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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 East, Box 109, Lachine, Que.—or to Ed. A. Barnard, Director of the *Journals of Agriculture, &c.*, Quebec.

OFFICIAL PART.

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SUPERPHOSPHATE.

Mr. Barnard, the Secretary to the Council of Agriculture, has sent me the subjoined analysis of the superphosphate of lime manufactured by Messrs. Nichol & Co. of Capelton, Sherbrooke, and delivered, free on the cars, in bags, at \$12.50 a ton of 2,000 lbs.

The analysis was made by the Rev. C. P. Choquette, M. A., analytical chemist to the Experiment-station attached to the Seminary of St. Hyacinthe, and is perfectly satisfactory, as it is exquisitely simple, but perfectly clear.

From the analysis, we gather that the value of the manure, reckoning the constituents at the same price as those set forth in the reports published by the Experiment-station at Washington is, per ton :

Soluble phosphoric acid—138 lbs., at 8 cts.....	\$11.04
Reverted do. do. — 64.60 at 7½ cts.....	4.84
	<hr/> \$15.88

Hence, we see that the Capelton superphosphate is 26 per cent. cheaper than the same article sold in the States.

I need hardly say that the insoluble phosphoric acid (2.13 %) is absolutely worthless. The finely ground *Carolina-rock* of the States, and the *English Coprolites*, in the same condition, are useful manures without the acid-treatment, but our apatite, as I have shown a dozen times, in the undissolved form, is not affected by organic acids, and, however finely it may be ground, lies in the ground in a *caput mortuum* condition. According to the States' valuation, phosphoric acid in finely ground *Carolina-rock* is worth 2 cts. a pound.

Supposing 45 lbs. of available phosphoric acid to be a fair dose for an acre of swedes, we should require 4½ cwt of the Capelton superphosphate to supply it. I hope to see in a short time a superior quality of this manure manufactured at Capelton containing 15 % of available phosphoric acid, or even more, and saving thereby a considerable amount of freight-charge.

In his letter, Mr. Barnard says: "It is satisfactory to show that the work of the Journal for many years, in asking for a low-priced superphosphate of good quality, has contributed to obtain results which must prove of great benefit to our Province and to Canada in general." So what somebody calls "hammering on" is of some use after all!

I am more than pleased to see the appointment of a provincial analytical chemist. Such an officer has been long wanted, and his appointment is full of promise to the country at large.

A very important part of superphosphate is the sulphate of lime, which is a necessary product of the manufacture, as my readers will have observed in an article in last month's number. In some cases, this exceeds 40 % of the whole mass,

but, though doubtless valuable to a certain very small extent in itself, it is *never* reckoned in the valuation of the manure. What you buy in a superphosphate is a *stated number of pounds of available phosphoric acid*, and nothing else ought to be paid for.

Comparing the price of the Capelton superphosphate with the price charged by other manufactories we find that—mentioning no names—the two articles stand as follows :

Capelton—10 % average.....	per ton.	\$12.50
Other manufactories—13 % average.....		26.00
Balance.....		\$13.50

Whereas, the price of the latter, allowing for the 3 % additional phosphoric acid, should be only \$16.25 ! As :
10 : 13 : \$12.50 : \$16.25.

With superphosphate at the present price and sulphate of ammonia at \$3.50 per 100 lbs., the crops of the country ought to give an enormous increase in a very short time.

Do try, in the ensuing spring, one acre of swedes, sown on the flat, with 450 lbs. of superphosphate and *nothing else*. The mere cost of the loading, carting, and spreading a good dressing of dung will be as great as the cost of this manure—\$2.80.—

For green-crops, such as tares or vetches, green-rye, fodder-corn, Hungarian grass, &c., I think the sulphate of ammonia would answer, at the rate of not less than 200 lbs. per acre, with, perhaps for the tares, a couple of bushels of plaster, sown broadcast when the crop is up and on a dewy morning.

For wheat, barley, oats, or corn, try 240 lbs., added to 150 lbs. of sulphate of ammonia—cost \$7.82—, and let me know the results, please.
A. R. J. F.

ANALYSIS OF SUPERPHOSPHATE PRESENTED BY THE HON. M. RHODES, THE COMMISSIONER OF AGRICULTURE, &C.

	Moisture.	Soluble phosphoric acid.	Reverted phosphoric acid.	Available phosphoric acid.	Insoluble phosphoric acid.	Total phosphoric acid.
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.
No. 1.....	5.95	7.13	3.23	10.36	2.13	12.49
No. 2.....		6.53				12.27
Average.....		6.88				12.38

C. P. CHOQUETTE, M. A.,
Director-chemist of the Agricultural Experiment Station.

St. Hyacinthe,
October 25th 1889.

Laboratory, Dom. Exp. Farms.,
Ottawa, Oct. 5th 1889.

ED. A. BARNARD, Esq.,
Sec. Council of Agriculture, Quebec.

Dear Sir,—I now take pleasure in sending you the result of my analysis of the sample of superphosphate forwarded by you for examination :

Insoluble phosphoric acid.....	P205	3.00	%
Soluble phosphoric acid.....	P205	7.72	%
Reverted	P205	1.62	%
Total	P205	12.34	%
Residue insoluble in water.....		17.70	%
“ “ “ acid.....		6.12	%
Sulphate of lime (o s o ₄) (plaster)		17.27	%
Moisture.....		9.13	%

True copy. I have the honour to be,
(Signed) FRANK T. SHUTT,
Chemist Dom. Exp. Farms.

DE OMNIBUS REBUS.

Box 109 Upper Lachine—Nov. 1st, 1889.

Malting barley.—The price of grain in England varies very much more, according to quality, than it does here. For instance : barley for grinding—for pig- or cattle-food—is worth at present from 18s to 22s. a quarter ; but the best malting barley, such as is bought in the eastern counties for the great export Breweries at Burton-upon-Trent, is worth 50s. ! Much of the grinding-barley weighs actually 2 lbs. and even three lbs. per bushel more than the finest malting qualities, and would give as great a proportion of extract ; but the flavour is not in it. Next to the Essex, Hertfordshire, and Cambridgeshire barley—grown on chalk-lands, comes the barley from the banks of the Saale, a tributary, if I remember, of the Elbe. What causes the great difference in the value to the brewer of these barleys I cannot say, and I doubt if any one knows. Certainly, no chemical analysis has, as yet, thrown any light on the subject.

Ram-lambs.—I do not understand why farmers will not castrate their male lambs at the proper age. Ram-lambs, dropped in March or earlier feel the genial influence of the recreating Goddess by the month of August, and, in consequence their flesh is tainted with the overflow of the *fons amoris*. I had a leg of lamb, last month, of the very finest exterior appearance, but when carved, it was almost uncatable. All male lambs should be cut before they are three weeks old. Hampshire men let their lambs go uncut till the end of May, and operate on the whole drop at once ; but theirs are born in February, and when fit the weather is cool enough for the purpose. Here, lambs dropping in April generally, would not be 3 months old till the middle of July, and the flies would play the mischief with them if cut then.

Poudrette.—Some years ago, I was blamed for making fun of an assertion in one of the States' agricultural papers that poultry-dung was equal in manuring properties to the best Peruvian guano. Now, M. J. H. Perreault, a correspondent of the *Star*, of Montreal, states that Poudrette—dried night-soil from the Parisian sewers—is as good as guano ! Well, some guano is very poor.

Eggs.—A friend of mine wants to know why I do not advocate the selling of eggs by weight instead of by tale. The reason is simple : because it would not be of the slightest use to do so. The habit of selling and buying eggs by the dozen—large or small—is so ingrained in the people of the province—as it is indeed all over Europe—that it seems to me impossible to eradicate it. Were I editor of a daily paper in-

stead of a monthly journal I would keep on about this matter in the market-article, until perhaps in a few years, a better state of things might be brought about. As it is, I fear I can do but little to aid the very sensible desire of my friend.

