live Stock Journal* lately published the following:—

When Mr. William Parsons, of West Stratton, in the course of his able paper on "Early Maturity," at the Farmers' Club three years ago, quoted figures and gave details of practice which were considered rather flattering to his favourite breed—the Hampshire Downs—some of the members who took part in the discussion attributed the results to advantages of climate, particularly to the coolness of the Hampshire hills in summer time. We wish these gentlemen had accompanied us in our inspection of the flock at West Stratton on Friday last, when we think they would have agreed that there was very little to boast of in this respect. The late and trying spring has been followed there, as elsewhere, by a summer of scorching heat and excessive drought, and it has been with considerable difficulty that the flock has been brought along, several of the forage crops having missed. Still, careful and skilful management overcomes many difficulties, and we have rarely seen a flock in better condition—not fat, but healthy and thriving—than the magnificent collection of Hampshire at West Stratton, which Mr. Parsons has bred with such remarkable success. During the present and last season Mr. Parsons has not exhibited specimens of his flock—last year owing to the failure of the root crop, and this year on account of his approaching sale. Had they been shown we are certain they would, as before, have given a good account of themselves, and that the breeders outside Hampshire, who so nearly made a clean sweep of the prizes from the county exhibitors at Reading, would have found their work a good deal more difficult of accomplishment. Without such good reasons for withdrawing from the show-yard, Mr. Parsons might very well have been content with his former victories, for during the ten years that the flock was exhibited it gained no less than £758 in prizes, made up of one gold medal, two silver medals, eight champion prizes, fifty-four first prizes, twenty second prizes, and five third prizes, including in 1883 the champion prize at Smithfield over all breeds with a marvellous pen of lambs.

The breed which thus owes a good deal of its modern reputation to the victories achieved in the show-yard by Mr.

(1) Give up the long-wools except on rich, low-lying pastures. Their meat will never make mutton popular. A. R. J. F.

Parsons and other exhibitors—among whom we may specially name Mr. Humphrey, Oak Ash; Mr. Rawlence, Bulbridge, Mr. Morrison, Fonthill; Mr. F. R. Moore, Mr. Lambert, and Mr. Perry-Keene, has long been talked of as "the Coming Sheep." We do not quite understand what meaning the phrase is intended to convey. If it is that the Hampshire Downs will hold their own in the show-yard with any breed with which they enter into competition, then the claim has been already fully established. If it is that the breed is fitted above all others for large sections of the country and for particular systems of management, that also has been conclusively proved. It has further been shown that in feeding on the early maturity principle it has come out well ahead; and the fact, which has already been indicated, that the prizes at the shows this year have been carried away mostly by breeders in other counties, makes it evident that it is adapted to widely diversified conditions of soil and climate. We go with the advocates of "the Coming Sheep" thus far. But if it is considered probable that the Hampshires will crowd out either the Southdowns or the other breeds in the "making" of which that impressive variety has played a conspicuous part, we must express a wholesome scepticism as to this result being brought about. The late Mr. Torr, of Aylesby, never rendered better service than when, in spite of his own personal preferences, he insisted on the great importance of keeping up our local breeds of cattle, and his opinion is equally forcible when applied to the many admirable descriptions of sheep which it is the good fortune of this country to possess. Of this, at all events, we are satisfied, that Hampshire breeders could not possibly find a sort better suited for their purposes than the breed which for so many years they have so skilfully and sedulously cultivated, and it must be gratifying to them to find that the Hampshire Down is rapidly extending all over the country.

The West Stratton flock was commenced in 1870 by Mr. Parson's father at Monk Sherborne, near Basingstoke, where he occupied a farm belonging to the late Rev. L. M. Halton, rector of Woolhampton, Berks. The late Mr. Parson had for many years been well known as a sheep breeder. He was born in 1798, and, prior to 1846, he resided at Aston Tirrald, near Wallingford. In 1846 he went to Monk Sherborne, and paid great attention, as he had previously done, to the management of his flock. The present owner of the flock lived at Monk Sherborne, until 1874, when he removed to West Stratton. The late Mr. Parson had sold off his previous flock by auction at Basingstoke in 1865, when some ewes were purchased by Mr. James Rawlence, of Bulbridge, at what was then considered the fabulous price of £8 each. Mr. John Barton, of Hackwood, was also a buyer at that sale, and the present West Stratton flock is descended from the old Monk Sherborne flock through a ewe presented to Mr. Parson by Mr. Barton, which ewe was bred from one purchased at the late Mr. Parson's sale in 1865. The sheep disposed of at that sale were descendants in uninterrupted succession from the flock started by Mr. Parson, senior, somewhere about the year 1816, so that the existing flock is one of the oldest among the Hampshire strains, extending back for a period of seventy years. Since 1870 Mr. Parson has always purchased rams from the foremost breeders of the day, including Messrs. F. Budd, J. Barton, W. E. Pain, A. Twitche, W. M. Harris, and G. Judd, in Hampshire, and Messrs. Morrison, J. Read, E. Dibben, and F. Moore, in Wiltshire. In 1879 a ram lamb was hired from Mr. Morrison, Fonthill, for six weeks at 100gs, and from this sheep were descended many of those which won such a large number of prizes at the various leading shows, including the champion plate at Islington. We have here another example of the great influence of blood in establishing a true breeding stock.

