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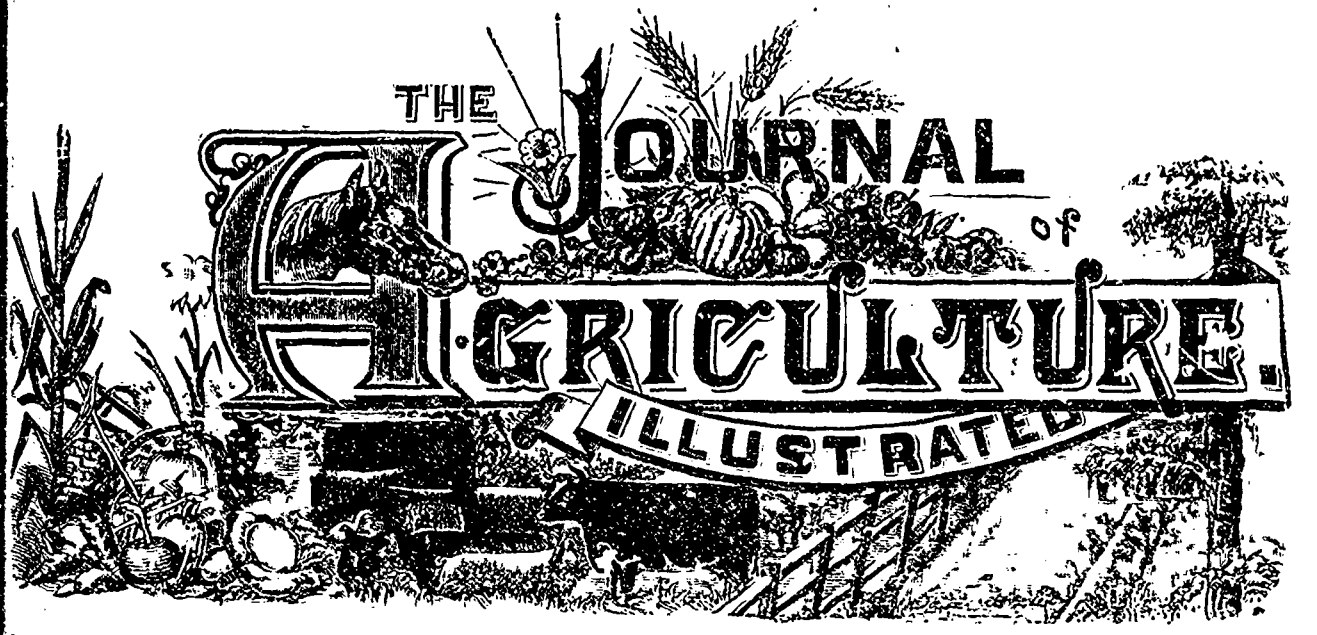

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NOTICE.—The subscription to the *Illustrated Journal of Agriculture*, for members of Agricultural and Horticultural Societies, as well as of Farmers Clubs, in the province of Quebec, is 30c annually, provided such subscription be forwarded through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

OFFICIAL PART.

Table of Contents.

PROVINCIAL EXHIBITION 1887 AT QUEBEC.

PEDIGREE OF THE HERD AT THE THREE-RIVERS EXPERIMENTAL FARM, SHOWN AT THE EXHIBITION OF THE PROVINCE OF QUEBEC, SEPT. 5 TO 9, 1887, BY THE PROPRIETOR, ED. A. BARNARD, DIRECTOR OF AGRICULTURE, P. Q.

Since Saturday morning, Mr. Ed. Barnard has had on show a herd of cattle of the Jersey-Canadian cross, with a few Ayrshires and Jersey-Ayrshires—as a comparison—in all; 26 head.

It will not be without utility to remember that our Canadian cattle are descended from the best types of Normans and Bretons, selected with great care by our French ancestors when the foundation of the Canadian colony was laid. It is now admitted that our Canadian cows, when well selected and well kept, are equal to the best European milch-cows. As regards their hardiness and capability of living on poor keep, they are superior to all.

For bulls, Mr. Barnard has chosen the best types of the Jerseys from the families of the best butter-producers in the whole world. The Sultan of the harem is *Rioter's Pride* (A. J. C. C.), the brother of the sire of *Mary Ann* (A. J. C. C.) of St. Lambert's, who, *in a public trial*, gave 37 lbs. of butter in 7 days, 106 lbs. in the 31 days, and the incredible quantity of 867 lbs. in twelve consecutive months. Astounding as this is, it is perfectly true, and the facts have been established under the strict inspection of two societies well known to all American and Canadian breeders.

The bull, Rioter's Pride, is an animal of great beauty, and should be seen by all cattle-fanciers who visit the exhibition.

Annexed is the pedigree of the herd. We request all farmers to pay attention to its form, as it may serve for a model when they themselves have to draw up one.

ORIGINAL HEAD OF THE HERD.

Rioter's Pride of St. Lambert.—A. J. C. C.	Sire: *Stoke Pogis III.*, No. 2238, A. J. C. C., Sire of *Mary Ann of St. Lambert*, &c., &c. Dam: *Pride of Windsor*, No. 483, A. J. C. C., g. g. d. *Mary Ann*, &c., &c.

No. 1. PRESENT HEAD OF THE HERD.

Albert Rex Alphea. No 8710 A. J. C. C. (5 year old.)	Son of *Rex Alphea*, No. 4509—from *Europa* No. 175, 700 lbs. butter in 355 days, and *Usilda* 2nd, No. 6157, from a good stock, &c., &c.

No. 2. 2 YEAR OLD BULL.

Malo de St-Lambert des Forges. No.——L. G. C. — Sire: *Albert Rex Alphea.* v. pedigree No. 1. Dam: *La Malo* of St-Lambert.— L. G. C. See below, No 13.

No. 3. YEARLING BULL.

Albert Prime des Forges. No.——L. G. C. — Sire: *Albert Rex Alphea.* See pedigree No. 1. Dam: Prime of St-Lambert of Varennes, No.——L. G. C.

No. 4 BULL-CALF (23 JANUARY 1887).

Malo de Varennes des Forges. No.——L. G. C. — Sire: *Albert Rex Alphea.* See No 1. Dam: La Malo de Barrée Varennes— L. S. C. See below, No. 14.

No. 5. BULL-CALF (29 JANUARY 1887).

Rex Alphea des Forges. No.——L. G. C. — Sire: *Albert Rex Alphea.* See No. 1. Dam: *Normande des Forges.* Canadian cow (40 lbs. of milk).

No. 6. HEIFER-CALF (16 MARCH 1887).

Reine de St-Lambert des Forges. No.—L.G.E. Dark brown.

- Sire: *St-Lambert Rex*— A. J. C. C.
  - Sire: *Christmas Rex* 9542 A. J. C. C.
  - Dam: *Lena of St-Lambert*, 20425 A. J. C. C.
- Dam: *Rex Rioter's Bretonne* No.—L. G. C.
  - Sire: *Albert Rex Alphea.* See No. 1.
  - Dam: *Rioter's Brodeur de Varennes* No. 1. See below.

No. 7. COWS AND HEIFERS.

Rioter's Brodeur is still giving 16 lbs. of milk daily after 30 months from calving. The average butter yield for the herd is 18.1 of milk to one of butter. She must therefore have given over 400 lbs. of butter in the last 12 months. She is to be fully tested by herself with her next calf—her third.

Several cows in the herd will do as well, I think.

Rioter's Brodeur de Varennes, No.—L. G. C. Red with black spots round the eyes; calved May 1882. — Sire: *Rioter's Pride.* See pedigree A. Dam: *La Bretonne de Varennes.* Fine Breton-Canadian giving 43 lbs. of milk.

No. 8. *Rioter's Rougette de Varennes.* No.——L. G. C. Red—calved May 1883. — Sire: *Rioter's Pride.* See pedigree No. 1. Dam: la belle bretonne, 43 lbs. of milk.

No. 9. *Rioter's Brune de Montcalm*, No.——L. G. C. Brown—calved June 1882. — Sire: *Rioter's Pride of St-Lambert.* See A. Dam: *Brune de Montcalm.* Splendid Breton-Canadian, 45 lbs. of milk.

No. 10. *Montcalm de St-Lambert*, No.——L. G. C. Dark brown; calved 1883. — Sire: *Rioter's Pride of St-Lambert.* See A. *Brune de Montcalm*, splendid Breton-Canadian, 45 lbs. of milk.

No. 11. *Prime de St-Lambert des Forges*, No.—— L. G. C. Brown, with large white spots—calved April 1883. — Sire: *Rioter's Pride of St-Lambert.* See A. Dam: *Normande de Varennes.* good Breton-Canadian, 42 lbs. of milk.

No. 12. *Rex Rioter's Bretonne*, No.—L. G. C., dark brown; calved July 1884. — Sire: *Albert Rex Alphea.* See No. 1. Dam. *Rioter's Brodeur de Varennes.* See No. 7.

No. 13. *La Malo de St-Lambert*, No.——L. G. C. Red - calved May 1883. — Sire: *Rioter's Pride of St-Lambert.* See A. Dam. *La Malo de Varennes.* Capital Breton cow

No. 25. *Malo Fléchée de St-Lambert*, No.——L.G.C. Calved March 1883. — Sire: *Rioter's Pride.* See A. Dam: *Malo Fléchée de Varennes.*

No. 14. *Malo Barrée de Varennes*, No.——L. G. C. Calved May 1883. — Sire. *Rioter's Pride of St-Lambert.* See A. Dam; La Malo Barrée (Canadian cow).

No. 15. *Bienvenue de St-Lambert (black)*, No.—— L. G. C., calved July 1882. — Sire: *Rioter's Pride of St-Lambert.* See A. Dam: *Bienvenue de Varennes* (Canadian).

No. 16. *Des Forges de St-Maurice*, No.——L. G. C. Brindled—calved 1884. — Canadian bull, des Forges. Canadian cow, de St-Maurice.

Rex Rioter's Bretonne II. No.—L S C Red; black spots round eyes, calved 22 March 1885. — Same pedigree as No. 12.

No. 18. *Reine Fléchée de St-Lambert*, No.——L.G.C., calved 12 April 1885. — Sire: *Albert Rex Alphea.* v. ped. No.1. Dam: *Fléchée de St-Lambert*, ½ Rioter's Pride, ½ Canadian.

No. 19. *Reine Bienvenue de St-Lambert*, No.——L.G.C., calved 9 May 1885. (reddish brown, with gray muzzle). — Sire: *Albert Rex Alphea.* See pedigree No. 1. Dam: *Bienvenue de St-Lambert*, No ——L. G. C. See No. 15.

No 20., *Reine Malo de St-Lambert*, No.——L.G.C., calved 5 Feb. — Sire: *Albert Rex Alphea.* See pedigree No. 1. Dam: *Malo Fléchée de St-Lambert.* See No. 25.

No. 31. *Reine Malo de St-Lambert*, 2, No.—L.G.C., calved 15 January 1886. — Same pedigree as No. 20.

No. 23. *Reine Beauregard des Forges*, No.——L. G. C., calved 20 May 1885. Red and White. — Sire: *Albert Rex Alphea.* See pedigree No. 1. Dam: *Beauregard de Varennes*, ½ Rioters Pride ½ canadian.

No. 24. *Reine Prime des Forges*, No.——L. G. C., calved 7 May 1885. — Sire: *Albert Rex Alphea.* See pedigree No. 1. Dam: *Prime de St-Lambert des Forges.* See pedigree 11.