Working butter.—My readers will have seen M. Taché's article on butter in the August number of the Journal. I remember perfectly well that my own dairywoman in England never worked butter, for packing or for present use, more than once. Was it good? Well, except what I have made here Devonshire fashion, and the sample I mentioned that Mr. Gylling sent me at Sorel, I have never tasted any butter so good. The milk was set 3 inches deep in wide pans in a deliciously cool dairy; the cream was carefully mixed; the churning done three times a week, and the only fault I can remember was that the butter was gathered in lumps in the churn instead of being washed when in grains. The cows were at first a rough lot—more Ayrshires than any thing else,—but afterwards pure Guernseys. No food but very ordinary pasture in the summer, and hay in the winter.

The Milking Trials at the London Dairy-Show.

Well, the Shorthorns were beaten by the Jerseys, this year, there is no denying it! That is, one Jersey cow, a very superior animal indeed, beat the best shorthorn by 6%.

SHORTHORN COWS.

- 1 and Thorley's, John Evans, Burton, for Molly—110.3.
- 2, J. F. Spencer, for Hope—107.5.
- r, G. Church, for Dairy Queen—99.2.

SHORTHORN HEIFERS.

- 1, G. Church, for Rose—83.8.
- 2, J. Errington, for Red Rosebud—73.6.
- r, T. Tebbs, for Cherry 2nd—72.9.

JERSEY COWS.

- 1 and Thorley's, Joseph Brutton, for Baron's Progress—117.2.
- 2, F. S. Champion, for Gaddy—95.1.
- r, S. Baxendale, for Bramble—92.2; and H. H. Howard-Vyse, for Marian—92.0.

The first three were respectively first, second, and third for the separate Jersey Dairy test.

JERSEY HEIFERS.

- 1, Baron Rothschild, for Lillian—70.2.
- 2, E. Carter, for Lime—67.5.
- r, J. Brutton, for Fairy Elf—66.5.

GUERNSEY COWS AND HEIFERS

- 1, Sir F. A. Montefiore, for Flukes—98.6; equal 1, Express Dairy Company, for Dairy Queen—98.5.
- 2, Express Dairy Company, for Laura 2nd—85.5.
- Other breeds.—Silver Medals:—
- Red-Polls: Lovely Bella (Rumball and Son)—105.1 (and Thorley's).
- Ayrshires: Nellie (Mr. Gordon Harrower)—96.8.
- Holstein: Leuwarden—72.0.

It is noticeable that the points earned this year by the animals are very much lower than those of last year or the year before. For instance, 117.2 is the highest allotment this year, while the highest last year was 139.4, and 127.1 for the trial in 1887.

The first prize Jersey, not only gave a very rich quality of milk, but a good quantity too—35 lbs. a day = 3½ imperial gallons—. At the tests by analysis and by actual production in the churn, a very satisfactory agreement appeared: by analysis, her milk showed 8½% of butter-fat, and as, by the churn, 11.3 lbs. of her milk produced one pound of butter; showing that the scientific test is about as correct as we can hope to get it, even in such extreme cases as this.

GUERNSEY DAIRY TEST.

The following are the details of this test:—Silver cup to Sir F. A. Montefiore, No. 172, Flukes 2nd, which produced 1 lb. 13½ oz. of butter in one day. The quantity of butter yielded by other competing animals is given below in order of merit:—

	lb. oz.
16i Express Dairy Company's Dairy Queen III....	1 12½
166 J. C. Foster's Lady of the Half Moon.....	1 11½
165 J. C. Foster's Antina.....	1 9
163 Express Dairy Company's Laura.....	1 2½

The *Mark Lane Express* is very much annoyed, and with reason, at certain remarks of the "Breeder's Gazette," that paper having stated in a recent issue that "shorthorns are not milkers, because they are not built that way," and defends the breed as follows:

"We really must protect against such a loose attack on our historic breed, simply because some American buyers have selected pampered animals rather than those bred for use and profit. * * * The selection and management by American buyers and breeders—and the same holds good of English, Scotch, and Irish—is, in but too many instances, at fault. There is no breed that may not lose every good point by careless breeding. To call attention to this is good and useful, and breeders should listen to such well meant criticism. There is no breed that can be described as having but one merit. It is equally true to say that one of the great inherent qualities of the famous Teeswater race of bovine stock is its aptitude to become good milkers."

I cannot understand why people will not see that the Exhibition-Shorthorns are of a very different strain from the Dairy Shorthorns. The former have been bred for many years with one sole object: the production of beef. The latter have been for years, and are still, the stand-by of the English dairy-farmer.

American Butter Wins.—"American butter has carried off the honors at the Paris exposition. The sweepstakes gold medal for the best butter has been awarded to the exhibit from the Green Mountain stock farm, West Randolph, Vt., owned by the Moulton Brothers. The butter was made from cream raised in the Cooley creamer and is a great victory for all who had a hand in it, namely, Vermont, Moulton Brothers, and the Cooley creamer. This is a significant victory for the Cooley. It has won the gold medal at the last three Expositions and in '82 at the Palais of Industry at Lode, France, the French government experiment station, after a severe test of six weeks, the Cooley was awarded the gold medal for the largest quantity and the best quality of butter from a given quantity of milk."

Will any of my readers tell me if the above is a correct statement or a puff? I confess it reads to me like an advert-

isement. Surely Normandy and the centrifuge together are not so easily beaten! (1)

Mutton.—The following paragraph has a hopeful look about it. But I trust the American breeders of mutton sheep will not forget that to rear good stock the land must be properly treated on which they are to feed:

"A new start has been taken in sheep-raising in Eastern Massachusetts in the last year or two, and there is no reason why this old-time, profitable branch of husbandry should not be revived again to the mutual advantage of shepherds and the mutton-loving public. Whereas the breed commonly employed was Merino or Merino grades and wool was the main crop desired, the aim to-day is lamb and mutton. The renewed interest manifested in sheep-raising seems to have emanated from the demand for these meats by the thousands of summer visitors, so to day, Oxford, Hampshire or Shropshire sheep are the favorites. Their lambs are large and plump and make quick growth, forming juicy, tender meat, which brings a good price. Carcasses of 50 to 60 lbs. live weight are easily produced at 10 to 12 weeks, making the lambs bring \$6 to \$10 each. By proper care and extra feed, all the time the sheep are under treatment, the breeding ewes may be turned off at a good figure for mutton. The industry must be conducted with energy and good calculation, and if these precautions be observed success is warranted."

Ridge culture of potatoes.—I wonder what crops follow potatoes in the state of Tennessee? A farmer from that country writes as follows to the "Country Gentleman":

Eds. Country Gentleman.—Noticing the trench mode of planting Irish potatoes, of your correspondent, C. A. B., I beg leave to give you my mode in contrast. I break my land well in the fall and let it rest until the first open spell in January and February. Then I harrow it well, have my seed out, and plant with potato planter in rows 32 inches wide, dropping the seed from 10 to 12 inches apart. No fertilizer is used. I let the field alone until the shoots begin to show themselves above ground; then take a single-horse plow and cover them back, throwing on two furrows, and let them rest until they begin to show themselves again. I then treat them as at first, covering them back the second-time, and leaving them untouched by cultivator, weeds or no weeds—the more the better; the weeds shade and protect the tubers from the hot sun.

No manure used, and as many weeds as possible encouraged to grow! Truly Tennessee must be a hot country to want weeds to shelter its crops from the sun, or else, the Irish potato is not a plant adapted to its conditions. And about the remaining crops of the rotation! Do they enjoy the fresh growth of weeds from the seeds of those grown in the potato-land?