The flock which was thus founded on the choicest mat-

rials made its first appearance in the show-yard in 1873 at Basingstoke fair, when the first prize was gained for wether lambs. Next year at the Bath and West Show Mr. Parson was first for shearling ewes. In 1876 the champion prize for ewes at the Royal Counties, and first for fat ewes at Smithfield, were among the winnings, and since then the flock has every year taken a leading position at the shows. The great victory at Smithfield in 1883 has already been alluded to. The wether lambs that then gained the champion prize, beating very strong entries of all the other breeds, had an average weight at ten months old of 207lb., the dead weight being 136lb. each. It was generally considered that in 1884 a similar honour should have fallen to the West Stratton flock, for the pen exhibited at Smithfield that year weighed over 6 cwt., while those that won the champion prize were only 5½ cwt., and in symmetry and quality Mr. Parson's were quite the equals of the winning sheep the previous year. To prove that the flock was still in the front rank when in 1885 Mr. Parson was obliged to withdraw from exhibition, we may state that in that year the West Stratton flock supplied the first prize yearling ewes at the Bath and West Show at Brighton, the first and third prize shearling rams, first prize shearling ewes, and second prize ram-lambs at the Royal Counties Show at Southampton, and the first prize shearling ram at Overton fair. The prizes gained at the great fairs prove that the excellence of the flock is not confined to a few selected specimens, but is widely diffused. At Winchester, in 1878, 1879, and 1880, Mr. Parson was first for ewe lambs, and in one of the finest displays of sheep ever witnessed at Winchester fair in 1884 two first prizes were awarded to the flock, there being 100 ewes in the two winning lots.

Did space permit we should like to print a minute account of the management of this first-class flock, which may well be taken as typical of the breed, its eminence having been attained as the result of skill in breeding and unremitting care in management. The farm extends to eight hundred and fifty acres on the chalk formation eight miles north of Winchester, and two miles from Micheldever station. The bulk of the land, which varies considerably in character a good deal of it being poor and thin soil, is under cultivation. A small strip of water meadow is a useful adjunct. The practice has been between lambing time, which commences in January, and the period of the late summer fairs, when the wether lambs, cull ewes, have been sold, to divide the flock into various lots, those which ought at the earliest date to be ready for disposal going first into the folds. The ram lambs, for example, go into a field of tares and pick off the tops, being then removed to the early rape or cabbages. As soon as they go from a half-eaten field, another lot of sheep enters it, the old ewes coming last and clearing up. Other portions of the flock are similarly treated by changing from crop to crop. In an ordinary season it is the custom to carry through the flock in this manner:—On the 1st of August the rams are turned with the ewes, care being exercised in suitable mating. (1) At this time the ewes are on late vetches, or rape, or aftermath clover, following the ewe-lambs, and they run in the stubbles, but they do not enter the young seeds. The lambs are fed on the seeds during the day, and when the tares and clover are gone, get a fold of rape and turnips, sown together, at night. When the ewes have fed by day in the stubbles, they follow the lambs at night and clear up their folds for them. At the end of September the whole flock is folded on the lattermath sainfoin in the day time—the young animals going before—and on turnips at night. This food often lasts until Christmas. When the

(1) That is, ewes having some imperfection are put with a ram likely to correct it.

sainfoin is finished the lambs receive turnips and half a pound of cotton-cake. When lambing time approaches, a little before New Year's day, the forward ewes are separated from the others lot by lot as they come on, and are placed in a straw fold at night. As they lamb their place is taken by others, and in about a week after lambing the couples (1) are put on turnips, with a straw fold at hand for shelter in bad weather. Those ewes which have produced twins get one pound of cake, and this quantity is increased to 1½lb. daily in the course of a month or six weeks. The other ewes receive ½lb of cotton-cake, and they all receive, in addition, pea-chaff at the rate of two bushels of 16lb. per bushel per 100 ewes. The twins receive corn as soon as they will eat it, with cake and split-peas. The usual weaning time is the second or third week in April. Until weaning, the ewes receive as many turnips as they will eat, with chaff in addition, and swedes when the turnips are over. A similar careful and systematic method of treatment is observed throughout the year. What we have said describes the general management in an ordinary season. This year it has been necessary, while carrying out the foregoing plan, to exercise greater vigilance in the way of economy, and more cake has been used, other food being so scarce. Notwithstanding the approach of the sale, the flock has necessarily had to be less generously treated than could have been wished.