How to make the Best Butter.

Any one of clean and tidy habits, can make butter of the finest quality—even with the milk of a single cow—by using a good thermometer and practising exactly the following rules:

1. Keep the animal in good health by proper feeding and care;—

2. Thorough cleanliness must be observed, both as to the cow herself and her products, up to the time the butter is sold or consumed;

3. Where skimming is not done at once by the centrifuge, the milk must be cooled, as soon as it leaves the cow, by means of cold water, that the cream may rise well, and not remain in part in the sour milk;

4. Skim before the milk sours, and keep the cream sweet by means of cold water until it is churned;

5. Put the cream into the churn at a temperature of 55° F. to 58° F. in summer, and 62° F to 64° F. in winter: churn slowly and regularly until the GRAINS OF BUTTER separate from the buttermilk, and *never longer;*

6. Wash the butter, *in grains*, with cold water and with cold brine until all the buttermilk is extracted,

7. If the butter is to be kept, it must remain *in grains*

and be preserved in very strong brine until there is enough to completely fill a jar or firkin;

8. Press or sponge the butter sufficiently to dry it, but work it as little as possible;

9. Salt the butter, according to the taste of your customers, with the best fine salt;

10. Keeping butter must be pressed firmly into the jar or firkin, which must be perfectly clean and void of taste and smell.

New Firkins should be always used. To prepare them, fill them with strong boiling brine, which may be made in the vessel itself, and having allowed it to stand full for two days, rinse it out with cold water before putting the butter into it;

11. Having well filled the jar or firkin up to half-an-inch of the top, and pressed the butter down firmly, cover the whole with a white linen cloth, fill the vessel up to the brim with fine salt, and fasten down the cover securely.

Excellent butter may be made with perfectly sweet cream: it seems to be considered the most delicate of all. But, as the chief thing is to please the customer's palate, butter with the *nutty flavour* may be made by allowing the cream to sour gently for 12 hours before churning; or by using 10 % of the last churning's buttermilk with the sweet cream.

This is a very short sketch of a subject which, treated in full, would occupy a large book. Nevertheless, I repeat that by following exactly the rules that I have just laid down the very best butter can be made, particularly if the maker has once seen the process I have recommended in operation.

Ed. A. Barnard.

Quebec, August, 1887.

(*From the French.*)

The best thermometers for butter-makers can be had on application to the Director of Agriculture, Three-Rivers: the price is 50 cents.

I extract from the "Quebec Chronicle" a full and interesting description of the Working Dairy and Mr. Barnard's herd of Jersey-Canadians. I am surprised to see that no one of the daily papers notices the churns exhibited by Mr. Lynch: they are well made, well suited to their intended work, and cheap.

Arthur R. Jenner Fust.

Quebec, 9th September, 1887.

In responding to the invitation to examine and report upon the herd of Canadian cattle on exhibition here by Ed. A. Barnard, Esq., we beg respectfully to submit the following opinion:

The improvement of the cattle of any country has always been, and can only be attained through intelligent selection and continued systematic efforts towards a particular object, whether for beef or milk under a variety of conditions. The province of Quebec is essentially a dairying one, and in view of the increasing importance of this interest everywhere there can be no doubt that her live stock development is the question of the day.

We consider therefore that the recent action of the Legislature, in establishing a plan of registration for Canadian cattle of a certain stamp, deserves the highest commendation and any one who backs up this scheme in a thoroughly practical manner is a benefactor to his country.

At the same time we are conversant with the fact that several of our progressive thinkers do not place much value on these efforts and would rather look to other sources for the accomplishment of the same objects. While it is unnecessary to discuss these differences of opinion in this submission, we trust to be pardoned for saying that no other source can possibly be so rapid and cheap, if it also be efficient and permanent.

The certainty of the origin of these cattle has not been called in question, nor can it be said that "outside crossing" has been common in many sections of the province; hence we are met with the strong position that very many, if not the majority, of the common cattle of Quebec are as thorough French, or Channel Island, as nature and indifferent management could make them.

While also we may not agree as to the particular male source by which these native cattle should now be improved —whether perhaps by the imported Jersey, or by selection from among themselves, there is no doubt that both can be successfully used.

The exhibit of Mr. Barnard is therefore of the highest importance to the province and indeed eventually to the Dominion. He has shown us how to select milch cows, and what results from breeding to the two types named. The lesson is a national one, and we are of opinion that his work deserves special recognition.

Signed W. Brown,
J. Israel Tarte.
J. O. Couture.

Quebec, Sept. 10th, 1887.

Prof. E. A. Barnard, Quebec.

Dear Sir,—I beg to submit the following as my report of tests made to determine the butter-value of the milk from pure-bred Canadian cows, and your herd of Canadian-Jersey cows. The tests were made by Engineer Shoale of the "de Laval Separator Company," by the de Laval "Lactocrite," from samples carefully collected by myself:

Test A includes the 12 cows in the Barnard herd of Canadian-Jerseys which were exhibited in the Model Stable. Test B includes the pure-bred Canadian cows as I found them on the grounds.

Test No.		Per cent. fat.	Pounds of milk to 1 pd. of butter.
Test A	1	4.1 %	22.6
	2	5.1 %	18.2
	3	4.1 %	22.6
	4	3.9 %	23.9
	5	4.5 %	20.5
	6	4.6 %	20.1
	7	5.2 %	17.7
	8	5 3 %	17.3
	9	4.5 %	20.5
	10	5.1 %	18.2
	11	4.8 %	19.2
	12	4 3 %	21.5
	Average.	4.6 %	20.2
Test B.	1 255	4.2 %	22.1
	2 158	3.5 %	26.8
	3 137	3.6 %	26.0
	4 138	3.8 %	24.5
	5 139	4.2 %	22.0
	6 149	4.8 %	19.2
	7 145	4.4 %	21.0
	8 144	4.9 %	18.8
	9 147	4.3 %	21.5
	Average.	4.2 %	22.4

Mr. Wahlin, the manager of the De Laval Separator Company, in reading in Engineer Stroale's report, congratulates

you upon the above excellent showing. After an experience in Europe, Australia and United States, he finds these cows compare favorably with *the best* he has seen anywhere. Taken collectively as a herd, your twelve cows give a better result than Mr. Wahlin has found in his own country, and fall little short, if any, of some of the noted Jersey herds in richness of milk, and make an exceedingly creditable showing.

I made an attempt to obtain further data, such as time of calving, &c., but the information was not available under the circumstances.

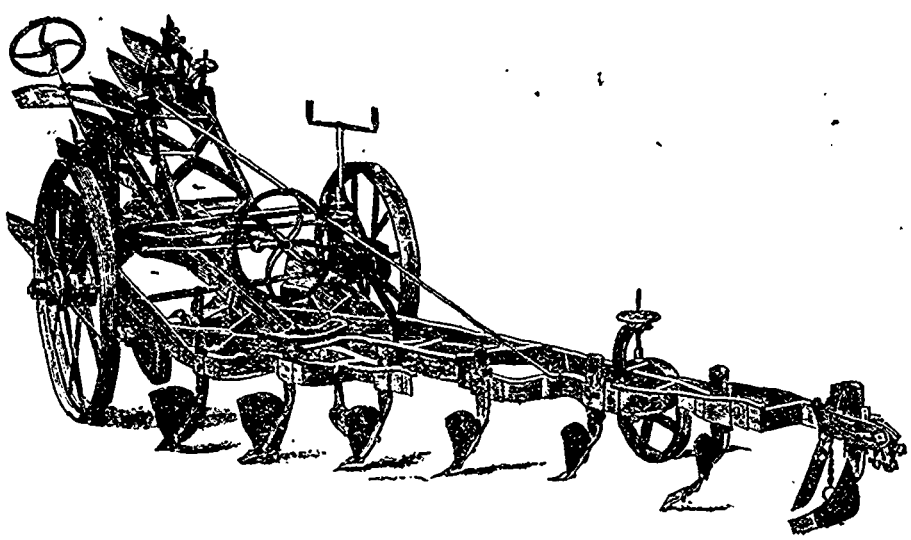
This test may be said to be only a beginning, but it is a good one, and will abundantly justify the efforts that have been made to have the peculiar qualities of the little "Quebec Jerseys" better known, and appreciated, by any who have not had the pleasing experience of the *creaminess* of their yield.

W. H. LYNCH.

Practical Dairying !-Upon the Exhibition Grounds !-The Model Stable and Its Tenants.—A Model Dairy in Full Operation —Lectures on Dairy Management by Leading Experts.—Siloes and Ensilage.

Notwithstanding the fact that portions of the Province of Quebec have been found to be admirably well adapted for the profitable raising and feeding of beef cattle, the prevailing impression both among farmers and patrons of agriculture is that dairy farming is the most suitable and most lucrative department of agricultural science and pratice that can be presented here. It is not our purpose here to enter into any discussion as to the relative merits and returns of these industries, though we are well aware that there is very much to be said upon both sides of the question. It is enough to know that, for some years to come at least, dairy farming must be the principal occupation of the bulk of our agricultural population; and recognizing this fact, the officials of the Provincial Department of Agriculture and those having charge of the principal agricultural features of the present exhibition, have done well, we believe, in turning their attention largely to this particular agricultural industry.

The model stable and its tenants, the two siloes from which ensilage is fed to the model herd of Canadian-Jerseys, and the model dairy in full operation, constitute together one of the principal features of the present exhibition. It is impossible to estimate the good that may be accompushed by this department, or the amount of benefit and instruction that may be derived therefrom by the thousands of practical farmers who will inspect it during the course of the exhibition, and attend the lectures given by professional dairymen on the practical working of the siloes and model dairy. It is a well established fact that while this Province contains some few farmers that are thoroughly up in the details of their industry, there has been up to within very recent years a sad lack of anything approaching to scientific agriculture or dairying amongst the masses of our farming population. Hardworking and industrious as are both the French-Canadian and old country elements amongst our agricultural class, they have been so painfully unprogressive, and so satified to continue in the old ways that their forefathers trod before them, that much of their labor has gone for nought. In many portions of the Province, not only butter factories and creameries, but even cheese factories are of comparatively modern date, while the low prices still obtained for certain grades of butter upon the markets of both Quebec and Montreal, testify to the immense amount of the inferior article which is permitted to leave the dairies of some of our farmers. Still very good progress has been made within the past few years, and we look for excellent results from the dairy department of the present exhibition. It is only natural that farmers, whose living depends upon their own manual labor, should cast at first a somewhat suspicious eye upon the suggestions of science and scientific men. Theory, they say, may be good enough for city people, and they may have a vague idea that it may even enable some of them to obtain a much easier livelihood in town than can possibly fall to the lot of the agriculturist, who as a rule may be sometimes taught by practice but never by precept. The great hope therefore of introducing into the country districts of this Province the modern improvements in dairying and in the winter feeding of cattle, is in placing them under the very eyes of the farmer, where he may see them in actual operation, witness for himself the beneficial results of the system, and hear it explained by skilled and inteliigent lecturers. This is what the gentlemen in charge of the present department are aiming at, and of the good results that will follow, as we have already said, we have not the slightest doubt. Mr. E. A. Barnard, the Government Superintendent of Agriculture, who is in charge of this department, himself an enthusiastic, practical and succesful farmer on thoroughly scientific principles, asserts without



FOWLER'S STEAM-CULTIVATOR : WIDE, AND FLEET, AND RAPID.

any fear of contradiction, that no farmer can visit the working dairy on the exhibition grounds without going home and making better butter than he ever made before, even if he increases his dairy appliances by the purchase of a thermometer only.