Black-Tartar oats.—A correspondent of the English Agricultural Gazette writes to that paper to know if Black-Tartar oats impoverish the land more than other oats. The answer is simple enough: it is not what crops draw from the land that impoverishes a farm, but what is sold off it. Black-Tartars, as my experience teaches me, produce the heaviest crop of grain of any sown in this country, and therefore draw the land more. But if they are consumed at home, or if manure, or cake, is brought back from the town in which they are sold to replace them, the farm cannot possibly be any the worse for having grown them.

(1) **Answer.**—The butter made from cream raised in the Cooley creamer has certainly taken the prize at Paris this year. But "the best butter made" and "the best apparatus to skim the cream" are two very different subjects to submit to a jury. ED. A. BARNARD.

Garden-work.—I hope all my readers have taken advantage of the fine weather we have had lately to dig, or plough, their gardens and got them ready for the early spring-seeding. As a rule, if the land is dry enough, pease should be planted as early as possible, and where a difficulty exists in getting sticks for them, except at an exorbitant price, as in our towns, I cannot find any pea equal to Bliss's American Wonder. Sown on the 25th of April, it has, with me at least, always produced a picking by the 20th June, and with it I generally manage to get four crops off the same piece of land—as thus:

I sow the pease, very thickly, in rows 18 inches apart, and between the rows I plant a double row of small onions, saved from the previous year which are grown in this way: taking a piece of very rich land I sow onion-seed—large whites by preference—at the rate of 20 or 25 seeds to the lineal inch; they come up and ripen very quickly, so that by the middle of August they are ready to pull and store away in a dry place, each onion being, on average, about as large as the top of one's middle finger.

These are, as I said before, set in double rows, 4 x 4 inches apart, between the pease, and in a month you can begin to pull them, and very good and delicately flavoured they are.

When the pease are all gathered, say, about the first week of July, I have celery plants, that have been transplanted once, ready to take their place. These I trim—both tops and roots—and they never require shading, as they come out of the ground with a good bunch of soil adhering to the roots, and start again at once. I make the trenches about 14 inches deep and 4 feet apart, as I still stick to the old plan of earthing celery well up. In making the trenches, I throw the top spit on one side and the subsoil on the other, and with a strong 4-tined fork I break up the bottom, so that when the plants are set, they find a deep bed of moved soil under them—generally, about 20 inches—. Very rotten dung is dug in, on the top of which is returned the earth of the top spit I kept on one side, and the celery is set out about 8 inches apart in a single row. I don't like double rows: they are difficult to earth up. If your garden is near your house, and you have a hose from the tap, as you ought to have, just water every evening copiously—you can hardly overdo pease, when the pods are formed, or celery.

The land between the trenches should be kept thoroughly pulverised, and either lettuce or endive—transplanted once beforehand—be set in double rows—12 x 12 inches—. These will be fit for consumption before their site is needed for earthing up the celery. This is a simple job; only take care no earth gets into the hearts of the plants.

Thus we have, as I said before, four crops on the same piece of land, in the same season: pease, onions, salad, and celery, and the land being stirred continually by the hoe and fork, will, at the end of the autumn, be in first-rate condition for the crops of the following year.

Rothamsted experiments.—My readers may remember that, in the September number of the Journal 1887, p. 130, and the January number 1888, p. 6, I laid before them a condensed report of Sir John Lawes experiments on the growth of wheat and turnips on the same soil in consecutive years. By these experiments he convinced the agricultural world that the ash theory of Liebig was erroneous in application, and that to produce wheat without an abundant supply of nitrogen, or turnips without an abundant dose of phosphoric acid, was a hopeless undertaking. I have lately received the annual record of the work at the same station for 1888, and some of the results are worth referring to, particularly those that show the yield of crops grown con-

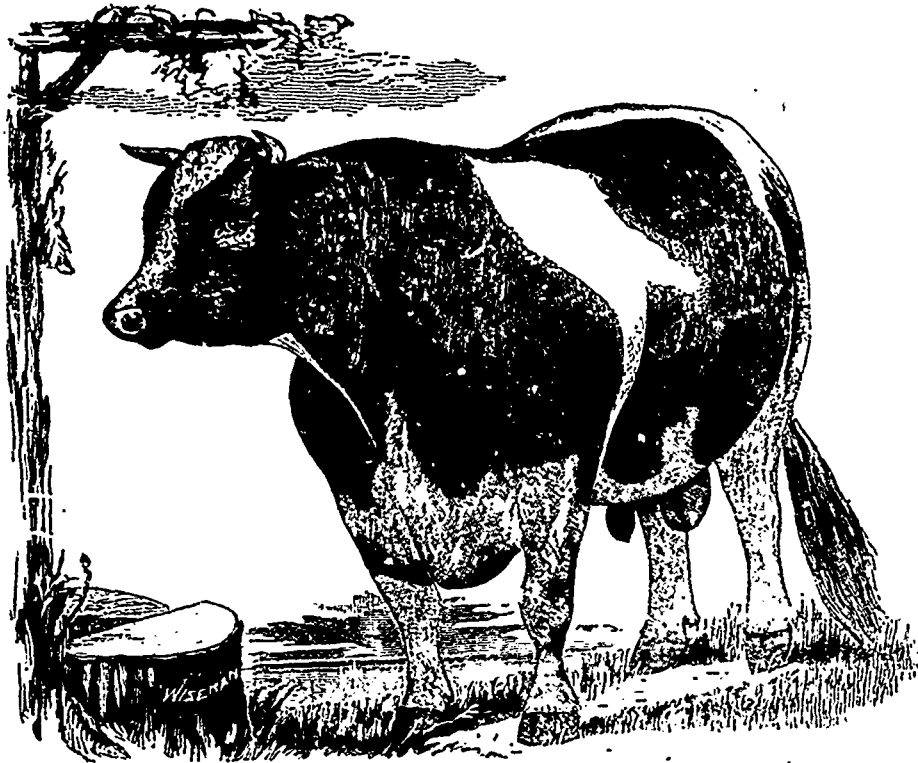
tinuously on the same land, with the same annual dressings of artificial manures, during thirty-six years.

On one wheat-plot, dressed every year for 36 years with 200 lbs. of sulphate of potash, 100 lbs. of sulphate of soda, 100 lbs. of sulphate of magnesia, $3\frac{1}{2}$ cwt.—336 lbs. of superphosphate, and 600 of ammonia salts, the average yield of the 36 years was $36\frac{1}{2}$ imperial bushels: just *three times* the average wheat-crop of the United States and four times that of the province of Quebec.

Of course, it did not pay, and no farmer would use such a mass of fertilising material. But, then, farmers do not grow wheat 36 years successively on the same land, and where farming is carried on in a regular systematic form of rotation, it is easy to see that a half-dressing of the above fertilisers

them with various manures; of which process I have given instances several times.

In the barley experiments the most striking result is the production of a thirty six years' average of $45\frac{1}{2}$ bushels per acre, on a plot dressed annually with $3\frac{1}{2}$ cwt. superphosphate and 275 lbs. nitrate of soda. Only three plots gave more, namely one dressed annually with 14 tons of farmyard manure, which averaged $48\frac{1}{2}$ bushels per acre, the maximum yield, and two manured with very elaborate and costly mixture of nitrate of soda and superphosphate paid better than any other dressing on barley, and probably it would have done the same in the case of wheat if it had been tried. The benefit of superphosphate on the barley crop is very clearly shown, as the plot dressed with 275 lbs. nitrate of soda alone



FIRST-PRIZE HOLSTEIN BULL MERCEDES PRINCE.

would suffice. Also, it must not be supposed that the alkalis would be wanted on ordinary soils—in other words, where farmyard dung is carefully preserved and expended at regular intervals over the whole arable land, a very moderate dose of superphosphate, and of nitrogen, in the form of sulphate of ammonia or nitrate of soda, will aid the soil in producing the maximum crop it is capable of yielding.