The season's crop of lambs has been exceptionally short. Owing to the failure of roots last year, the ewes became poor in condition, and the number of lambs diminished accordingly. The shearing ewes which were in good condition had as many twins as usual; but the result over the whole flock was that instead of weaning 100 and 120 pairs of twins there were only fifty. As a general rule the flock produces one half twins. The practice has been to castrate 100 ram-lambs every year, and to save about 140 for breeding purposes. The wether lambs have been sold at Overton fair, the weight being from 9 to 10 stone per carcase. (2) The ram-lambs have been disposed of at the annual sale. The ewes clip 5½lb. of wool, and shearlings 9 to 10lb.

The flock at present consists of 175 two-tooth ewes, 170 four-tooth ewes, 140 six-tooth ewes, 130 full-mouth ewes (3) — total, 615; 175 ewe-lambs, sixty ram lambs, and six shearing lambs—in all, 856 head. The whole will be sold on Monday, July 25th, in consequence of the lease of the farm expiring at Michaelmas, 1888. On the occasion of our visit last week we saw the sheep in groups, and a very impressive sight they made, their uniformity of type, closeness of wool, excellent colour of fleece and markings being wonderful. They are of thoroughbred character, with beautiful well woolled heads, great length, good legs of mutton, and grand broad backs, the sweep over the rump from the pin bone to the top of the tail being particularly noticeable. They are on short legs, without waste in any part. It is not attempted to make the bone too fine, and altogether great care has been bestowed in preserving the constitution and vigour of the flock, as well as in maintaining and increasing its capacity for the production of choice meat. We need not particularise, as, except that some of the animals are larger than others, a description of one might stand for all, so much alike are they in all their admirable points. Specimens of the flock have been in high

repute all over England, and sales have also been made to Canada, (4) the United States, New Zealand, and Egypt.

FLOWER STANDS.

Flower-stands may be used for supporting or exhibiting cut flowers, for holding metallic pans with soil and growing plants, or for the support of a few pots of flowers while they remain in bloom. They may be placed on verandas or on lawns. Everything which increases the attractions of floral beauty, or which multiplies the modes for displaying flowers, is worthy of attention, and the following forms are presented for showing some of these different modes:

The two accompanying cuts represent different forms of rustic work. Fig. 1 is a tripod supporting a neatly made circular frame filled with cut flowers, or with the soil in



Fig. 1.



Fig. 2.

which they grow. For cut flowers there should be a metallic pan, fitting the frame and filled with damp sand. If the flowers are grown in the pan, such continuous bloomers among annuals as Drummond's phlox may be employed, or any small growing and free bloomer. Fig. 2 is a solid rustic stand, surmounted with a square rustic vessel for the flowers; and both are made by nailing on square boxes strips of round wood with the bark on, split and shaved smooth so as to leave them a little less than half with the convex part outside. This stand will appear well on a more secluded part of the lawn. If the wood of both these supports is thoroughly soaked with crude petroleum, it will add to and preserve their color, and render them as durable as cedar.

A heavier and more finished stand is shown in fig. 3, the



Fig. 3.



Fig. 4.

cast-iron basket being filled either with growing plants in soil, or with temporary bloomers in damp moss.

(5) From this flock were selected the ewes and rams at present in the flock at the Guelph College. I do not apologize for the length of this article, as it contains a whole essay on the management of a Down flock from the pen of a man who knows what he is writing about.

A. R. J. P.

(2) i. e. the ewes and lambs.

A. R. J. P.

(3) 72 lbs. to 80 lbs.

(4) In the South-East of England a sheep before shearing is a *tey*—a *hog* in Scotland. A shearing lamb is the produce of a ewe lamb accidentally having received the ram, and consequently lambing at a twelvemonth old. *Two-tooth* is of course bad English, but it is the form in use.

A. R. J. P.

Fig. 4 is a wire basket, with a braced wire support, the neat and finished construction of which adapts it to the veranda, or if small in size it may decorate a centre table or other place in rooms. The light appearance of the wire work accords well with the lighter and most graceful forms of such flowers as grow in loose panicles and racemes, with drooping ones at the sides. Massive plants with broad and thick leaves would be out of place.

For combining several flower pots together so as to produce the effect of a single mass of flowers, without the heavy appearance of a broad box or tub, the mode represented by

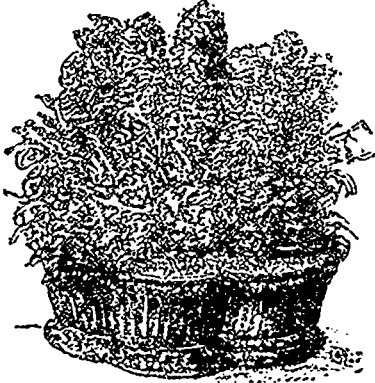


Fig. 5.

fig. 5 answers well. It represents a central mass of hyacinths, with looser bloomers surrounding them. An easy and good way to arrange them, is to place three or four pots on a wide board just large enough to receive them; bind them together with a wire or cord, and then cover them with broad sheets of rough bark peeled from a tree, wiring on the bark. The whole may then be placed on any suitable support.



Fig. 6.