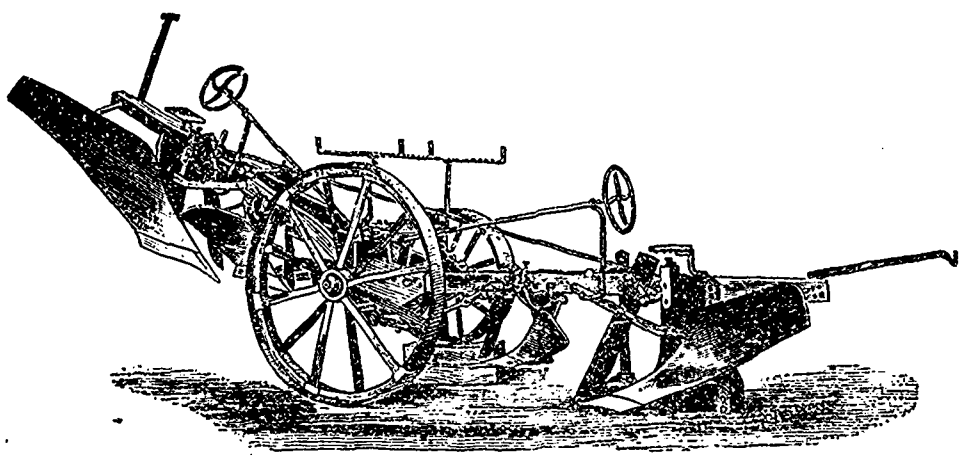
MODEL HERD OF CANADIAN-JERSEYS.

In the model stable on the exhibition grounds will be found the Canadian Jerseys from Mr Ed. A. Barnard's private experimental farm at Three-Rivers.

This stock consists of the first, second and third crossings of good cows of French origin (those imported from France about two centuries ago) crossed with the very best Jersey blood in the world viz: "Rioters Pride," a highly prized son of the unsurpassed "Stoke Pogis III," and brother of "Mary Ann of St. Lambert." This extraordinary cow has produced in a public test 36 pounds of butter in seven days and 837 pounds in twelve consecutive months. The stock of French descent in this province is still to be found in considerable numbers in nearly every French settlement of any importance. As frugal, hardy, rich, milkers, they are perhaps unsurpassed, being given the very limited quality and quantity of food with which they seem satisfied. Under good treatment, they have produced in public tests from 13 to 17 pounds of butter in seven days. If we take into consideration the fact that these cows had been reared on the scantiest of food, it must be admitted that no known breed of cows offers a more promising feature. The Canadian cow is evidently closely related to the Jerseys, both being from Brittany origin. Mr. Barnard informs us that when he began farming, some 30 years ago, he was impressed with the then general idea in this Province that, for an abundance of rich milk, no breed equalled the Ayrshires. He therefore bred from thorough bred Ayrshires nearly exclusively. However, he soon found out that many common country cows in his vicinity gave as much and even more milk than his costly and somewhat delicate Ayrshires. Being then in the milk trade, he decided to test both breeds very thoroughly. Later on, he tested also some highly recommended pedigreed Shorthorns and pedigreed Devons, purchased at the Ontario Agricultural College and vicinity, against Ayrshires and French Canadian stock, all purchased with the view of the most economical milk production. The Shorthorns and Devon stock had to be abandoned as most unprofitable as milk and butter producers. Some thoroughbred Ayrshires stock have been retained, and also crosses from the latter with "Rioters Pride." Yet, Mr. Barnard asserts that he much prefers his Canadian Jerseys to all the Ayrshire blood he ever possessed. The Jersey bull heading the herd on exhibition is, according to Dr. Couture, Vet. Superintendent of the Quebec Quarantine, a finer animal than any yet imported through the Quebec Quarantine. His pedigree is of the highest lineage, and his stock, also on exhibition, is, according to Mr. Barnard, of the finest. There will be about about thirty head of this stock on exhibition, most of which will be offered for sale. They are to be on the grounds this morning. We are sorry to hear that Mr. Barnard intends closing up his experimental farm from want of public support. The model stable, the silos, and even the model dairy on the exhibition grounds, have all been planned exclusively by Mr. Barnard, from the experience he has acquired from long practice in Canada and very numerous voyages all over Great Britain, the Continent of Europe, the United States and Ontario. On examination, it will be seen how much has already been attained. It would be a great pity that such good work be stopped for want of funds, and the official agricultural journals, under Mr. Barnard's supervision, must necessarily suffer greatly should such experiments be cut short.

THE MODEL DAIRY.

The model working dairy, which is of course of very great interest to all the farmers upon the grounds, as well as to their wives and children, is nearly a hundred feet to the south of the model stable, so that visitors may pass easily from one to the other. The dairy building is 90 feet long by 30 feet broad, and contains at one end a model ice-house and refrigerator twelve feet square. It has double board walls, a foot apart, the intervening space being filled with earth. Six feet and a half above the floor is the ceiling of zinc above which is placed the ice. The temperature of the refrigerator yesterday was between 45 and 50 degrees. Zinc tubes convey the waste water formed of the melting ice into a bath below, used for cooling the milk, and as cooler water finds its way down, the warmer escapes. The dairy is also supplied with a number of centrifugal machines for separating the cream from the milk, as soon as it comes from the cow. One of these machines, from Burmeister & Wain, of Denmark, separates 2,000 gallons of milk per hour. We are informed that there are fully twenty butter factories in this Province which use these machines, and probably twenty more using the De Laval, which is a Swedish machine, and which may also be seen working in the dairy. In connection with the De Laval Skimmer, the dairy is supplied with De Laval's Lactocrite, or milk testing apparatus, by means of which it is possible to



FOWLER'S STEAM-PLOUGH: NARROW, DEEP, AND THOROUGH.

test quickly, with the greatest accuracy, and in an inexpensive manner, the real percentage of butter fat contained in milk. The principle of this method is briefly as follows:—To the milk which is to be tested is added concentrated acetic acid, and 5 per cent concentrated sulphuric acid, which dissolves the casein and leaves the butter fat alone undissolved; by means of centrifugal force the butter fat is afterwards extracted, in specially constructed test boxes, so that its exact quantity may easily be noted. The machine in this dairy tests twelve samples at once, and gives the quantity of the butter in each sample, as well as the chemical analysis.

In addition to the above modern and novel methods, the old system of chemical analysis is practised daily by Mr. Cheesman, of Toronto.

A number of small churns are run by steam power in the dairy, to correct the scientific tests for the benefit of any that may be sceptically inclined concerning them.

All the tests in the model dairy are made under the superintendence of Messrs. Painchaud & Côté, Government Dairy Inspectors, and it goes without saying that they elicit marked attention from a large proportion of the sight-seers upon the grounds.—*From The Quebec Chronicle.*

Notes on The Provincial Exhibition.

Many people, among whom I must reckon myself, thought it rather a rash act on the part of the authorities to attempt holding the provincial exhibition at Quebec; and this for several reasons: 1, the great distance of that place from the main breeding districts; 2, the novelty of the site, and its doubtful convenience for the purpose; and, 3, the improbability of the exposition being successful, considering the numerous provincial and other shows all announced to be held about the same time. I am happy to say, however, that we, the dissidents, were agreeably deceived: the exhibition, in spite of some contretemps was fairly successful, and, judging from the faces I saw of men who had clearly no previous conception of what a Hereford, a Jersey, or a Polled Angus, when brought to perfection, really was, I should say that the opening of their eyes to the difference between their own homebreds and the finished products of such herds as those of Messrs. Reburn, Vernon, Pope, and Judah, was alone worth the entire cost of the exhibition.

As a matter of course, the entries were postponed to the last minute, and consequently the carpenters employed by the committee had hard work to complete the cattle-stalls in time; and, as usual, the different breeds of stock were not divided into separate lots, but a Hereford lay between two Shorthorns, and the Jerseys, though in point of fact there was only one herd exhibited, were stalled in two distinct lots, far apart from each other. Sheep were thrust here and there without the slightest discrimination; for in one pen I remarked three ewes and two lambs; and under the same roof were pigs and sheep in juxta-position!

A dark brown 3 year old *Stallion*, from the St. John district, seemed very popular among the crowd. A splendid mane and tail, with a showy carriage, were his chief attractions; but he wanted one most important point: he had no carcase at all. I understood that his owner asked $1,000 for him! A great price for a thirteen hands pony! Well, sentiment goes a long way, even in horse-dealing. (1)

Talking of Lake St. John, I was told by a well known liberal member of the Quebec House that, with the exception of some land round St. Raymond, the general quality of the soil through which the railroad runs is very inferior. As the gentleman in question assisted in the late visit paid to the district under the auspices of the government, I presume he had a fair opportunity of judging.

About the best Shorthorn dairy-cow I have seen for a long time was Mr. Mairs' of Richmond, which won the first prize for dairy cows. Strange to say, she was passed over without even a commendation at Sherbrooke. Mr. Mairs thinks we do not take enough pains with our hay, and I agree with him.

I wish to call attention to the opinion drawn up by Messrs. Brown (Guelph), Tarte, and Couture, on Mr. Ed. Barnard's herd of Canadian and Canadian-Jersey cows. I need add nothing to what they say, except that Mr. Reburn, who is not often guilty of indiscriminate praise, seemed very much struck with the merits of the Jersey bull at the head of the herd. Two of the cows reminded me strongly of Brittany.

The model dairy was very attractive; it was crowded all day and every day, and great interest was taken in the centrifugal skimmers.

Mr. Fuller, of Lennoxville, had some fair Downs, in good order but badly shorn. I could have made them look 20 % better in an hour or two. Sheep, to look well, must be prepared for the judges' eye. Mr. Fuller complains of the damage caused to his flock by dogs. A sad thing indeed, and one which has almost cleared off the sheep from the Island of Montreal.

Some decent white pigs of a small breed; but, as a whole, the swine were not much. Pigs ought to fetch money this winter, as the crop of pork in the States must be short. Economy is absolutely necessary this year, as there is no doubt that the yield of everything grown by the farmer will be below the average. Wheat in Ontario will not turn out more than ten or eleven bushels an acre; pease are better; but there, as well as in this province, the barley is scalded and will weigh very light.

There were very few agricultural implements on the showground: one or two self binders, and a good hay and sheaf loader, an engraving of which has already appeared in this periodical. Mr. Latimer, of McGill Street, Montreal, was the chief exhibitor.

The Beet-sugar factory, at Berthier-en-haut is about to open in the Spring under the management of my friend Mr. Wilfrid Skaife, late of the St. Lawrence sugar refinery. Now, here is a wonderful thing: Professor Brown and Dr. Hoskins I heard at Quebec asserting that deep-ploughing *at once* was frequently the ruin of land; Mr. Skaife, however, is at present hunting everywhere for a plough that will cut a furrow twelve inches deep!

Did any body remark Mr. Selah Jedediah Pomroy's French coaching Stallion? I could not find it, but I congratulate the Compton farmers on having at last got a chance of breeding carriage horses with second thighs, and good hocks. The Hambletonians had a long reign in that fine district, and it will take some years to eradicate the weeds they grew.

Bravo, Mr. George Reburn. Your brave behaviour with the savage St. Foy bull is another proof that quietness of manner and courage oftener go together than pluck and bragadocio. No more thoroughly gallant action has fallen under my observation since I saw Lord Feversham's great red bull

(1) I am told that his owner refused $500 for the pony!