The unmanured plot, continuously sown with wheat for 46 years, has yielded an average of $13\frac{1}{2}$ bushels an acre! More than the average yield of the States, Canada, India, Russia, Australia, and the Argentine Republic!

To my mind, one of the most satisfactory points in the whole record is this: whereas, for the first few years *potash* had no effect at all on the Rothamsted land, of late it appears to have been needed, as one might expect after the annual removal of so many white-straw crops. And yet, strange as it may appear, the soil is still full of potash; at least, so the analysis says! But the chemist cannot tell in what state the potash is, whether available or not, and hence we derive the almost absolute necessity of setting to work to make the soil tell us its own tale by taking four or five plots and dressing

produced only $33\frac{1}{2}$ bushels an acre, or $12\frac{1}{2}$ bushels less than the one to which superphosphate was given in addition to the nitrate.

Adulteration of milk, &c.—When I explained to my purveyor of milk, last January, that I really could not stand milk, at 7 cents a quart, reduced one-third with water, he was good enough to say that if I would say nothing about it, he would only charge me 5 cents a quart! I thought that was bad enough for any country; but I lately received the "Monthly Report of Milk, Butter, Cheese, Lard, Baking-powders, Vinegars, Liquors, &c., examined by the Minnesota State Dairy and Food-Commission, for August 1889," and after an attentive perusal of it I have come to the conclusion that there are worse places to live in than the province of Quebec.

Ex uno disce omnes: VINEGAR.—Of 55 samples sold as cider vinegar, 11 were pure, 13 were spurious cider vinegars made from the exhausted pomace from which the cider had been expressed, re-pressing vinegars as they are sometimes termed, and 31 were colored low-wine vinegars, con-

taining in some instances a small proportion of apple solids or of cider vinegar.

Baking powder, again, was worse. out of 23 samples, 20 were adulterated! One-third of the *cheeses* tested, and the whole of the *port-wine*, were more or less adulterated.

Of 11 samples of *milk*, 1 only was of what the report terms "legal character," of 68 samples of *lard*, 37 were adulterated with cotton-seed oil.

Ten samples of *olive-oil* were examined, of which 6 were found to consist *largely or entirely* of cotton-seed oil.

Well, if I were obliged to buy my salad-oil and my port-wine, of both of which articles I am rather fond, in the state, I should not choose Minnesota as a place of residence.

Ontario oats.—A 7 page brochure has been forwarded to me by Mr. C. C. James, M. A., Professor of Chemistry at the Agricultural College, Guelph, Ont., from which I find that the average weight of oats in the province of Ontario is, on an average, 37.39 pounds, pretty much what they weigh in the southern counties of England.

Oats, as every one knows, depend, for their perfect growth, more on climate than any other grain does. The moist, dull climate of Scotland produces potato oats weighing from 44 lbs. to even 48 lbs. a bushel. Now, these same oats sown in the south of England—I have tried the experiment myself—never weigh in the third year more than our own Black Tartars, that is, from 36 lbs. to 38 lbs. Therefore, I conclude that advice contained in the appended note by Mr. James is hardly borne out by facts. It is true the farmer "selects his animals individually," but, if he understands his business, he does not select a Hereford or a Shorthorn, as a breeding animal, for a farm on the Sorel sands.

To show what climate does for the oat crop, take the following figures:

Colorado and Dakota . . .	48.7 lbs. per bushel. (1)
Alabama	24.7 " " " } (2)
Florida	26.9 " " " }

"In studying the samples of Ontario oats, I was much impressed with the great variety in each sample as regards the size, shape and plumpness of the grains. What were apparently choice samples contained a large proportion of inferior kernels. It occurred to me that there is a possibility of great improvement by, in some way, culling each sample of seed grain. It may at present be impossible for the farmer to select and inspect minutely every individual grain he sows; but I believe that the farmer who can find the time and means or devise a method of selecting his grains individually as he does his animals will have taken one step, one very important step, in advance of his less careful neighbor. "Trifles make perfection, and perfection is no trifle."

The Black Tartars would weigh more of it were not for their abominable habit of thrusting forth those long beards of theirs. An engraving of this heavy-yielding oat may be seen at p. 35 of the Journal for 1885

ARTHUR R. JENNER FUST.

The Dorking Fowl.

Next to the Game fowl the Dorking is probably the oldest pure-bred variety known to fanciers of to-day. Their origin is still shrouded in mystery; the weight of evidence showing that they were introduced into England during the old Roman

(1) Probably on irrigated land.
(2) Persistently dry climates.

A. R. J. F.
A. R. J. F.

occupation of that country. From history we learn that they were then the favorite fowls for the table, which position they have held ever since, even up to the present day. The descriptions given of them by the old writers differ materially in colors and markings from the breed as known now, being described as "red" with various markings, but all concur in naming the fifth toe, which is still one of the distinguishing marks of the breed. They are large birds, attractive in appearance, showing to the most casual observer their aristocratic descent, and have a general "pull off your coat and roll-up your-sleeves" look of business and utility. They have honestly earned and retained their position as the "king" of table fowls, their flesh being very firm, fine grained, tender and of delicious flavour. The carcass possesses a very large percentage of palatable flesh to total weight, the bone and offal being very small and light for so heavy a fowl, the meat on the breast and thighs is particularly heavy and plentiful. They have never been considered very prolific, though in late years certain strains have been produced which are excellent layers, their eggs being large, clear white in color, and of fine flavor. This is only another instance in corroboration of the generally accepted fact of all breeds, that there is more in the strain than in the breed, as concerns the laying qualities.

The general characteristics of all varieties of the Dorkings are a large but well formed and not coarse head, rose comb in the whites, single in the silver grays, and either in the colored; neck so heavily feathered as to look rather short, abundant flowing hackle, body very long and deep, with a rectangular appearance when viewed from the front, tail very large, with long flowing sickles, thighs heavy and so thickly feathered as to show very little shanks, short, with good bone, but not excessively heavy, of a white or pinkish shade, and with a large fifth toe which turns upward with a slight curve and not resting on the ground in walking. The weights required in our shows are: cocks, seven and one-half to nine pounds; hens, six to seven-and one-half pounds. English authorities give weights several pounds heavier for both sexes. At one time the chickens were considered tender and hard to raise, but that has largely been overcome by judicious mating and handling and on suitable ground. A light sandy soil is the best for Dorkings of any age. The chicks can probably be raised as successfully as most other breeds. They have never been held in as high favor in this country as in England, their reputation as moderate layers probably being one reason why our fanciers have not taken them up and pushed them to the front, but within the last two or three years some of our most enterprising fanciers have imported a good many from the best flocks in England, and they are gradually working their way into the esteem of the American public. We confidently expect to see them take the place they deserve to hold in the ranks of pure bred fowls, in a very few years. The rank and file of poultry raisers are paying more attention to pure-bred stock in the poultry line, year by year, but they want to see usefulness in what they take hold of, as well as the pure blood, and this they will find in the Dorkings.—*American Agriculturist* for November.

No Rest for Ensilage.