The bell glass used as a Ward case, shown in fig. 6, may properly be under this head. It has the advantage of continuing many weeks without change or much care, the dust being excluded, and but little watering being necessary. It is well

adapted to ferns and to other plants which will bear this confinement, and may be used for an in-door ornament.

*Country Gentleman.*

#### How English Prize Butter is Made.

The London Live Stock Journal publishes reports obtained from successful exhibitors at the recent Dairy Show, from which we give the following extract :

(1) Rev. S. H. Williams, Great Linford Rectory, Newport Pagnell, was very successful, gaining with a single entry, in class 61, not only first prize for best fresh butter very slightly salted, and made from Channel Island cows, but also the Lord Mayor's cup for best butter, made in the United Kingdom, and the Association's silver medal for the butter sweetest and in the best condition on the last day of the show. Mr. Williams keeps a small herd of pedigree Jerseys, there being generally from six to eight cows in milk. The cows are at present (October) at grass night and day, but will be housed at night as soon as the weather breaks up. The extra food consists of 1½ lbs. or 2 lbs. each of cotton cake in the morning, crushed oats and bran at 4.15 p. m., also a little clover hay in the rack to eat while the milking is going on. Thyss, Lockyer & Co.'s "Jersey" cream raiser has been in use since November, 1886. Supply of cold water is laid on to the dairy from a well by force pump. The cream rises in from ten to twelve hours. It is only fair to say that during this hot summer not one setting of milk went sour. Hatha-way's barrel churn is used. The temperature of the cream when churned is 58°, and cream is churned twice a week. The butter is washed, Bradford's butter worker being used. The average price obtained during the year was 1s. 6d., and the demand exceeds the supply. The cows are brought in to calve from August to April, in order to keep a regular and uniform supply during the year; the object being to have the richest and best quality butter only. Great attention is paid to the selection of bulls and cows showing the deep orange skin. One cow, Sunflower, after calving last November, gave 33 per cent of cream. The average is from 18 to 25 per cent.

(2) Mrs. White, Rockfield, Roscommon, gained the first prize in class 66 (238 entries), open to Irish exhibitors only, for fresh butter salted at the rate of half an ounce of salt to 3 lbs. of butter. She has a dairy of fourteen cows, mostly Short-Horns, a few being related to the Kerry breed. The cows are fed on grass in summer, and hay and grass in winter. The cream is taken from the milk set in shallow pans. The cream is used sweet or sour to suit trade or convenience, the sample exhibited at the show being from sweet cream. The butter is washed. A "Holstein" churn is used, and the temperature of the cream when churned is 60 deg. No butter workers are used. About 14 lbs. of butter is made at each churning.

(3) Mrs. Faulkner, Merritt's Farm, Ellisfield, Basingstoke, who obtained second prize in class 60, from fresh butter very slightly salted and made from sour cream, says the cows, which are cross-bred, are fed on upland pastures and a few crushed oats. They are milked regularly. Butter is made in the old-fashioned way with a box churn. No butter-workers are used. The butter is made twice a week. At present about 16 lbs. per week is made, but she has made 30 lbs.

(4) Mrs. Williats, Denton Court, Canterbury, who gained second prize in class 61 for fresh butter very slightly salted, made from Channel Island cows only, informs us that the number of cows, in her herd varies from thirty to forty head, the present number in-milk being fourteen. They are all pedigree Jerseys, the greater number being bred at Denton.

The soil is chalk and the pastures much exposed to gales from the sea coast, Folkestone being within seven miles. The cows are fed at 6 A. M. and 4 P. M. Those in milk receive about 2 lbs. linseed and 1 lb. cotton cake a head, and about a bushel of chaffed straw, bran, and barley-meal, mixed, per day, with a truss of hay divided between them. The young heifers over a year have  $\frac{1}{2}$  lb. cake, chaff, bran, and hay. The calves are kept in boxes, and have bran and meal and a little long hay. The whole herd, with the exception of calves under three months, find their own living in the pastures from 7 P. M. to 4 P. M. They are housed at night from Oct. 1 to April 1. The dairy faces the north, and is kept most scrupulously clean. The floor is bricked and the walls tiled with white glazed tiles. It is fitted with thick green glass shelves on which the tin pans are placed. The churn is one of Hathaway's barrel churns. In summer the cooling tins are used to set the cream, the skim milk being drawn off in twelve hours, but, as soon as the cool weather commences, the milk is skimmed from the pans, the temperature being from 56° to 60° for churning. Butter is made twice weekly in winter from soured cream, salt being put to it before churning. The butter is never touched by the hand, a Cunningham worker being used. The price obtained per pound to private customers is 1s. 9d. all the year round.