A. R. J. F.

held by Booth's herdsman at the R. A. S. show at Nottingham.

Mr. Stevenson, in his remarks on the exhibition to a *Star* reporter, observed that several of the judges knew nothing about the articles they had to decide upon, and others were partial to their friends in their decisions. Pretty severe charges, indeed. He goes on to say that the lumber and fishery exhibits were trifling in number and inferior in quality: he might have added that the poultry-house was miserably lighted and wretchedly poor in appearance.

Arthur R. Jenner Fust.

DE OMNIBUS REBUS.

Box 109, Lachine, Que.—August 10th, 1887.

Mixed classes.—I regret very much to see that this practice of assigning prizes to mixed classes, of both cattle and sheep, at our exhibitions still obtains. It was so for a long time in England, as I see by looking over some old reports Even as late as 1865, Sussex cattle, Suffolk polls, and longhorns—Bakewell's models—were all lumped together, and pleasant work it must have been for the judges to sift out the best of the various competitors, no two lots of which could be judged from the same point of view. At the Plymouth (1865) meeting of the Royal, the prizes for the mixed class were assigned to the following animals: *Old bulls;* 1. Longhorn; 2. Polled Suffolk; *yearling bulls:* 1. Polled Suffolk. *Old cows;* 1. and 2., polled Suffolk; reserved number, Kerry! *Heifers,* 1., Longhorn; 2. and 3. polled Suffolk. Conceive a tiny Kerry cow competing with a great Longhorn—they possess no two points of similarity in common.

In the report of the judges at the same show, I find that they were by no means satisfied with this style of procedure. In their observations on their decisions on the classes devoted to the "Channel Islands" cattle, Messrs. Dumbrell and Le Cornu write: "We should have done better to have left out 'the Sussex and other breeds" class, and, in its place, to have established two separate classes, one for Jerseys and the other for Guernseys. In closing these remarks, we would beg to draw the attention of the Council to the difficulty which exists in awarding prizes in a mixed class; for although the Channel Islands are very nearly allied as regards locality, their breeds of cattle are totally different; and we would respectfully suggest that should the entries, in future, be as numerous as on the present occasion, some distinction should be made in the classification, so as to encourage separate competition for each breed." Classing Jerseys and Guernseys together, is a mere trifle compared with the absurdity of putting Oxfords and Hampshire-downs in competition with each other. Even now the type of the Oxfords—cross between Cotswold and Hampshire-downs—is by no means fixed, for some of them look like long-wools, and others much more like Downs, as any one, judge or not, can see at a glance, and last year, at the Norwich exhibition of the R. A. S. Eng., Mr. Sanders Spencer, the Senior Steward of Live Stock, reports that: "In the aged Ram Class, the first prize was won by Mr. J. Treadwell. Some surprise was expressed at the action of the judges in awarding the second prize to a ram from the same flock, as there was *a decided tinge of gray* in the wool upon the ram's side."

As to the Hampshire-downs, I am surprised to see that in his report of the values of sheep, Mr. Brown, of the Guelph College, places them so low in the scale of early maturity, a quality which, especially in this country, where nine lambs are slaughtered to one wether, is of very great, if not of the greatest importance; putting, as he does, the different breeds kept at the college in the following order:

Leicester	1
Oxford, Southdown	2
Hampshire-down, Shropshire	3
Lincoln	4
Cotswold	5
Cheviot	6
Merino	7

But, strange to say, according to Mr. Brown, the sheep, arranged in order of general excellence as indicated by the total marks for weight of fleece, early maturity, weight of wool, prolificacy, &c., &c., stand thus:

Southdown	1
Hampshire-down	2
Shropshire	3
Oxford	4
Leicester	5
Cotswold	6
Lincoln	7
Merino	8
Cheviot	9

And it is worth noticing that, while the Hampshire-downs do not obtain the highest number of marks under any one point, they yet stand second on the general list. (1)

Very different, as regards the early maturity point, was the opinion of the judges of the R. A. S. Eng. in the year 1886: "As to the Hampshire-downs, the "coming sheep," as some of its admirers term it, *there is not the slightest doubt that, for early maturity, it stands pre-eminent,* and that this quality is transmitted to cross-breds, in which either sire or dam is a Hampshire."

Uniformity, in all flocks of cross-bred sheep, takes a long time to secure. As late as 1865, neither Shropshires nor Oxfords had attained to it. In that year the judges of the R. A. S. Eng. observed that: "while the Oxfords possess great size and mutton-giving properties, they lack the uniformity which should be apparent in each distinctive breed." Of the Shropshires they remark: "The character and type of the sheep exhibited on the whole is good, but there are a few exceptions, and breeders will best serve the interests of this class of sheep by paying all the attention possible to uniformity, which is the attribute most calculated to assist their natural good qualities, and render them still more attractive to flockmasters generally." To which the Senior Steward adds: "There can be no doubt that in the last named classes of sheep (Oxfords and Shropshires) there is some want of agreement as to type among the different breeders, and this want of uniformity appears to be the weak point in breeds, which, to an unprejudiced eye, appear most valuable as producers of both mutton and wool."

The reporter for one of the Montreal paper, in his notes on the Sherbrooke show, evidently takes the Hampshire-downs and the Oxfords to be one and the same breed: "Mr. J. Neilson showed some grand specimens of *this now favourite breed*"! And again, speaking of the Lincolns: "For weight, early maturity, and turn off of wool, the Lincolns are the first favourites in the Old Country at present." Fancy, the early maturity of a Lincoln!

A. R. J. F.

Milk fever.—Mr. Reay, who won the "first prize for the best arable farm," given by the R. A. S. Eng. at the New-

(1) At Quebec, Prof. Brown told me that he had been unfortunate in the selection of the ram of the Hampshire-downs though it came from the flock of Parsons of Micheldever!

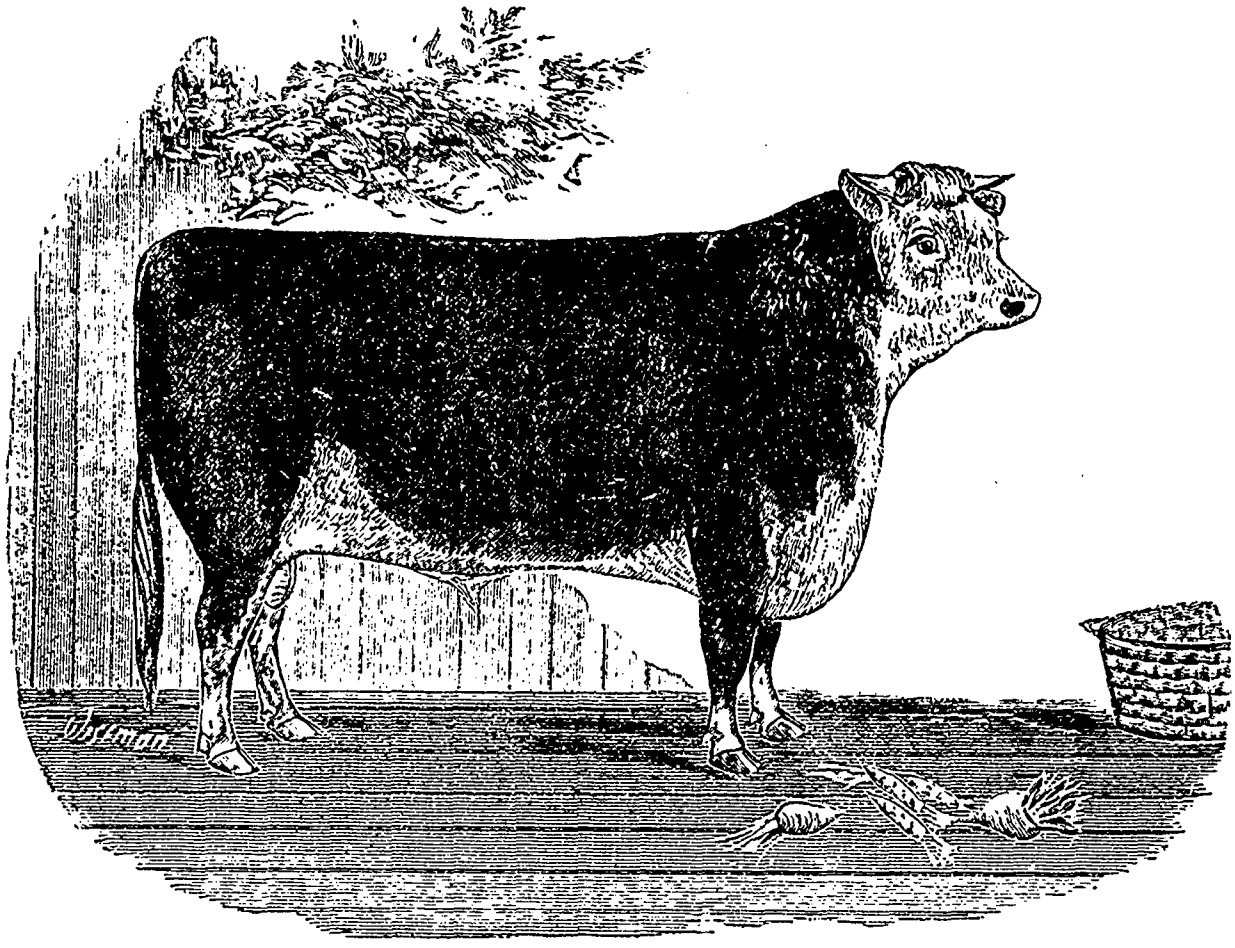
A. R. J. F.

castle meeting, as well as the £100 offered by the Newcastle Farmers' Club for the best-managed farm in the first four sections, has been always very *fortunate* (?) with his cows. While many in the district have suffered from abortion and parturient fever, not a single cow of his has been affected by these fell diseases. This is the more remarkable, because Mr. Reay is a heavy feeder, and he attributes his cows' immunity to his keeping their bowels open by copious supplies of *treacle*, i. e. molasses, before calving. Mr. Reay milks thirty-five cows, and the average yield of his herd, last year, was 2½ gallons a day, which, at one shilling, makes the pleasant return of $220 a head. The cows are fed three times a day with a mixture of pea-meal, bran, and brewers' grains. No cake is used, but hay is given *ad lib.* The food is all steamed and the treacle is mixed with it when cold.

A comfortable business, truly, but then Newcastle is a wealthy town, and the inhabitants can well afford to pay good prices. Still, 24 cents a gallon, wholesale, is a large order. The cows are, of course, dairy shorthorns, and I wish to goodness I could see a few of them at Compton or Sherbrooke. (1)

Manual Centrifuge.—To any one who reads the English Agricultural Gazette, the name of "Smith of Woolston" will be familiar. I really do not know whether the palm of bigotry in matters agricultural should be awarded to him or to my old friend Archdeacon Denison! Mr. Smith, who attacks every body, and every thing that does not derive its origin from Woolston, having lately invented a mysterious implement, that he calls "The Dairyman's Dairymaid," of course falls foul of the hand-separator—see his letter below:

—THE CENTRIFUGAL CREAMER.—At page 38, I said that the centrifugal creamer is not a practical application for the general dairyman. Now, I will give some evidence upon the point based upon Dr. Voelcker's report on the award at Dorchester the other day to the hand separator. The report starts thus: "It is capable of separating twenty-five gallons of milk per hour," after which he says, "Forty turns of the handle per minute causes no less than 6,500 revolutions of the bow containing the milk." Now forty turns of the handle per minute is over four miles per hour, therefore the man's hand must go at that speed, and his whole body must work proportionately hard. Churning, generally, is not done at that speed, but it has always been found to be hard work. Upon this datum I find that it costs 1¼d. to separate a gallon of milk. That is the thing that is dubbed as the best, and receives the award. It is a regular pickpocket, robbing the dairyman of more than a penny out of every gallon of milk it works. Now let us see what the doctor says about the quality of its work. By it, he found a remnant of only 0.18 per cent. of fat, while some of the other systems left as much as 1.5 per cent. This, near upon 1 per cent. of fat over other systems, would be worth a fraction of a farthing per gallon of



IMP. HEREFORD BULL, SIR HARRY, BY LORD WILTON.