It is an encouraging feature of farming that it is constantly under discussion, for it shows farmers to be wide-awake, and becoming more so. While the question is apparently settled in the minds of most farmers in relation to the best way of raising corn for the silo (with or without ears), the subject of how to treat the ears, having secured them, is very far

from being satisfactorily understood. A thinker in Wisconsin, writing to Hoard's Dairyman, says, "Corn should be near enough to maturity to dent and glaze if wanted to make sweet ensilage. The ears should be ripe enough to snap off. What little I have tried has paid me for removing the matured ears. The corn was picked four rows at a time and the unhusked ears thrown upon the ground, the husking being completed at leisure. In this way I obtained five wagon loads of corn to the acre which is no small item."

William H. Gilbert, a New York correspondent, says: "I found by observation that my cows didn't digest all the grain on the stalks of cut ensilage. I believe that if they were obliged to masticate their corn more thoroughly there would be no such trouble. Cut ensilage is eaten too greedily to be properly masticated, and I have adopted the practice of feeding it whole. The ears are left upon the stalks, which are packed in the silo without cutting. The ensilage proves sweet and every kernel of corn is seemingly thoroughly digested. I have found ears of ensilaged sweet corn almost as perfect in March as when first put in the silo. There is a great difference in the cost of packing out and uncut ensilage, and it doesn't take one man more than 20 minutes longer twice a day to feed 75 cows with whole ensilage than with cut feed. To balance this loss I save the time of two extra men in the silo at the time of packing, and a complement of men and teams to keep the machine in motion. Well-masticated food is better and more readily assimilated than undigested food."

Such remarks from practical men show how wide-spread is the difference of opinion existing upon this subject. By first picking off the ears the extra cost of picking, husking, shelling and grinding is incurred, and all this is saved where the entire plant is put in the silo and fed. The only query to be solved is: Does ensilaging grain lessen its feeding value? It is believed that no loss is incurred. There appears to be but one argument in favor of removing the ears before placing the fodder in the silo, and this is one advanced by Prof. L. P. Chamberlain of the Storrs agricultural school—to know what proportion of grain one is feeding milch cows, and to keep it altogether from growing stock which doesn't need it.

It is a big make of butter the year round, and especially in winter, that enables a creamery to pay good prices. Whether milk or butter be the object, our farmers must learn that winter dairying is the kind that pays. The old belief that cows must go dry all winter, producing milk only during the summer season of pasturage, has nearly ruined many farmers and exhausted hundreds of farms.

Crops for soiling—How located.

Crops for soiling, being watery, are heavy to carry, containing as they do about three times as much water as those grown to maturity, or for hay, &c. It is therefore indispensable to grow such crops in a special rotation, and in such fields as immediately surround the stables. Here, the bull and milking cows are kept, perhaps for 22 hours out of 24, and, to be profitable, every comfort, such as thorough cleanliness, ventilation, pure water; and every convenience for feeding, milking and stable cleaning—besides proper husbanding of all droppings—must have been provided for, in order to reduce to a minimum the amount of manual and other labor required, and of possible loss.

After mature consideration, and several years of experimental work in this direction, I have adopted a special rotation for soiling crops, as follows:

First year: Maize—of a variety sure to mature in our cli-

mate, and sown—according to its natural size, very much as if grown for seed, and only when the ground is thoroughly warmed up, viz: When the white oak is coming well into leaf;—if possible, on a rich meadow land, well manured, early in the previous fall. If the season has been favourable, a light crop of grass, from 10 to 12 inches high, is cut and fed, or ensiled, the plow started, followed immediately by the *acme* or *similar* breaking harrow, and, if possible again, the corn sowed in rows, but on the flat—the same day as plowed; with about 300 lbs. of plain superphosphate per acre, to hasten, and enrich the crop in solids. This maize is neither fed nor ensiled until the ears are fairly well glazed. The cultivation in the mean time—entirely with horses—being thorough, in order to keep the soil perfectly clean and aerated, until the crop allows no more interference with it.

As soon as the crop is removed, the land is carefully fall-ploughed and treated to from 8 to 10 bushels of quick lime per acre, put into small heaps covered with earth, and finally shovelled over the whole field, when entirely pulverized.

2nd Year.—As soon as the soil is fit, in the spring, four to five bushels, of a mixture,—of oats and rye ($\frac{1}{2}$ half), and tares and peas ($\frac{1}{2}$ half)—is sown, thoroughly harrowed in, and over this, 15 lbs. of mixed clovers are *bushed* in and rolled,—if light land—and *pressed* down with the *acme harrow* and *leveller*,—if heavy soil likely to cake. This crop is used for food, or ensiled, as soon as necessary, and *always* carried away entirely before the crop can possibly lie down flat and rot at the bottom; this, in order to have better food, and save clover killing. In good time a second crop, mainly clover, is carried away to the stock or the silo, the same season. As soon as this second crop is carried away, a half dose of manure—or more if the soil be not sufficiently rich—is given, with the Kemp manure distributor.

3rd Year.—Three cuttings of clover, in order to obtain rich, palatable food, by no means woody and over fibrous. A more or less heavy coat of manure is given in the fall, with 200 lbs. of plain superphosphate to the acre, after the last cutting is removed.

4th Year.—A light crop of grass being removed—maize follows,—exactly as above (see 1st year).

5th Year.—A mixture of seeds,—oats, rye, tares and peas—exactly as in the 2nd year, the clover seed being here replaced by 25 lbs. of the best hay seed mixture, according to the nature of the soil; but without any clover, this, to avoid clover sickness in the future.

6th, 7th and 8th year.—Mixed grasses—out *thrice* each season, and manured, more or less heavily, every second year at the latest.

I count that good land so treated should feed two cows and produce from 14,000 to 15,000 lbs. of milk, per acre, provided from 4 to 5 lbs. of good straw, finely cut, be mixed with the green food every day, and about 1250 lbs. of cotton seed meal and 350 lbs. of bran be added per annum, per cow. I must say, here that I *want* cows to give the largest possible percentage of rich milk, with a minimum expenditure of the necessary food, and therefore, I act accordingly. This question of *the best rations, both for summer and winter*, will form the subject of another paper.

But let me say, here again, that to make soiling profitable, (1st) proximity to the stables, (2nd) thorough cultivation, (3rd) heavy manuring, (4th) systematized, intelligent, persevering labour are indispensable. Under these conditions, soiling means heavy cash returns, provided the produce—be it calves, pork, poultry, and milk butter or cheese—be properly husbanded as well. Successful soiling, also means the production and proper husbanding of an abundance of farm manure, which will grow—besides soiling crops—heavy crops of grain, roots, hay, &c., provided too much land cultivation and

too scanty manuring be not attempted on that portion of the farm.

Farmers may ask where all the farm manure mentioned above will come from. The answer is plain: From your cows, provided all the droppings, solid and liquid, be saved and properly utilized.

ED. A. BARNARD,
Director of the *Ill. Journals of Agriculture*,
Province of Quebec.

Quebec, November 1889.

Derwent, Ont., Oct. 18th, 1889.

PROF. E. A. BARNARD, QUEBEC.

Dear Sir,—By this mail I sent you a copy of the weekly edition of the *Advertiser* containing some selections from and comments upon a communication of yours to one of our exchanges "Hoard's Dairyman," agricultural and especially dairy matter is being read by our subscribers with ever increasing interest. If it be not asking too much I should like to receive from you a statement of the succession of crops you use for soiling and the winter rations you have found best suited for milk production. Any other points that you might think of practical value to our readers, following what has been re-produced from the *Dairyman*, would be appreciated. I had the pleasure of meeting you some years ago when you were attending the Western Ontario Dairymen's Ass. meetings, being then reporting for the *Daily Advertiser*. My attention, as far as newspaper work is concerned, is now devoted exclusively to agricultural and dairy subjects, being at the same time, practically engaged in farming, a short distance from London, (Ont.).

Pardon me for thus trespassing upon your valuable time and hoping to hear from you shortly on the subjects referred to, I remain yours respectfully,

WM THOMPSON, JR.