#### The New Wood Straw-Band Harvester.

We have received a copy of the London Times of Sept. 5th, which contains a long article awarding great credit to a distinguished American inventor - the material portion of which we give below:

The most original invention of the year in connection with agriculture is undoubtedly the straw-band harvester of Mr. Walter A. Wood, of Worship street, which is now being shown at the American Exhibition. This is no mere toy or clever model, but a practical business machine, mechanically worked out in all its details, which has been largely manufactured in the United States, and will be introduced to English farmers next season. The specimen machine now at the exhibition has cut and bound into sheaves the produce of forty acres, without using wire or string or any other binding material than what may be designated the natural one of straw. The invention is the finished fruit of several years' designing and gradual perfecting by trial in the field; it embraces marvels of mechanical ingenuity, accomplishing manifold automatic results with the most remarkable simplicity of movements and fewness of working parts. Desirous of superseding the objectionable wire and expensive twine in harvesting machines, various inventors of late years have attempted to utilize straw itself in mechanical sheaf-binding - some trying to seize portions of straw from the crop which is being cut, and thus form bands as the reaper goes along, each band being twisted or tucked round the sheaf in imitation of manual binding; other contrivances proceeding upon the principle of tying with straw-band previously prepared and carried ready-made upon the machine. Mr. Wood has judiciously taken a middle course, his straw-band harvester twisting the band, sheaf by sheaf, as it proceeds, but from a bunch of previously cut straws carried upon the machine. The straws are cut to a uniform length of about 22 inches, a loose bundle of some 10 inches diameter serving to bind the sheaves of an acre of crop. Wheat or other straw can be used; but straw broken by the threshing machine is objectionable, and strong rye-straw from which the ears have been cut off in a sort of chopping-box is preferred. The few bunches employed for displaying the action of the binder at the exhibition are from fields of rye in the neighborhood of London; some, indeed, were brought from Dorchester, where crops were cut at the

summer-show trial of reapers. In practice, probably half an acre of rye would supply straw enough for binding about 300 acres of wheat, barley or oats. Where a farmer did not care to grow a bit of rye himself, a small bulk of rye straw could always be purchased in England from a rye-growing district, in bundles as marketed for plaiting purposes. It is considered that the substitution of straw for twine may save four-fifths the expense of binding. A calculation brings out the estimate that in America about 33,000 tons of string are employed in one harvest by the sheaf-binding machines of all makers, at an outlay by the farmers of \$9,240,000, which sum is further reckoned to average two cents per bushel of the grain so harvested. Therefore, the successful introduction of a straw-band harvester is desirable.

In performance, the new machine, like the ordinary binders, produces sheaves slightly varying in diameter, according to the quantity of corn that may be accumulated upon the binding platform by a mechanical "packer" before the pressure releases by trigger the binding action and delivery of the completed sheaf, and in every case, as tested by continuous running of the machine, the sheaf bunch is pinched closely, and the two ends of the severed straw band tied firmly together in a secure "weaver's knot." The band stands any reasonable strain, and the knot holds the tighter against slipping the more that it is pulled. And here comes in one of the cleverest features of the machine. Should the farmer meet with a sample of tender straw (involving an undue number of "misses" by the snapping of the material), he can instantly replace the straw-band-making action by a ball of manilla string, and proceed with his work without any delay; for the binding and knotting mechanism ties with twine just as well as with the twisted straw-band. The new knot for the string is solid, snug, and so economical of material that it consumes only two-thirds the proportion taken up in the knot of the ordinary binder.

After quite a minute description of the details of the machinery, the article concludes as follows:

The band-making is intermittent and the supply of straw-band self-regulating according to the demand occasioned by the rate at which the formation of bound sheaves goes on; and the binding movement helps itself to more band by means of a pair of small india rubber rollers, which draw out the band from the twister in conjunction with a trigger which sets in motion or stops the band-making movement. Complicated as this may sound in a brief description, the whole, in reality, is accomplished with the utmost simplicity, certainty, and rapidity. It may be added that the stubble-ends of the sheaves are made neat and square by the very effective operation of a novel kind of "butter," in which the action almost of an automaton hand is imitated simply by a skew-shaped over-neck crank rotating in conjunction with an oscillating spring. (1)

#### Breeds and Butter.

At the recent Quebec exposition we acted, in concert with Prof. W. Brown of the Ontario agricultural college, as a judge on several classes of cattle, and were much impressed by Mr. Brown's thorough mastery of the points at issue, and his unpretentious common sense, which at once inspired both confidence and respect. He spoke to us of some recent tests he had been making as to the comparative butter value of several leading breeds, and the report of these tests we find in a late issue of the *Rural New Yorker*. Attached to his college is a creamery at which the milk from 800 cows,

(1) A most marvellous improvement I still believe that the separate gathering and binding machine will prove to be the best and most economical in the long run.  
A. R. J. F.

belonging to neighboring farmers, is handled. The experiments tested the butter value of milk and cream from nine different sources on the college farm, for comparison with the average received from the patrons of the creamery. Thirty milkings, or portions of milkings, were taken from short-horn, Aberdeen-Angus, Hereford, Devon, Holstein, Ayrshire and Guernsey cows, as well as from a spayed common Canadian cow and short-horn grades—in all 13 cows, running on permanent pasture. The milk was set in inch test tubes and iced water at from 40° to 45° for 24 hours, so as to copy as nearly as possible the conditions of the creamery patrons. The average per cent of cream from all sources was only 11. The mean of the three beef breeds—short horn, Aberdeen-Angus and Hereford—was 12 per cent, while that from the two heavy milking breeds—Ayrshire and Holstein—was only 7½ per cent; from the two acknowledged butter breeds—Devons and Guernseys—the percentage was 12½, and from the grades 12 per cent, of cream. The separation of cream was very indistinct in the cases of Devons and Ayrshires. The highest per cent was a mean of 18.8 from the Guernsey, and the lowest 6½, from the Holstein.