(1) Mr. Mairs' cow at Quebec was an almost perfect specimen of the Dairy-shorthorn. A. R J. F.

milk. Therefore the penny in excess in the cost of work stands dead against his report and the award. So much for a "Royal" fancy upon showyard matters. The learned doctor does not tell us what the excess of milk in cream turned out by the centrifugal system is. It is greatly in excess of the old skimming dish, therefore it is vastly damaging, upon the general dairyman's point of view. The whirligig may do for cream sellers, but it will never do for the general dairyman. —*W. Smith, Woolston, July 12th.—Eng. Ag. Gazette.*

—The Centrifugal Creamer.—Mr. Smith makes a mistake. This implement is a decided success, and one of the greatest improvements of the age so far as farming is concerned. How does he make out that it costs 14d. in wages "to separate" a gallon of milk? The hand separator passes twenty-five gallons per hour, and one man works it for an hour (hard work I will admit), and 1¼d. would be 2s. 6¼d. for one hour's work of a man! High wages those, Mr. Smith! Men in England get 3d. per hour. Now, suppose two men work it, turn and turn about, that would be just 6d. to separate twenty-five gallons, or ¼d. per gallon, and easy work to the men. But Mr. Smith must not lose sight of many other advantages these De Laval's separators possess, for they save all setting of cream, all skimming of cream, all the washing out and scalding of the numerous milk pans needed in a large dairy; and, though last, not least, the calves get "fresh" separated milk not one hour old since it left the cow, and still quite warm when carried to them, instead of getting their skim-milk twenty-four or thirty six hours old. No. Mr. Smith, you must not run down the Swedish cream separator.

I believe that no greater boon has ever been offered to the dairy farmer than this implement, and I do not hesitate to say that every sensible man who milks ten or twelve cows will provide himself with one as soon as he can manage to scrape up the means to pay for it.

Pleuro-pneumonia seems to have got a foothold in the State of New York. A most serious a matter, as no one feels more deeply than I do. I only hope the government will not play with it: nothing but the strongest measures can cope with it. At present, I hear, for a diseased animal that is slaughtered $20 are paid, and for a healthy cow, killed to prevent the spread of the disease, $40. In the district infected there are said to be 30,000 head.

Fallows.—Though Sir John Lawes piques himself on the great attention paid to his advice throughout the United States, he must not by any means imagine that all he says is taken for Gospel. At a late meeting at Rothamsted, reported for the Country Gentleman by Mr. Bowick, of Harpenden, the following results were arrived at: One plot of wheat had been grown for 35 years in succession, with an average yield of 48 bushels an acre, using 2½ cwt. of nitrate of soda and a dose of superphosphate, the weight of which is not stated. On another, there had, for the same period, been alternate fallow and cropping (with wheat I presume), without any manure, and the yield was 18 bushels an acre! This means, of course, that the yield of the acre was only 18 bushels *in the two years* = less than one fifth of the land treated with nitrate of soda and superphosphate. Sir John, at luncheon, told his guests that the fallow-experiment proved most conclusively that land could not grow good crops without its being manured, and exploded the old theory of fallowing. Another division had grown wheat for 43 years consecutively without any manure at all, and the average yield had been 14 bushels an acre, which he pointed out, exceeded the crops of most of the wheat growing countries of the world. Curious enough was another experiment: a plot was sown with wheat three years ago, and left to ripen, drop its seed, and take its chance. Now, there is hardly a blade of wheat to be seen on the whole piece!

GROUP OF AMERICAN MERINO SHEEP.

But about this question of fallows, Mr. Henry Stewart does not agree with Sir John Lawes; he says that summer-fallowing is of the greatest benefit to land; whereupon a correspondent of the Country Gentleman is anxious to have these opposing views reconciled. The solution of the question seems simple enough: No one would dream of summer-fallowing light land; frequent ploughing and stirring such soil would make it what farmers in my country call deaf, i. e., too loose to afford good root-hold to the plants. Besides, there would be necessarily a great loss of profitable time in letting land lie idle that would grow a good crop of roots or of corn. Land too heavy for roots might be sown with fodder-corn, tares, or rape, for sheep-feed or for mowing green for cattle or horses: in fact, do anything rather than fallow land, unless it is so foul that there is no other mode of cleaning it.

The answer to the question by the editor of the C. G., who is always strictly non-committal, is: "This question involves several different considerations, and for this reason causes conflicting opinions with different persons. There are some soils where a mere exposure to light and air may be useful, and others, again, where there would be a positive loss. But the subject has not been sufficiently investigated by accurate experiment to point out what soils would be thus affected, and arbitrary opinion would not be of much value." No, I should think not; but the writer should really know something of what has been going on at Rothamsted for the last forty years, and not the least of Lawes' results has been that unmanured fallows are a waste of time and labour.

Hay making.—I do hope that the farmers of this vicinity are not taken as examples of good haymakers. Most, if not all, of the hay here has been allowed to die on foot, has been mown, and carried without being even once turned—it is as yellow as straw. Hay is, or ought to be, grass dried in the shade; the shade being afforded by the constant exposure of new surfaces to the air acting as a protection to the under parts from the piercing rays of the sun. A dull time with a good breeze makes far better hay than a bright, sunny time and still weather. The subjoined extract, from the Country Gentleman, is correct in every respect, except that it forgets to mention that if the tedder is used at all for clover, it should only be worked with the back action. For myself, I prefer getting clover into "wind-rows" as soon as possible, turning them carefully, and putting them into cock as soon as both sides are wilted a little. Keep the leaf on the stems, whatever you do, and if you have to stack anything out of doors, let it be the clover.

There can be no question as to the value of the hay tedder in the farmer's meadow. It will repay its cost and the labor of using it, and return an ample profit in the better quality of the hay produced. The great trouble is that so many farmers in every State and county either persistently forget, or do not in fact know, that hay is *dried grass*, and from year to year they allow their timothy and other grasses to ripen and die in their meadows before cutting. Very little curing is then needed; cut it down in the morning, and house it in the afternoon. It is dry before it falls, and no tedder can be of any use. Many a farmer will tell you that he waits to cut his grass until he can do this very thing. It saves so much trouble in mowing, and escapes bad weather, he says. His father "allers" did so. You cannot convince him that his hay is inferior, hard, woody, devoid of substance—dead grass instead of dried grass. You cannot make him see that it is not green in color when put in the mow like his neighbor's. He does not notice that it lacks the sweet odor that new-mown hay ought to possess, nor will he admit that his cattle leave much of the hard stalks in the manger; but he often wonders why an immense load of his hay weighs so "plaguey" little. You argue with him, and he finally trots out his other reason for cutting late. The timothy seed drops and renews the meadow from year to year, he says. So it is easy to understand why the tedder is not used more universally than it is." C. G.

Above all things, cut your clover in time. There was a remarkably fine piece of new grass close by my house, this year, in which the clover had failed except on one patch of about four acres. On this patch, there was very little timothy visibly, but the clover was grand, and fit to mow on the 16th June. I mentioned this to the farmer, but he replied, "Oh I haven't time to attend to a patch like that;" and it was not till three weeks afterwards that the meadow was cut! What was the consequence? The mower sliced off the heads of the clover and about ten inches of the stalk, the remainder of which, *kneed down*, was left on the land: the heads, and the stems without a leaf, were all that saw the barn. On the same farm, a piece of timothy, by no means a heavy crop though a fair one, was cut on Saturday, July 23rd—three weeks too late—lay out in those broiling days the 24th and 25th; and was carried, without having turned even once, on Tuesday evening. If this is the way to make hay, I know nothing about it!

Statistics of English prize-farms.—The amount of stock kept on the best managed farms in England will seem astonishing to many of my readers when they see this article. I condense it from the reports of the judges commissioned by the R. A. S. to inspect the farms entered in the annual competitions in the years 1885 and 1886:

Stapleford farm, near Chester—*tenant*, John Lea; 280 acres, of which 104 are arable.

Stock = 91 Shorthorn cows, sales of dairy products = £27 a head = $135.00 x 91 = $12,285.00; purchased food—cake, bran, corn-meal, brewers grains = $3220.00

Arable land; sales = £1,550 = $7,750.00.

Rent, tithes, poor-rates = £697 = $3,485.00 = about $12 an acre.

Manure bought = 19½ tons bonedust; cost £122 = $610.00; and a ton of guano = £13. 10 = $67 00.

Labour cost £410 = $2,050.00 = $8.00 an acre.

Cheese in the year mentioned, sold for an average of 73s. 6d. per Cheshire cwt. = 120 lbs. = 14½ cents a pound.

A pretty profitable investment of capital, in spite of the bad times of which we hear so much. The fact is, that farmers in the grass-districts are having a very fair time of it, and Mr. Lea's occupation is *farmed*, and the first prize was duly awarded to him.

Such a lot of implements in the shed: four carts; one liquid manure do; two sets of drag-harrows; one grain-drill; one double-row turnip-do; one clover-seed do; one clod-crusher; flat-roller; 3 two-horse ploughs; 1 one-horse plough; two drill-ploughs; one four-furrow drill coverer; chain-harrows; horse-hoe; mowing-machine; reaper; hay-tedder; and 2 horse-rakes; and three pairs of "very good farm-horses" to work them.

I have to observe that on all the farm-prizes—except one on which Suffolk-Polls are kept—no other breed but the shorthorn is to be found. On the second prize-farm of Mr. Parton, the liquid manure from the cow houses drains into a ditch, whence it is carted over the lower meadow, and as liquid manure is not a perfect dressing, 5 cwt. of bones are given every three years to the land to which the liquid is applied.

Of dairy-farms under 100 acres the one that gained the first-prize is in the occupation of Mr. Ed. G. Hothersall = 77 acres, all in permanent grass, of which 39 acres are mown

every year. Mr. Hothersall began with only 20 cows, now, he milks 52 (1) Fancy a farmer on so small an occupation as this winning Lord Vernon's 100 guineas prize for the best herd of dairy-cattle in the Preston district, lying in the counties of Lancashire, Cheshire, and West Yorkshire. The judges, Messrs. Tisdale, Williams, Bell, and Algernon Fawkes, all well known dairymen, report "that in respect of (1) selection of cows, (2) average yield of milk, (3) the greatest yield of milk on trial day, (4) least number of acres per cow, and (5) greatest percentages of fat and total solids in the mixed milk of the whole herd, this herd was far superior to all its rivals in the competition." Rent, tithes, and rates = $1690 00. The tenant is a regular working farmer, who knows his business and does it. He lost his father early; helped his widowed mother on a still smaller farm than the one we are speaking of, helped in the cow-house from early boyhood, and after school milked the cows every evening. I do not think that Mr. Hothersall would have been a much better farmer than he is, had he passed two or three years at an agricultural college!