P. O. address

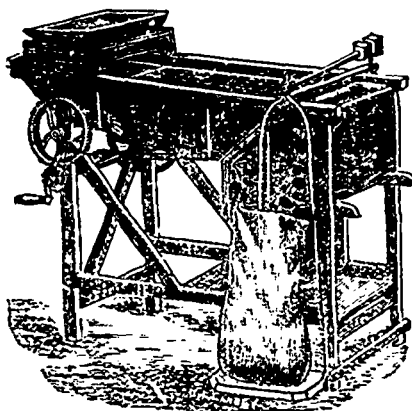
Wm Thompson, jr.,
Derwent, Ont., Canada.

POTATO SEPARATOR.

Patented July 3rd 1885.

BY J. C. JOUBERT.

This improved separator cleans, takes off the germs, separates the potatoes and onions into three different sizes, and weighs them at the same time.



It does the work of at least ten persons.
Manufactured and sold by the Institution for Deaf-Mutes,
Mile-End, near Montreal.

If all that is predicated of the above Potato Separator be correct, it must be a most valuable implement in the hands of those who grow large quantities of that tuber for market. Nothing is more tiresome than to see potatoes come up to table of all sorts and sizes, some underdone, and others no better than a starchy paste. In England, potatoes are always sorted into three sizes, called, in the London district, Ware, Middlings, and Chats, the last being reserved for the pigs, and the middlings being usually used for seed.

I have not seen the machine, but judging from the engraving and from what M. Chapais writes to me, it ought to meet with a large and ready sale.
A. R. J. F.

THE SILO.

A LECTURE BY M. LOUIS BEAUBIEN.

M. President, Ladies, and Gentlemen.—One fine day last autumn, I was travelling along one of those long colonisation roads: the first encroachment on the virgin forest. We had crossed the bright Laurentians, driven along the side of many an enchanting lake, and were approaching the greatest of all, the end of our journey, the beautiful Nominigoue.

We were, you see, in an absolutely new country, a part of that grand domain which the zeal and activity of Father Labelle has thrown open to our people, and to which we have given the name of the North-West of the Province of Quebec. On each side of us, the unbroken forest; the hand of man had not yet attacked its rustic loveliness. No sign, as yet, that any colonist proposed to take possession of the spot as his heritage.

All at once, what was almost an event happened: we met some one! When in the forest two men meet, then is the time to supply the want of post, of telegraph, even of the telephone. Not only, like Christians and Frenchmen, must we salute each other in a friendly way, but more, instead of passing along coldly and stiffly, we chat a little, telling and hearing, frankly but briefly, the news of the day. It is not at all in these distant spots as it is in our horrid towns, when one does not know one's neighbour on the other side of a ten-inch party-wall.

Our conversation, then, was soon started. I recognized at once the son of M. Lalonde, who had been settled for the last few years at Nominigoue; a fine young man—I hope he does not hear me—with a bright, intelligent face.

I asked him about the silo built the previous autumn on the farm. I had seen them at work on the building, and had even given them a little advice. "Ah! Sir," replied he, we have been making butter all the winter just as in summer. This fall, we shall double the capacity of the silo, and the production of butter will be doubled too, and no mistake."

In addressing you, gentlemen, on experiments on ensilage, of its results to the country, I thought it would be as well to relate to you, at the very beginning the words of this youth, to tell you where I heard them, and to convey to you as well as I could the tone of satisfaction in which they were uttered. To my mind, they include an important lesson as well as display a great popular result.

Many a time have I repeated these words, and with satisfaction: they form one of the pleasantest recollections of my farms at Nominigoue, last autumn. (1)

(1) May I be permitted a digression, though what I am about to say is not really one? I have mentioned M Lalonde: a model for many men. He was fairly successful as a shopkeeper at St. Jérôme; but he, by the blessing of Abraham, had a very large family, a thing

If the silo, then, is thus valued in the new farms, far away, on the borders of the virgin forests, where the tough stumps with their long roots, and the *second-growth*, hinder cultivation, what may we not expect from it in the settlements, where corn can be cultivated, not with the hoe, but with all the care insured by the use of modern implements. This was the reflection I made to myself, as I was drawing towards the end of my colonisation road.

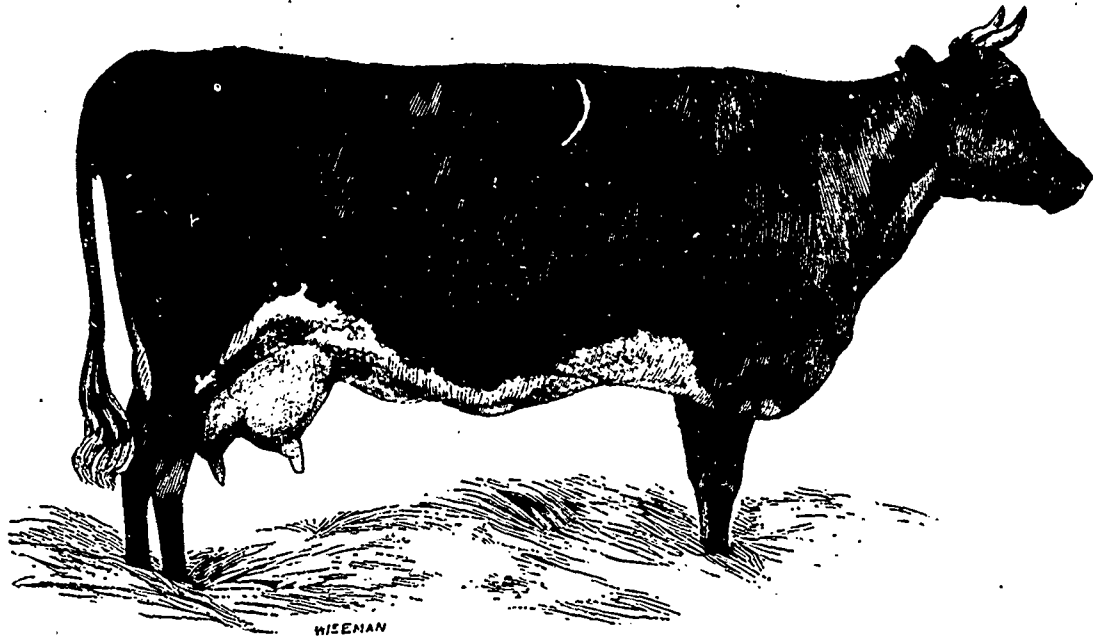
While I am in the country of the colonist, I may tell you that the silo is of immense assistance to him.

When, at the formidable St. Louis, (1) the buckwheat is caught by the frost, the farmer crams it into the silo, and in winter, the cattle will eat it all, grain and straw together; in any other case, the whole crop would be lost. If the pancakes are wanting, there will be plenty of milk.

In the fall, the tops of the turnips sown on the burnt-over land (*le noir*) will be added to the contents of the silo. The

not rich. If, when he arrives on his lot, he brings with him naught but his axe and his two arms, be they as strong as may be, the silo becomes his savings-bank, and at a very trifling cost. One man digs out his silo in the red sand of the hill-side; another, builds his, on the surface, of logs squared on three sides and stuffed in the interstices with moss; the whole covered with rough boards or with *auges* (1) *forestiers*. The fodder-corn is laid herein, at full length, by hand; a chaff-cutter is beyond their means at present.

Like our own silo, M. Lalonde's is placed in his spacious barn, which, by the bye, was not at all a spacious barn last season. "The silo," said he, "has enabled me to increase my stock, and I shall be obliged to extend my barn to lodge all the animals I can now feed." The mixens, too, are growing bigger, and his crops, as well, in proportion to the dung made. Thus, all things are uniting, as in a chain, to insure his prosperity.