The oil tester showed the following quantity of butter fat, namely, ounces per inch of the cream can, 16 being the standard for one pound of butter :

Durham .....	16½
A. A. Poll.....	17
Hereford .....	17
Devon .....	11
Holstein .....	7
Ayrshire .....	10½
Guernsey.....	17
Spayed grade.....	15½
Grades on permanent pasture.....	16½
Mean .....	14½

Taking into consideration the quantity of cream, in addition to its butter value, the following were the results :

Guernsey.....	30 per cent over standard.
Grades .....	14 " under "
Hereford .....	18 " " "
Durham .....	20 " " "
A. A. Poll.....	25 " " "
Ayrshire .....	65 " " "
Devon .....	70 " " "
Holstein .....	82 " " "

Accordingly, if the standard represents 3½ pounds of butter to 100 pounds of milk, the Guernsey yielded 4½ and the Holstein two thirds of a pound of butter per 100 pounds of milk.

DR. HOSKINS.

#### The Chicago Fat Stock Show.

It was mentioned last week that the two departments of the Chicago show which are not exactly covered by its title—the Horses and the Poultry—were much more numerous than in previous years, poultry especially so; and that of the main exhibition itself—fat cattle for the butcher—the leading feature was the decided victory, on the whole, of Short-Horns over other breeds. Short-Horn blood predominated considerably in the number of animals shown, it is true; but what is particularly remarkable is the number of high prizes won by a single exhibitor of high grades of that breed, Mr. D. M. Moninger of Galvin, Iowa, on two bullocks, Stevens and Glick, three years and two years old respectively, these

two animals winning every prize for which they both competed, beating all other breeds and grades, and Glick finally carrying off the grand sweepstakes as best beast in the show. Unbroken success like this, extending through so many rings, renders the management of the feeder a subject of much interest.

When visiting the show of 1882, at which also Mr. Moninger captured important prizes, he gave the writer a description of his system which was summarized in the *Country Gentleman* at the time as below :

" Mr. Moninger would turn his cattle right into his corn-fields and let them 'go it' at their own discretion, if he had sufficient fencing. Not having it, he feeds them corn whole, and this, together, with grass, is all they have had to eat until within the last two months, when they began receiving some rye and oats and a little oil meal. No shelter whatever was provided last winter."

At the same exhibition, the grand sweepstakes was taken by J. B. Gillett on an animal which had never been under a roof or received any feeding but grass, hay and whole corn in abundance. The time of victories for this treatment has passed—nothing quite like it seems now to prevail among those who take the great Chicago prizes. A system of stuffing has been gradually developed, the details of which are mostly kept strictly secret, and the contest has largely degenerated (if that is not too strong a word) into a competitive trial of the skill of the different feeders. It may be due as much to Mr. Moninger's good management as to the original merits of his steers, that he has been able so far to distance his competitors. Such being not improbably the case, we were glad to be informed that he still proceeds on a comparatively simple and natural plan, which we suppose results in profit; and does not adopt the full high pressure system which has sometimes won important premiums on animals that must have cost a good deal more than they would sell for. He has given up to some extent the open-air treatment, the animals shown by him having been stabled for a year back; and he doubtless feeds more oilmeal than in former years; but corn and oats are still the main staples, and the former is generally fed, as we understood him, either whole or else merely shelled.

The pure-bred Short-Horn which most distinguished himself, winning first in his class and the Short-Horn sweepstakes—"Prentice," owned by J. J. Hill, St. Paul, Minn.,—has been more elaborately treated, having doubtless been tempted with sundry condiments and sauces of which nothing could be learned. The manager said, however, that oats were the main dependence for grain—barley and bran being also used, but not much corn. A point strongly insisted on, is the giving something succulent regularly every day through the year—roots, cornfodder, and at night in summer, fresh grass. The animal is stabled by day in hot weather, and at night in winter.

The only important winner of whose feeding we could learn anything worth repeating is the 3-year Devon Morsel, property of J. W. Morse & Son, Vernon, Wis. Up to about the first of last May, he was fed chiefly on ground and shelled corn. At that time the owners began using a mixture composed of equal parts of corn meal and oats, with about one-third the weight of Blatchford's Royal Food added, and then cut hay to the weight of about one-third of all the previous ingredients combined. Of this mixture not quite half a bushel has been used per day. The animal has been "kept up" and stall-fed for the last two months.