Here, if a cow shows signs of milk-fever before calving, she has a drench or two of linseed-oil; if she is attacked with it after calving, a pint of whiskey, with six pounds of treacle and a quarter of a pound of Epsom salts are administered, a mustard embrocation being well rubbed into her loins.

Mr. Shercon, who won the second prize (1885) must find it rather a difficult matter to keep up his reputation, for there is a very large head of game on his farm, especially of hares, thirty-five of these *beasts* being counted by the judges in one field at one time.

On Mr. John Cropper's tiny 50 acre farm, (1st prize under 100 acres), the two best carthorses out of the three kept, cost $350.00 and $385.00, respectively, apiece! One horse sometimes takes a load of 3 tons into Liverpool—8¼ miles—and as everything is weighed as a rule, there is no guess-work about the load.

Mr. Learner, first-prize for farms under 500 acres and not less than 250 acres, does not single his turnips, &c., so cheaply as could be wished: after horse-hoeing, the plants are struck out ten inches apart, singled by hand, and twice hand-hoed, at a contract-price of $2.50 an acre; but, as this is the only instance in all the reports of singling being conducted after my fashion, I thought it worth mentioning. The only example of uneconomical work I ever met with in Scotland was that the hoers single their turnips. With women at 20 cents a day, the practice may be tolerated, but in this country I am sure that the cheapest plan is to *gap* out the turnips with a 7-inch hoe, and let children single the bunches. Mr. James Drummond used to sow his mangels by dibbling at a foot or so apart, so that singling could be done at any time; but, when I saw his crop (1880), the seed had been dropped too thickly, and the young plants, in coming up, had entwined themselves round one another, so, upon the whole, I should prefer drilling. Mr. Learner says his land responds better to rape-cake as a manure for mangels than to any other artificial manure he has tried, and no wonder, as rape-cake contains about 6 % of nitrogen = 7.284 of ammonia; so that the usual dressing of six cwt. of cake would give about 44 lbs. of ammonia to the acre, in addition to that contained in the farmyard dung. Nitrogen, my readers will recollect, is the specific manure for mangels.

As to management of grass-land, there is not much said about it in these reports, as, in England, every body is supposed to understand it; only, most of the farmers who compete seem to have a horror of mowing pasture land, particularly Mr. Proctor (2nd prize), of Downham Market, Suffolk, who assigns as one reason among others, that his predecessor in the farm mowed a fattening pasture, with so deteriorating an effect that five or six years of heavy cake-feeding barely restored it to its former power of growth and condition. Pretty much what my brother related as the opinion of his Gloucestershire tenants; v. August number, 1887. An essential point in dairy management, according to Mr. Proctor, is that something nice should be given to the cows while being milked; it attracts their attention from the milkers, and they give down their milk more freely.

One good little Suffolk-poll of Mr. Proctor's gave 1200 gallons of milk in eight months, which realised at the station, on the farm, the agreeable sum of $192.00!

Treatment of down-calvers seems to be, generally, something like this: About ten days before the cow is expected to calve, she is kept pretty poorly, and a drench with a pound of Epsom salts and an ounce of ginger, in beer, is administered, which dose is repeated about two or three days before calving. After calving, 3 ounces of sulphur, 2 ounces of nitre, and the yolk of an egg, mixed in strong beer, are given, and as much bran-gruel as she wishes to drink, say ¼ peck of fresh bran to 3 gallons of water—the bran to be well scalded first. Heavy, thick bran-mashes are thought dangerous.

In cases of milk-fever, prevalent in Quebec as well as in England among heavy-milking cows, the bowels must be *kept* open; castor-oil, treacle, salts, &c., are used for that purpose. Then a free use of stimulants, old ale and whiskey, a bottle of each to begin with not being to much. One cow is mentioned, a pedigree polled Suffolk, that recovered and did well after taking 14½ pints of brandy in 58 hours!!!

I have always been possessed with the idea that our French-Canadian farmers of heavy soil are right in ploughing their land into narrow ridges. A somewhat long experience of the best cultivation of soil of this description in Kent, Surrey, Sussex, Cambridgeshire, and Essex, taught me that, however well under-drained heavy land may be, it is seldom or never sufficiently so to be allowed to depend upon the drains for its rapid clearance from sudden heavy falls of rain. I see by the reports I have under consideration, that the practice of retaining heavy-land ridges in the old form still obtains in the Eastern counties of England:

"The arable is cultivated on the 9-feet stetch or ridge. After it was drained, an attempt was made to increase the width of the stetch; but experience proved the utility of a "hark-bark" to the "corduroy," as the late Mr. Mechi used to designate land so laid up." And we must not forget that, if the *drained* land of the East of England will not stand ridges of more than nine feet in width, *a fortiori* must it be dangerous to increase the width of the heavy land stetches in the *undrained* soils of this province. Tenacious soils possess the properties of expansion and retention in a much greater degree than the property of transmission, and hence, however well the land may be drained, when a great and continuous rainfall occurs, or when a great thaw converts the snow very rapidly into water, the above properties so prolong percolation, that unless an escape by the surface is provided, the young plants suffer, and the more soluble parts of the organic and inorganic matters contained in the upper soil are washed away into the nearest watercourse. A headland holding water being sown when too wet and so perishing the plants, is a circumstance that every practical man has observed; and something like this, though in a less marked degree, takes place on clay land when laid on wide flat ridges.

After ploughing, the horses are not allowed to travel on the ridges, but all the after-cultivation is done from the furrows. In autumn ploughing, in Kent, nothing is more common than to see at work three, and on the very heavy "London clay" formation, 4 horses at length in the furrow with a driver, and this to keep the team from treading—locally

(1) All Shorthorns! A. R. J. F.

poaching—the unploughed land. Some drills are made wide enough to cover the ridge, and in this case the horses walk up the furrows on each side, the drill being between them; but this is where the ridges are not more than 7 feet 6 inches wide. Where they are of the full width of nine feet, a drill covering half the ridge only is used: the horses, at length, walk up one furrow and down the other, completing at a "bout" the sowing of the whole ridge. The harrows take the whole ridge, the horses of course in the furrows with a long stretcher for the whipple-trees, and the roller is *broken-backed*, rolling two halves of contiguous ridges. The clover-leys are ploughed nine inches deep for wheat with a *skim-coulter* plough, and when the presser has been applied, I defy the most observant eye to see a particle of grass or weed from one end of the field to the other. Kent is not so skilled, as a rule, in general agriculture as the other Eastern counties, but as regards fruit- or hop-growing and the preparation of clover-leys for wheat, my beloved old county can beat the world.

Of course, in these days of reapers and mowers, care must be taken to slope off the sides of the water-furrows. I mentioned, I think, in my report on Mr. Aries' farm at Saint-Césaire last autumn, how very cleverly that gentleman had arranged his *rigolles*.

Root-growing on heavy land seems to be chiefly restricted to mangels, and, in Suffolk, their old strong point of sowing everything on a *stale-furrow* is carried out in its perfection by the farmers. The preparation of the land is begun immediately after harvest by looking over the stubbles and forking out any couch-grass or other root-weeds that may be in them. The land then receives a deep furrow; and is thrown up into 30-inch drills, and so lies rough and open till spring, and when dry, the manure—dung and some ammoniacal artificial—is applied, the drills split, and in April, by which time the spring frosts, the wind, and the sun, have well weathered the surface, a fine tilth will have been secured for the reception of the seed. I think this might be easily arranged for here, except the forking out of the couch, which would be impossible for two reasons: first, because no one could be found to take enough pains to do it properly, and secondly, because it would be too expensive. Still, with our early harvests, the cleanest stubble might be chosen, the grubber put across it both ways, and the ploughing, drilling up, manuring, &c., could be done before the frost came. I do not think much of the damage that would be caused by the spring-thaws washing the manure, as it would lie pretty securely in the ground, and the furrows between the drills would allow the melted snow to get away with ease. I fancy from what I hear, that most of the heavy land roots in the East of England are now grown in this way.

ARTHUR R. JENNER FUST.

Experiments in Tomato Growing.

EDS. COUNTRY GENTLEMAN—This season I grew eighteen different kinds of tomatoes for the purpose of knowing which kinds are most suitable for my soil and location. The soil I grew them in is a rather heavy loam, well manured and well cultivated. The seeds of the different kinds were sown in a greenhouse April 9th: all vegetated rapidly, and as soon as large enough the plants were transplanted into shallow boxes, using very rich soil. They were placed in a hot-bed, and kept growing without any check until planted in the open ground May 25th. They were thoroughly hardened off, however, before setting out. I do not care for extra large plants to set out, if they are stocky and well exposed to the atmosphere, so that they shall not feel the change in being transferred to the open ground. I plant in rows five feet apart, and four feet between the plants in the row, do all the cultivating with a horse, and allow them to grow at will, with the exception of cutting off some of the foliage and young shoots, to allow a more free circulation of air and more sunshine to the fruit. I have tried tying up the vines, but find it unprofitable to the market gardener.(1) While the fruit may be and is cleaner and better flavored, I do not think so much fruit can be got as when they are allowed to lie upon the ground: nor do I think there is any difference in the time of ripening. (2)

The rot is the great drawback in some sections in tomato culture, not that I can see any particular kind of soil more favorable to rot than another. I have had similar success with the same varieties on very different soils. I have closely watched this rot pest for a good many years, and have concluded that, like grape rot, the cause is atmospheric. This season after planting we had a long dry spell of weather, lasting, in fact, until we had begun picking ripe fruit. We then had several days of close, rainy weather, followed by another dry period. Several days after the rain a good many of the tender-skinned varieties showed that rot had begun on much of the half-grown fruit; the small, newly formed fruit, as also what had begun to change in color, where exempt from it, but it destroyed nearly every half-grown fruit. As a consequence, we were without good fruit to pick after what were ripening had matured, until the small ones matured. I, however, picked off all the affected fruits as soon as I saw them, going over them every day, and removing them from the field altogether. This in itself, I think, is a means of checking the spread of the disease, as this season we had only the one attack of the disease upon our plants.

The first variety to ripen with me was Precursor, but it was one of the most wrinkled tomatoes I ever saw. No rot affected it, however, as it is one of the tough skinned kinds. Buist's Beauty, Livingston's Beauty, Cardinal, Perfection and Acme all ripened about the same time. All are excellent varieties, being smooth, ripening thoroughly, and of excellent flavor, but they are all liable to the rot. Favorite is my standard for fine fruit, fine color and excellent flavor; it is also comparatively free from rot.

In Mikado and Turner's Hybrid—if the seed were only carefully selected from the smoothest fruit—we should have an excellent tomato. I say tomato, because I consider both varieties the same thing, at least on my grounds. Although the seeds came from different seedsmen, and were sent out as true to name, there was no difference. With regard to selection of seed, if Improved Queen and Essex's Hybrid were carefully selected, I think two good varieties would be secured. They are both good tomatoes, solid, good color, but many of them badly wrinkled.

New White Apple is a well flavored white fruit, small in size, and most excellent for canning whole, and for sweet preserves.

Golden Queen was the best yellow tomato I had; the fruit is large, solid, and very smooth.

For my own taste, I prefer a yellow or white tomato to any other color. If grown on dry soil, they have a much better flavor than any of the pink or red kinds, grown on wet soil, they are liable to be too watery and not very solid.

Mahoning County, Ohio. M. MILTON

The General-purpose Cow.