SHORTHORN DAIRY COW MOLLY. (1st prize in her class.)

colonist is greatly assisted by all this in the first hard years of his sojourn on the borders of the forest, especially if he be

that happens pretty frequently among our people, and consoles them in their troubles. He felt able to set up one or two of his children in business, but what to do with the rest? To avoid creating jealousy among those whom he loved equally in his happy home, he determined to give them all the same heritage, earned out of the lands of the crown. Selling his property and realising his assets in the old village, he bid adieu to his friends, bought a large property on the banks of the great and beautiful Nominique, where his comfortable house, built on an eminence, commands a view over that immense sheet of water. There, under the eye of their parents, all the children, one after the other, will become happy and prosperous land owners, and, still, each will remain the neighbour of the other. There would have only been a pittance for each of them, and they must have separated, had the family remained at St. Jérôme. Brotherly union, happiness, abundance, will be their lot on these new farms. How many other fathers of families could do the same, who, now, seeing their increasing families, are looking at the future with a doubtful eye. If what I am saying at the moment may have the effect of extricating only one from his embarrassment, and at the same time assist our devoted colonisers, I should think myself fortunate in having made this digression, in which you have heard the history of the numerous, happy, courageous family of M. Lalonde

(1) *Pèle St. Louis?* Trans.

By means of the silo, the father of the family, already in years, has established on the land, bought of the Crown-lands agent, his son and his young family, giving them all at once the comfort of the home, and milk for the children from the first start. Here, in a few words, is the history of this settlement:

After choosing a fine spot in a hard-wood bush, the father, with his son and his cousin, all go there in the fall to clear up (*efferdocher*). After wintering in the village, they return to the bush in March and begin to *chop*. The snow gone, they pile the logs. The burning over, the best piece of land is chosen to be sown with corn and turnips. The remainder of the *desert* is, as usual, sown with buckwheat and oats. Then, the house is built, the stable and the oven, by degrees, and the beds for both great and small, for the men will soon go back to the village to bring home the beloved daughter-in-law, whose absence has caused them to feel not a little dull.

Behold the people leaving the land of Egypt! The grandfather, grandmother, the children and the grandchildren, are off to the promised land, taking with them all their little pro-

(1) These are, I am told, rough, overlapping slabs. A. R. J. F.

perty an ox, three cows, three sheep, two pigs, and a few hens. They arrive on the borders of the lake, in the midst of a clearing, where they find the grain up. This they protect by a fence of laid trees and bushes (*embarras*.) and the cattle they turn into the bush, where they find plenty of food.

The good old grandfather, who supplies the young family with the provision necessary for the first start in their new life, departs not until the maize has had its first hoeing, and the silo to receive it in autumn has been properly built. When the time for filling it arrives, he returns, and heaps it up with the corn, laid evenly along, and with the turnip-tops and a few oats that could not ripen. The silage is then covered with planks loaded with stones.

From the first winter, the son can winter his cattle without any difficulty. He brought them in from the bush in good condition in the fall, and they get on famously with the contents of the silo and the buckwheat straw, flavoured with some hay from a beaver-meadow near the banks of the little lake. Neither milk nor butter is wanting. This is the story of the swarm flown from its native hive in the old parish, and settled in a new spot, without having suffered these privations which, especially the first year of their abode in the bush, are endured, particularly by the children.

And the colonists who have observed the advantages attending the silo, soon hasten to build themselves one. If one is built in any place, the erection of others soon follows.

In the old settlements, too, the farmers are not slow to discover what a resource ensilage is in our long winters. That excellent and energetic farmer, Father Jean Baptiste, of Notre-Dame du Lac, whom we are glad to see with us to-day, spoke thus to a group of *habitans* who bring their milk daily to his factory: "You, whom I see here, you will, every one, before four or five years are over, be supplied with a silo of double the capacity of this one of mine which you are so much as astonished at to-day." And his hearers admitted that it was not improbable.

This winter, I had the pleasure to see at my place a meeting of some of the chief proprietors of siloes in the district of Montreal, as well as M. Barnard, the Secretary of the Council of Agriculture. The object of the meeting was to form a club to discuss our different manners of proceeding, and the results obtained. Were present:

The Rev. Brother Charest, Messrs. Thos. Irving, James Drummond, Paul Desmarchais, Dr. Desmarchais, George Buchanan, Andrew Dawes, Hugh Brodie, Milton MacDonald, Robert Benny, Frs. Dion, Wm. Stephens, Albert Garth, and Mr. Barnard.

Mr. James Drummond was chosen chairman, and Mr. Barnard, secretary, and I have no objection to that gentleman's giving us this very day a part of his report. The next meeting of our club will be at Mr. Garth's, Ste Thérèse, one of our best known butter-makers.

I need not say that our discussion was interesting and useful to each one of us. One remark, by Messrs. Drummond, Irving and Desmarchais, pleased me so much that I cannot resist the pleasure of imparting it to you. It was to the effect, that the construction of my silo and its accompaniments were most economical. I will give a concise description of it for the benefit of those who did not hear my last lecture on this subject. Silo of wood, in the barn near the thrashing floor. Frame substantial, lined within with two thicknesses of inch-boards, tongued and grooved, with paper between the two. The bottom on the ground.

This year, I was satisfied with covering the silage with loose boards unweighted, and it answered very well. The silage was topped up with five or six inches of straw. This we found rotten, but the silage was in good order.

The chaff cutter is fitted with an elevator. After having chopped up the corn and filled the silo, it serves, without changing its place, to cut the straw into chaff during the winter, and to carry it up into the silo, where it deposits the chaff on the boards that cover the silage. This straw-chaff is thrown down with the silage as it is wanted, and the whole carried in a barrow to the cattle, at the rate of $\frac{3}{4}$ silage to $\frac{1}{4}$ straw-chaff. At this very time, my pregnant Ayrshires are eating a hundred pounds of this mixture for their sole food, unless they are giving milk. With this ration, they not only keep in good condition, but are actually getting fat. The quantity of dung, too, I observe, will be much greater than usual.

The silage is good and sound all through, and is eaten by the cattle with appetite. It gives no bad flavour to the milk, though the cows in milk are eating fifty pounds a day of it.

At the rate the consumption is going on, I see that, to the best of my judgment, I cannot winter more than $2\frac{1}{2}$ head of cattle on an arpent of fodder-corn. (1) The crop, however, seemed to be a good one! But we know that the summer of the past year was a horribly bad one.

While we were filling the silo, I took care to allow the silage to heat, in layers of $3\frac{1}{2}$ feet, up to 125° F. to 150° F. You see that experience has caused me to make a change in my plan as I related it in my lecture last year.

When once the silage has been broken in upon, I take care, at each attack, to clear off as much as possible of the whole surface of the cut, so that none of the silage may be too long exposed to contact with the air. If my man leaves any part of the surface too long exposed, the smell gives me notice of it as soon as I enter the barn where the silo is placed. (2)

There is no mistake about its freezing, without hesitation and without consideration, in this barn, but the silage has never been injured by it. The frost penetrates very little through the sidewalls, when once the cutting begins, and the frozen parts mixed with the rest are comparatively trifling, and do not affect the bulk.

The cows giving milk receive, besides 50 lbs. of silage, 10 lbs. of hay, and a mash, composed of bran and meal, given hot and made thin.

I am told that pigs and colts can be kept on silage; up to the present time, however, mine are too dainty, except one, and he seems to take to it pretty well.

I have taken the liberty to give you the names of the gentlemen who met at my place, because we intend to do, as I am doing now, namely, to spread abroad as much as possible the advantages of this system of ensilage which answers with us so well, and the approbation of these experienced men can not fail to aid us in attaining our object.