The prizes for greatest average gain per day of the animal's life, including weight at birth, were awarded as below—the figure (pounds) telling the usual story of a steady falling off in gain as the animal grows older:

*Three Years.*

1. Fowler & Van Natta. Hereford & S. H. cross. 1.81
2. J. N. Cline, 15-16 Short-Horn..... 1.69

*Two Years.*

1. Moffatt & Bro. Pure Short-Horn..... 2.20
2. B. S. Eldridge,  $\frac{7}{8}$  Short-Horn..... 2.10

*One Year.*

1. S S Brown's Sons. 15-16 Short-Horn..... 3.00
2. Overton Lea, Sussex and Short-Horn cross..... 2.66

*Under One Year.*

1. B. Waddel. Pure Short-Horn ..... 3 59
2. J. A. Fuukhouser Hereford & S. Horn cross. 3.10

The three heaviest animals shown weighed 2765, 2850 and 3185 pounds apiece; but interest in this matter has long since greatly abated with the improved education of the public.

Turning to the other departments of the exhibition, we find a very good show of Sheep and Swine—all the important exhibitors being named in the list of prize-winners on p. 873. A considerable number of the Dorset-Horned variety, of which so much has been said of late, were displayed by Messrs. E. & A. Stanford of Steyning, Eng., and excited much interest, though not, we believe, coming into competition for any award. Mr John Rutherford, Roseville, Ont., took the prize for heaviest sheep, 347 lbs., (Shropshire-Lincoln cross) and for greatest gain per day, 1.17 lb. The heaviest pig (960 lbs.) was a Duroc, shown by Thos. Bennett, Roseville, Ill.; greatest gain per day, 1.68 lb., a cross between Chester White and Poland-China belonging to S. H. Todd, Wakeman, O.

The Horse show was exceedingly attractive, especially noteworthy being Mr. Dunham's magnificent Percherons, and the splendid Shires and Clydesdales contributed by the Galbraith Brothers and by George B. Brown & Co., (who also—the Messrs. Brown—showed a number of beautiful Cleveland Bays.) A better opportunity to compare the heavy horses of France and Britain could hardly be offered; and the throngs that continually surrounded their stalls gave evidence of a very general popular appreciation of their attractions. We gave last week all the important horse awards then settled on. The Clydesdale committee came in subsequently, reporting prizes to the following breeders: Galbraith Bros., Janesville, Wis.; Holloway Bros., Alexis, Ill.; John C. Huston, Blandinsville, R. B. Ogilvie, Madison, Wis.; Henry Bros., Indianapolis.

*Country Gentleman.*

**THE POULTRY-YARD.**

**WINTER LAYERS.**

The question of how to secure eggs during the winter season, when they are scarce and dear, is one that is of interest to every poultry keeper no matter what his object may be. The ordinary poultry keeper who never looks beyond supplying his own table, the farmer who wishes to obtain the best prices of the year for his eggs, and the exhibitor who desires to have plenty of early chickens, are all equally interested in this matter. With many this is the test of success or failure. The keeper of fowls who can manage to obtain a supply of eggs in the winter season rightly regards himself in that respect as a good manager, and better than his neighbors who fail to do so. It is, therefore, a point well worthy of our consideration, and as there are many things which contribute to the desirable result, we must look at the matter all round.

There can be no question that the breed of fowls kept has a very great influence on the result. These are generally the breeds which have the most abundant feathering, and hence as a rule the Asiatic varieties are more disposed to be good winter layers than those which have a smaller coating of feathers. The reason for this is not far to seek. The cause of fowls not laying so well in winter is that the cold eliminates heat very rapidly, and the elements which at other seasons of the year go to the formation of eggs, are required to provide for this constant and great expenditure of heat. In the case of varieties that are well feathered the lesser exposure of the body makes the expenditure of heat a much slower process, and therefore they are able to lay much better than do thinner clothed varieties. Of course I am referring to birds kept under natural conditions, and more or less exposed to the variations of temperature as they take place. Where no special attention is given during the winter season to the fowls, as is frequently the case upon farms, if good winter layers are required they must be selected from the heavier breeds, such as Brahmas, Langshans, Plymouth Rocks or Wyandottes. I have known very good layers produced from crosses between one of the heavier and one of the non-sitting varieties. In this country there is always a very great preference shown for eggs with tinted shells and some who have studied this question endeavor to secure the benefit of this preference. I have seen a cross made between Partridge Cochins and Minorcas, the result of which was most satisfactory. A Partridge Cochin cock was used to Minorca hens, and as there was no antagonistic plumage to alter the Partridge feathers the chickens came out similar to the father, while the fecundity of the mother had a great effect upon the chickens. Such birds have been found to produce first rate layers during the winter season, the eggs from which have the favorite tint. (1) In the same way Light Brahmas can be used with White Leghorns; Black Minorcas with Langshans, Plymouth Rocks or Wyandottes. Such combinations would have the effect of producing first rate layers, and layers at the most profitable season of the year. Therefore, in striving to secure winter layers it is necessary to think of the breed in the first instance.