Every little while I see articles in the agricultural papers asserting that cows alike suitable for a profitable production of

(1) Because he will not try the single stem plan. He takes 20 square feet for one plant; I take 4 square feet. I have 10,890 plants on an acre; he, 2176. A. R. J. F.

(2) About ten days. A. R. J. F.

a combination of milk, butter, cheese, and beef, do not exist, and cannot be bred for this purpose; that they must, in order to prove profitable, be bred for a special purpose; that is, either for a great yield of milk only, or for butter, or cheese, or beef, as either may be required. Now for farms devoted to a special product, special-purpose cows will undoubtedly be the best sort of stock; but the great majority of farmers are not thus engaged, for they grow grass, grain, and roots, and they must keep such a class of cows as most profitably consume these in combination, and yield them in return milk, butter, cheese; and finally, when dried off and cheaply fattened, a good quality of beef.

The early short-horn breed of cows eminently excelled for the general purposes of the English farmers, till beef and fancy points in them paid better than dairy products; then, such as were recorded in the Herd-book began to be bred more generally for the former rather than the latter purposes, but there are thousands of unrecorded cows still kept in the Northern counties of England that still excel as general purpose animals, and few others except these are kept by the numerous tenant farmers there. (1)

Recently such milking families of herd-book recorded cows, as have been preserved are being multiplied in England by the short-horn breeders, as they are now finding out that such strains are the most profitable for them in many instances. This is also getting to be the case in America, and except on those farms and vast plains bordering the Rocky Mountains, where the production of beef alone is the object, the general-purpose cow is the one preferred.

Well-Grown Pot Vine in Bearing.

In the same way the beautiful Devons and the red polled Norfolk and Suffolk cows are bred both in England and in America, while the noble Guernseys have always excelled, and in consequence of this they are likely, as multiplied, to become the most popular of all breeds amongs us, except the milking families of short-horns. The red polled cows may also come in the first rank as fast as their merits become known.

R. N. Y. A. B. Allen.

(1) Except in the few counties where the Devons, the red-polls, or the Herefords are bred and reared, the shorthorn is the farmers' cow all over England. Even in *Glo'ster*, the next county to *Hereford*, the dairy-cattle are all shorthorns. A. R. J. F.

Hay for farm horses.

Inquirer asks—"What is generally considered to be a fair quantity of hay to give farm horses at ordinary work, such as carting, &c.? I find my carter says he cannot do on less than 30 lb. each daily. Is this an excesssive quantity, or is it only a fair average? The horses seem to want it and would eat a good deal more if they had it. I have always up to the present managed to limit to 20 lb., but now it seems impossible. I may mention that they have no other food except 2 gal. of good oats daily.

Referring to the 115 rations enumerated in Mr. J. C. Morton's paper on the "Cost of Horse Power," in vol. xix of the Royal Agricultural Society's *Journal*, we find that in upwards of eighty cases wherein hay is specified as an item a few give it *ad lib.*—with oats, about 120 lb. a week.(1) Many give a mixture of hay and straw, half and half, *ad. lib.* in like manner. Where the quantity is specified, it varies from 42 lb. to 168 lb. a week, and, in one case, where nothing else is given, 294 lb. is named as the weekly consumption. Many give no hay whatever. Mr, J. Coleman gave 84 lb. of oats and 16 lb. of beans, and straw *ad lib.*, weekly; M. T. P. Dods, 95 lb. of oats., 56 lb. of roots, and straw *ad lib.*; Mr. M. Sandford, of Dover, gave 56 lb. of hay, 42 lb. of oats, 80 lb. of carrots, 20 lb. of bran, and straw *ad lib.*; Mr. Sowerby, of Aylesbury, gave 105 lb. of oats, 28 lb. of beans, 7 lb. of oilcake, and straw *ad lib.*; Mr. Morton, 126 lb. of oats, 350 lb. of carrots, and straw *ad lib.* These were all winter rations. Your allowance of hay is excessive.

Well-Grown Nectarine in Bearing.

(1) Surely a misprint! 80 lbs. of oats a week are enough for any ordinary farm-horse. (I see!—the omitted comma makes it all right.) A. R. J. F.

OUR ENGRAVINGS.

Nectarines and grapes in pots; v. article on.
Hereford bull, Sir Harry; v. article on.
Steam cultivators at work; v. article on. (1)
American Merino sheep; v. article on p. 160.

CREAM SEPARATORS.

At the Kilburn Show the late Dr. Voelcker tested the Laval machine on behalf of the Royal Agricultural Society, and in his report he stated that by its use 93 per cent of the butter fat of the milk had been obtained in the cream, as compared with 78½ per cent, the average result of the common system of skimming; or, in other words, that only 7 per cent. of butter fat had been left in the separated milk, against 21½ per cent. in the skimmed milk. A later test, carried out at the London Dairy Show, gave results still more strikingly in favour of the separator, nearly four times as much butter fat being found in skimmed as in separated milk Peterson's more commonly known as the Danish separator (Laval's being the Swedish), has given quite as good results, the most exhaustive test of all having been made, we believe, with this machine. We refer to 600 experiments carried out by Professors Fjord and Storch, of Copenhagen, extending over a whole year. The results, first published in 1882, are recorded in Long's "British Dairy Farming." When the separator was used, the quantity of milk required to make one pound of butter was 24·4 lb.; when milk was churned, 26·7 lb.; when cream raised upon the ice system in thirty-four hours, 27 5 lb.; under the same system in ten hours, 29·5 lb.; by the cold-water system in thirty-four hours, 32·4 lb. It is to be observed that this victory for the centrifugal separator was all the more triumphant because the ice and cold-water system are improvements upon the old shallow-pan method, which was not tried at Copenhagen. It was the Danish machine, too, that was used in some experiments carried out at the Munster Dairy School in 1885, from January to July. The average results of forty-three experiments were to this effect:—Taking the butter from separated cream as 100 lb., the butter from an equal quantity of milk set in open pans, skimmed after twenty-four hours, was 59 lb.; after thirty-six hours, 66 lb.; after forty-two hours 73 lb.; and fifty-four hours, 76 lb. At a single trial made in 1886, a quantity of new milk was divided into four equal portions, one being set for twenty-four hours in shallow tin pans, a second in Swartz cans cooled in iced water for twenty-four hours, a third portion in Cooley cans cooled in iced water for eighteen hours, and a fourth put through the separator. On the cream from each lot being separately churned, 16 per cent. more butter was obtained from the separated cream than from that raised under either of the cold-water systems, and 24 per cent. more than from cream raised under the shallow-pan system still in general use throughout the United Kingdom. The manager of the school informs us that his experience leads him to the conclusion that 24 lb. to 29 lb. of milk, according to season, will produce 1 lb. of butter when the separator is used, while 30 to 35 lb. will be required when the skimming process is followed. It is worthy of notice that two horses, instead of a steam engine, as usual, have recently been used to drive the separator at the Munster Dairy School. The most remarkable results, however, are those obtained by Colonel Curtis Hayward, of Quedgley, Gloucester, who, during a period extending from October, 1885, to February, 1886, obtained from a dairy of forty two cows, eleven of which were of the Channel Islands breed, an average of 1 lb. of butter to 19½ lb. of milk, the Laval separator being used. Winter milk, it is to be observed, gives a higher proportion of butter than summer milk; but Colonel Hayward's proportion has seldom been equalled, and he is of opinion that the separator gives 20 to 25 per cent. more cream than any skimming system. He has found that he gets 1 lb. more butter per cow per week by using the separator than he obtained before using the machine. —*The Engineer.*

(1) Owing to pressure on our space, these articles must be deferred till next month.

Guernseys for Beef.

EDS. COUNTRY GENTLEMAN.—Having no further use for my Guernsey bull Cæsario 929, I decided to fat him for beef. He was in good show condition at Christmas last, but beef was then so low that I did not care to sell and agreed with the local butcher to feed him highly until Easter. I accordingly made up a ration from Prof. E. W. STEWART'S tables, mixing with good quality cut hay, cottonseed meal, corn meal and wheat bran, and feeding all the bull would eat. I found that he would not eat more than about two-thirds of what Prof. Stewart recommends for an animal of his weight. On Dec. 29th he weighed 1,965 lbs. He was again weighed on April 7th, being 17 days less than four years old. He was not fed from noon on the 6th, and at 10 A. M. on the 7th weighed 2,052 lbs. He was killed that afternoon, and the meat weighed on the morning of the 8th. The quarters weighed as follows; Fore 299 and 312 lbs.; hind, 297 and 284, making in all 1,192 lbs. net. The tallow weighed 210 lbs., and the hide 140, or in all 1,547 lbs.

Every one who saw the meat acknowledged that they had never seen so well-marbled, fine meat, or so fat a carcass. The neighbors generally were very curious to see how he would turn out as he and my other pure Guernseys had attracted much attention at the county agricultural exhibition last fall. Those who afterward tested the meat at the table agreed that it was the best they ever had; and I may here say that the same butcher has killed several very large and fat short-horn bulls, some of which looked much larger than Cæsario, and some even weighed more alive, but none ever dressed as much by 200 lbs., or even presented as good an appearance on the block.

I was very much interested in the result of this experiment, for being quite convinced from what I have read and seen, that the Guernseys are the best breed for practical dairying, I was anxious to see how they would show up for beef. Of course this is not a conclusive test, but it is a good showing; and I have now a three-year-old bull, Jeannot, who by this time next year could be easily made to go much larger, while he is as fine in bone as a Jersey or Ayrshire, and as straight and smooth as a Short-Horn, with at the same time splendid showing for milk.

My neighbors, who had never seen anything of this breed until within the last two years, when I brought a few together, are so well satisfied with what they have seen of both cows and bulls, that this spring I have had more demand than I could supply, for the grade bull calves to be used for breeding in default of thoroughbreds, which unfortunately are very scarce in Canada. S. A. FISHER. (1)
Alva Farm, P. Q., Can.

DR. BEAL, in his book on grasses, speaks of the marked defects of Timothy. When sown with clover, it makes but a small growth and must be cut young if the clover is secured in good season. It starts very slowly in the spring, is a long time coming into flower, and after cutting, the second growth is slow, feeble and of little consequence, seldom large enough

(1) This, from the member for Knowlton, only supports what I have been saying continually for the last ten years, that the Guernseys are the "coming cattle" for this part of the would.
A. R. J. F.

to cut a second time or to afford much pasture. If cut early, the tuber at the base of the stalk does not become sufficiently matured to keep the plant alive and healthy. If cut close, the tuber is cut off, and the plants suffer and become feeble and perhaps perish.

Other objections which Dr. Beal mentions are that it is hardly suited for pasture at any time, unless it is "kept quite large;" horses, sheep, and especially hogs, must not be allowed to eat it close to the ground; it is likely to be short-lived; the tubers are easily trodden out by cattle, killed by frost or drought, or eaten by mice or gophers; it sometimes rusts badly.

The Sparrow.—We are interested in seeing that the Editor of the *Animal World* has at length (May, 1889) been constrained by the evidence of their mischievousness collected by and quoted from Miss Ormerod, Mr. J. H. Gurney, and the American Ornithologists' Union, to agree that it is now impolitic to include among our feathered friends the house sparrow, but to consent to his partial extinction indeed, for the sake of other birds [1], who are friends, but whose preservation will be jeopardised if no discrimination be made between friends and foes, blessings and pest. "We are sorry," he adds, "to say that sparrows must be reduced in numbers, for the same reason that we destroy, rats, mice, fleas, and other small vermin.

HOLSTEINS TO THE FRONT.

The result of the butter contest at the late New York Dairy Show was a genuine surprise to most cattle men. The test was reserved till the last, it being considered the most important trial of all. When the prize for producing the greatest weight of milk in one day went to a Holstein cow, it was the general opinion that it went where it belonged. There was but one Jersey entered, and she made but a poor showing. "Wait till the butter test," said the Jersey breeders. "Then we will prove that our little cattle are as famous at the churn as the big Dutch cows are at the pail." Before the test 75 per cent. of those interested in the matter would have been ready to admit that the Jersey looked like sure winners. It has become almost second nature to speak of the Jersey as the butter cow *par excellence*. In order to carry out the popular idea, the Jersey, if she was to be beaten at all, should have been defeated by the Guernsey or Ayrshire—never by the "watery-milk" Holstein. But beaten she was, and that ingloriously. The first prize went to the Holstein cow Clothilde, which made two pounds seven and one-half ounces of butter from milk yielded within the prescribed 24 hours. The only cow to push her closely was one of her own calves. There was nothing objectionable about the test; it was a fair and square victory for the black-and-white cattle. What does the victory prove? That Clothilde is the best butter cow in the world, that the average Holstein is sure to give more butter than the average Jersey, or that the Jersey has now lost her place? No, but that Clothilde produced more butter than any other cow entered for the trial. It is natural to suppose that the Jersey men were anxious to win, and that they took pains to enter good specimens of the breed. Many Jersey cows have, in private test, surpassed Clothilde's record. Every owner of a Jersey cow will regret that those who had the Jersey interests in charge did not have enterprise enough to bring such animals to the show. This trial does not even prove that Clothilde was the most economical butter maker at the show. Taking the cost of her feed into consideration, her butter may have been more expensive than that from some of the cows she defeated. But one thing has been settled beyond all question—the Holstein cattle have been wonderfully improved during the past ten years. After this contest, the "watery-milk" sneer had better be omitted by their opponents. (1)

R. N. Y.

How to Raise A Maximum Crop of Potatoes

THOMAS BARRETT.

In preparing ground for potatoes, if manured in the fall, then is the best time to plow, as the manure becomes thoroughly incorporated with the soil, and will be more or less rotted by spring. Spring plowing will do, but if the manure is not rotted, it will not produce as good results as fall plowing. I find nothing in the way of fertilizers equal to barnyard manure: if well-rotted, all the better. Let it be spread on liberally—say 50 to 75 two-horse loads per acre. Wood ashes are also good. A tablespoonful of unleached ashes spread over each hill, as the stalks come through or just before, will be of great benefit, killing or driving off worms and greatly promoting growth. (2) The drills should be three feet apart with strong-growing varieties—three and a half feet are still better. Make the drills four inches deep. Cut the seed to two eyes, and plant sixteen inches apart. (3) If planted uniformly, as by a line, at 16 inches apart, they can be crossworked with a hand cultivator, while the tops are small. This would be of great advantage to the crop, destroying the weeds and mellowing the soil.

Medium-sized potatoes cut up in two, lengthwise, and the halves split lengthwise, produce good results. We thus get in each seed-piece, seed-end, stem-end and middle. If cut to one eye, plant the pieces one foot apart.

Flat cultivation is to be preferred, unless, after abundant rains, the weeds come up thickly, when it would be better to hill sufficiently to cover the weeds, rather than let them appropriate the nutriment due the potatoes, or, by over-crowding, rob them of sun and air. My practice is to commence hoeing as soon as the sprouts come to the surface. I make it a point to clean them thoroughly once, taking every weed that can be seen, and where the hoe cannot reach them without cutting the potato tops, to pull them out with the fingers. This gives the potatoes a fair chance to grow and they get so much ahead of weeds that spring up later as to almost smother them. Keep the cultivator going until they have all been worked three or four times. For the later workings, shallow cultivation is the best, to prevent cutting the tubers and roots. (4)

Another point of great importance is thinning out the stems, when too many grow in the hill. Sometimes there will be from six to 12, and even more, starting on each hill: if all are permitted to remain, only small potatoes will be found in such a hill. It is a good rule to thin them to three stems in the hill, leaving the strongest. For destroying the bugs I have found nothing equal to one part of Paris green and 50 parts of plaster, thoroughly mixed, and sifted over the plants. This is death to the beetles, and will no injure the plants. If applied when the latter are wet with dew or after a light shower, it is less liable to be blown off and wasted. A fruit can with holes punched in the bottom makes a good sifter. If a few pieces were rolled in the above poisonous mixture and scattered about before the potatoes come up, it would kill off most, if not all, of the old bugs, and be a great saving of after-labor.

(1) I was sorry to hear a young Jersey breeder say, at Quebec, as if from his own observation, that "the Holstein cream would not gather into butter without an immense deal of work; whereas the Jersey, &c." Of course, I knew very well that he was quoting from the Country Gentleman's correspondents. A. R. J. F.

(2) Ashes ought to be sown very early in Spring. A. R. J. F.

(3) Two feet by one foot is enough for Early Roses, &c. A. R. J. F.

(4) Harrow with chain-harrows first, hand-hoe along the rows, and horse-hoe as often as possible. If you must earth up, do it with a flat top to the ridge, and as little as possible. A. R. J. F.

RAISING ROOT CROPS.

FROM careful tests and observations in the culture of roots. I find the most practical and simple method is to select the ground, manure it heavily, if sod (which is always preferable), in the fall before sowing the seed.(1) The following spring, as soon as the ground is dry and warm, plow as deep as you can, turning grass and sod under, or leaving the furrows on edge if the grass is all covered. Apply at least 50 bushels of wood ashes to the acre, harrow; then apply hen manure, if possible, at the rate of 40 or 50 bushels to the acre, and harrow until perfectly mellow and in prime condition for seed. Sow in drills 28 inches apart, with any good seed drill (Matthews' is good). When the plants have come up and made two leaves, hoe carefully, stirring the soil close to the plants. Then sprinkle land plaster upon each plant and leave for a week or ten days, when the cultivator can be called into requisition with good results. From this time on use the cultivator every week thoroughly, and the hoe and all back-aching work will be dispensed with. When the plants are about half an inch through, thin to the proper distance, three to six or eight inches.(2) If you are troubled with extreme wet or drought, hitch a pair of good horses, tandem-fashion, to a plow and run between the rows and you will be more than surprised at the result. Thorough tillage with roots is as essential as with any other crop. If once stunted or checked in growth, it is hard to induce rapid and healthy development afterwards. I am convinced that no stock raiser or dairyman can afford to do without this all-important crop. Half a bushel of roots, cut fine with a Clark's root-cutter, with a little grain, will greatly reduce the amount of hay required, and bring the stock through to grass in a more healthy and thrifty condition, which is very essential to the dairyman. Let more roots be raised and farmers will have more hay to place upon the market.

Fluvanna, N. Y. R. Y. N.

SOILING PROBLEMS.

We have never tried soiling to any extent, as we have a large amount of land fitted only for pasture. A good rotation for soiling would be, winter rye to begin with in April; then oats, or spring rye: clover (red), Hungarian Grass and corn; Sown at proper intervals, these would give almost or quite a constant supply of green forage here. We grow from 15 to 18 tons of fodder corn per acre—this is *actual* weight, not a guess or an estimate made from the produce of a measured rod. We have never been able to reach the 30, 40 or 50 tons per acre that are sometimes reported. It may be sown from June 1 to July 1. We usually sow about June 15. We still believe in silage as a most valuable addition to our cattle foods. S. Johnson.

Agl. Coll., Lansing, Mich.

I am one of those who think that lectures are a great means of advancing knowledge for the human race. As regards the improvement of agriculture, it may be observed that there are no people so dense as agriculturists, and so adverse to adopting any new thing. Now, there are men, a few only, who have studied agriculture very profoundly. I do not think that they could make a better use of their knowledge and their time, than by going about the country, and giving agricultural lectures.

(1) A good many queer ways in the States, but the idea of sowing roots *preferably* on sod is the queerest of all. A. R. J. F.

(2) What a droll sort of crops turnips or mangels would be if singled to three inches! I cannot think any one would use "two *good* horses tandem fashion to horse-hoe roots!" And to grow roots, in order to have hay to sell, would hardly be wise. A. R. J. F.

There is not one person in a thousand who understands the principles of drainage, and how the capillary system acts in drainage.(1) The agricultural lecturer would at first have to lecture to a small and most sceptical audience. But the good seed would have been sown; and some amongst his audience would have received ideas which they could not easily get rid of, and which they would gradually test by practical experience. ARTHUR HELPS: Author of Friends in Council.

AMERICAN MERINOES

Probably three fourths of the now fifty millions of sheep in the United States have a certain proportion of Merino blood in their veins. For eighty years the importations of Spanish Merinoes made between 1800 and 1812, have had especial interest for American breeders, who found in the improvement of fleece and carcass opportunity for displaying their highest skill in breeding and management. Their success in these respects has been such that the typical American Merino—(properly called American, because it is as distinct from the type of its Spanish progenitor, and as fixed in its characteristics, as the French, or Saxony or Australian types)—possesses every needed requisite for a profitable flocking sheep. Where so many eminent breeders have achieved successes, when so many localities are justly noted for the excellence of their flocks, the day has gone by for any man or any State to consistently claim pre-eminence in the superiority of its flocks. Money and enterprise has scattered flocks from the Eastern States, where the importations of four-score years ago were cradled, brought into general prominence, until today animals of the highest individual excellence are to be found West and South, as well as East.

The animals represented in this number of THE GAZETTE are from the well-known flock of C. M. Clark, of Whitewater, Wis., a locality not without reputation for the skill of its breeders and the excellence of its Merinoes. The three-year-old ram, Stub, took first premium at the Wisconsin Shearing of 1883, bred by C. M. Clark; sire, Captain Moore, bred by F. & L. Moore, Shoreham, Vt. First fleece was 10 lbs. 8 oz.; second, 20 lbs. 8 oz.; third, 30 lbs. 3 oz.; (2) weight of carcass, 95½ lbs. He has always been sheared in public at the Wisconsin State shearing. The central ewe of the group is a sister to the ram; is two years old; first fleece, 14 lbs. 8 oz.; second, 19 lbs. 7 oz.—both shearings public. The ewe at the right is seven years old (cut represents her at four). The ewe and her sire were both bred by Mr. Clark. Her five last fleeces, three of them shorn in public, were 17 lbs. 3 oz., 18 lbs. 4 oz., 17 lbs. 8 oz., 16 lbs. 12 oz., and 18 lbs. She has raised three lambs and now has the fourth. Mr. Clark's flock was commenced by his father, John M. Clark, in the year 1857, by the purchase of about sixty ewes of Eben Porter, then of Orwell, Vermont, who was considered one of the reliable breeders of his day. The flock, in the words of Mr. Clark, "has been bred with a view to producing large, heavy fleeces of wool (grease a secondary consideration), and now numbers about 200, all recorded in the Vermont and Wisconsin Merino Sheep Registers."

(1) I presume the writer intends us to understand that the land is kept moist in drought by the water in the drains being raised to the surface by capillary attraction. A very old idea but one I take the liberty of disputing, unless in the case of spring-drains. A. R. J. F.

(2) Unwashed wool of course. A. R. J. F.

NON-OFFICIAL PART.

The "Dairy World" of Chicago, Ill., offers $20.00 for the best article on cheese-factory management, and $10.00 for the second best our cheese-makers should all compete for these prizes.