The second consideration is necessarily that of the housing, for upon this very much will depend. It is quite reasonable to conceive that the fowls might be all that could be wished, and yet from want of proper housing they would not produce a single egg during a winter. It is small wonder that many fowls do not lay or thrive, for they are kept in wooden houses the walls of which are very little better than would be brown paper, so far as keeping out the cold is concerned. This matter cannot be remedied by such expedients as warming by stoves, for this really does more harm than good, and it is not to be expected that poultry with no more protection than we have named will thrive and lay during the winter season. To secure eggs the hens must be comfortably and warmly housed. Wooden houses should be much thicker in the material than is usually the case, and the light portable structures which we recommend for use during the summer and autumn, should not be employed for the laying hens during the winter. If, however, there are none other at hand they must be well lined out with straw matting, or covered over with felting, or the Willesden paper which is now being so much adopted in this country. In no case must artificial heating of such houses be attempted. I do not say that larger buildings of a permanent nature may not advantageously be heated, if heated to that degree when no harm will be done, but this is simply impossible with small wooden houses. On

(1) There is no doubt about the coloured egg being more highly flavoured than the white egg. A. R. J. F.



farms, if the portable houses must be used during the winter for the housing of the fowls, they should all be brought into the stack yard and placed under the lea of some of the buildings or stacks. In this way they will obtain a protection which is most valuable. It is only necessary in this context to mention that warm housing does not mean absence of ventilation, for that would be causing other evils which are infinitely worse than the non-production of eggs by the fowls.

It will at once be seen that the food given must greatly influence the result, and upon this very much will depend. The food is the material from which the eggs will be produced, and unless it is supplied of the right nature and in sufficient quantities, the desired end cannot be expected. I very strongly believe in the giving of a hot feed the first thing in the morning, as soon as possible after the fowls are astir. This does not make a very heavy call upon the energy of any one, for in the winter season the daylight is not very early and the fowls do not come out until the day has well broken. Therefore, it is not at all a difficult matter to do as I have suggested. The composition of this food is a matter of very great importance. I have always used Spratt's food very freely, and believe for the rearing of chickens and for the production of eggs it has no equal. The fact of its being so perfectly cooked has very much to do with its value, and I can vouch for the purity of the ingredients, as I have seen the whole process of manufacture in England, and suppose it to be the same in America. For laying fowls this should be mixed with barley meal, to which, in very severe weather, there may be added a fifth part of maize meal. The Spratt's food contains a supply of ground oyster shells, and also both vegetable and animal substances. Later in the day there should be given two good feeds of corn or grain, the last of which should be about an hour before the fowls go to roost. They will thus be provided with a capital supply of heat for the long night. They must not, however, be fed too gross or they will become idle and fat, and in that case there will not be any eggs produced. A fat hen is always a bad layer, and they should be encouraged to take as much exercise as possible, as in that way the system is strengthened and the powers developed.

All the matters which have been mentioned are such as can be influenced now, but there is another most important point respecting which nothing can be done this year, namely, the time when the fowls are hatched. If it is desired to have eggs in winter the hens to lay them must be bred accordingly. The object should be to hatch out the chickens intended as layers so that they will commence operations about October. In that case they may be fairly expected to go right on through the winter. To do this the heavier varieties of fowls must be hatched out in March or early in April. If delayed into May or June the probabilities are that no eggs will be obtained until the following spring. It is, however, to be observed that local influences affect this result very considerably, and each individual breeder will have to be guided by these as to the time of his breeding. In some very exposed positions it is necessary to hatch earlier than March, and in very favorable places the latter end of April is not too late. As a rule, however, it will be found that the times I have named apply to the majority of places.

H—, England.

STEPHEN BEALE.

#### The Perfect Weed Killer.

What the harrow is for field use, the rake is—or might be made—for garden use, namely: the most convenient and

most effective weed killer. If proper rotation and continued planting is practiced, as it should be in any farmer's garden, this will now "show off" as well as at any other time. In the place of onions, lettuce, summer radishes, early beets, early potatoes, &c., of early summer, we now find straight rows of thrifty growing cabbages, turnips, celery, spinach, kale, winter radishes, endive and perhaps a patch of late cucumbers.

Deep cultivation is hardly needed at this time, except perhaps for cabbages; and we find, that we can keep vegetables growing nicely, and the weeds in check, by raking the whole garden over every few days—an operation which requires but little time and effort, yet leaves the garden in a most attractive shape, and in quite a striking contrast with the appearance of the farmer's garden as usually kept. The rows between all vegetables should be far enough apart for free use of the rake.

The harrow in the field; the steel rake in the garden—these, with proper rotation, are our ideal weed-killers.

*Orchard and Garden.*

### 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. SLOCUM, 37 Yonge St., Toronto, Ont.