They were all of the same opinion: if the silo had not been already in existence, it would have been necessary to invent it for the special service of this country of long winters; that it was a very great assistance to our farming, by leading us to cultivate a plant giving the greatest possible amount of food on a given space, and which can be ensiled in any, even in rainy weather, at a time when no other crop can be touched.

The moister corn is, the more quickly it heats, and, consequently, the more rapidly can its ensilage be finished. And to such a point may this be carried, that if one gets impatient at not being able to add another layer as soon as one would wish, as has happened to me, it is only necessary to give it an abundant watering to induce the silage to begin to heat at

(1) An arpent— $\frac{1}{4}$ of an imperial acre. Trans.

(2) This "renouveler partout la surface de la coupe" means, I presume, "to clear off the entire surface-layer of the silage as soon as possible." Trans.

once to that degree that secures the production of sweet silage.

You know what sort of weather we had last harvest. Was there ever so inclement a season? Green fodder-corn is the very crop of all others for such years of failure and of real despair, provided always that one has a silo: it is by far the most difficult crop to be harvested in the ordinary fashion.

In spite of the difficulties of that unfavourable season, I got mine in, though, in spite of the piece being thoroughly drained, my waggon-wheels cut in deeply. We could only put on half a load, and more than one bundle of corn was carried dripping with water, from having been, no doubt, picked up out of a puddle. We could not wait; the layer already in the silo was passing 125° F.; another layer was absolutely necessary, unless we were to have the trouble of covering up the silage just as we do when the whole is full. There is no need, as you know, of tramping the silage in filling, for the layer, in heating, presses itself as firmly as an hydraulic-press could do it.

During rain, the workmen sometimes put on their water-proofs to bring in the layer that was wanted at the right moment.

These facts I related to the gentlemen who did me the honour to visit me, as they were in the act of telling me that my silage had a good colour, a good smell, and a good flavour.

I did not omit to tell them that while we were ensiling the corn, my honourable friend Mr. Ross, always ready to criticize, as you know (particularly now a days, since he is one of the riant leaders of the malcontents of the opposition,) Mr. Ross, being on a visit to me, asked me what I was going to do with these bundles of wet maize all covered with dirt, adding that I should spoil my silage, and had better wait till they were a little drier. But I have not always taken his advice: I replied that we were in a semi-deluge, and I saw no prospect of a change for the better, that the corn would only heat so much the faster, and that I would watch the thermometer closely, in order to stop the fermentation in time. And this was done, as I said; the result is there before the eyes of my friends.

All of you who, last summer, saw your pease germinating on the ground without being able to approach them; you who, in the same way, lost your wheat, barley and oats, and saw your hay rotting (*rouir = rotting*) in the field, when turning it over only injured it the more; you who gathered your potatoes, taking them first of all out of the water to carry them a little further up to an elevated place, where they hardly dried any better; think of this crop, blessed in that it is so free from all demands for particular treatment: I mean Indian corn, which will suffer ensilage in rain, even in snow, as well as in the finest weather: the lifeboat of the farmer, the gift of God in these years of distress and punishment through which we are passing.

Any one can build a silo, without being rich, even without being a carpenter.

Let every one, then, have a silo, that indispensable structure on a farm, the true mainstay against the storms of winter.

I also explained to my friends how I harvested my crop.

The reaper may be used with only two of its rakes. Invariably, if the corn be long and stout, it must be tied in sheaves. Up to the present time, I have cut mine with a sickle. The bands of the sheaves are of string, with a slip-knot, and last for an indefinite time: they are sent back to the field with every return cart. The cartage is done in tip-carts, and the sheaves, being placed in them at length, stand upright on the butts when unloaded, and are easily handled by the workman who carries them to the feeder of the chaff-cutter; another man drives the two carts by turns, and a

third is tying the bundles in the field all day. Two horses on the horse-power. That is all the labour employed when the ensilage is in progress. The next day, while the layer is heating, the horses rest, and the four men are reaping the maize.

The general opinion is that not more than a bushel to the arpent should be sown, and that the rows should be three feet apart, in order to let the stalk ripen as much as possible, and to give room for the passage of the horse-hoe. When corn is sown thin enough to grow ears, the proper time to cut it is when the grain is "in the milk." Corn broadcasted does not yield as well, and can be neither horse-hoed nor plastered.

The first cultivation is done with the inclined-toothed smoothing harrow, lengthways and across, from time to time, until the corn is six inches high. Then comes the turn of the horse-hoe. Thick-sown corn is more subject to make sour silage, while thin-sown, having arrived at a certain stage of ripeness, makes a sweet silage.

The production of milk may be increased by silage as much as by good pasture.

If you salt the silage, which is a mistake, cows will eat it more greedily, but it is not more nourishing, and, besides, it is slower in fermenting in the silo.

If the corn is ripe or blanched by frost, it will take longer to begin fermenting.

My friends all thought that the practice of ensilage was spreading rapidly. The system gave such satisfactory results, that they took pleasure in recommending it to every one. I have always found that if a man built a silo, he became at once an apostle and propagandist of that faith. He desires thenceforth to lead his neighbours and friends along the road that he himself follows with so much pleasure.

It was in that excellent paper, *The Country Gentlemen*, which I have been reading for more than twenty-five years, that I first studied the silo; then in French books on the subject, and lastly in practice. I became its partisan, and the little work that I read to you two years ago, I distributed all over the country, sending, among others, one to every Curé. Many thousand copies, too, were distributed by our association and by the government. Others, besides myself, in the province, have also written on the subject.

In many places the seed fell on good ground, for, judging from the letters I receive from people anxious to know the details of the system, and from the frequent visits I receive from farmers anxious to see with their own eyes, I am inclined to think that the process of ensilage is spreading rapidly; not so rapidly as in the States, where it is marching along with giant strides, but at a pace calculated to give satisfaction to those who are interested in the good results that are derived from it.

In the little I have been able to do for the agriculture of my country, nothing has pleased me more, on account of the immediate benefit caused by it, than my endeavour to popularise the process of ensilage. I have always been promising myself to abolish winter. This is what makes it so successful. And to think that it was for France that this grand system was discovered!

Here is a quotation which will show us how this idea is spreading in the north of the province, and the progress it has made in one or two states of the American Union. I read in *Le Nord*:

"I cannot refrain from citing the names of M. F. X. Régimbal and Dr W. Grigoo, secretary of the new agricultural society of le Nord. These two gentlemen each built a silo last fall; they are, by the very fact, the pioneers of this new idea in agriculture, in the northern part of Terrebbonne. It is an immense stride this that they have taken in the way of

progress; already, hundreds of farmers have visited these siloes; they were astonished at the results obtained from the ensilage, which has given entire satisfaction. This experiment will be the spark to light the fire, and I dare prophesy that, starting from next year, from eighty to a hundred siloes will be built in the eight parishes in the northern part of Terrebonne.

In fact, without the silo, breeding stock in the North is difficult, if not impossible, on account of the length of our winters. With the silo, breeding is easy, and the Northern Townships become in that respect a privileged district. In summer, the pastures never fail, the water is clear and always plentiful, the grass on the mountains is most nutritious for cattle; the farmer can command great tracts of land fit only for pasturage; (1) but as the winter devours all the profits realised during the summer, it does not pay to devote ourselves to breeding. The silo does away with this trouble; with three or four arpents of land well manured and sown with corn, the proper winter food for ten or twelve cows is secured, and, winter as well as summer, the cows will be well fed, will cost but little, and will return a good deal.

"For the Northern-Township, it is the silo which will save and enrich them," exclaimed M. J. B. Bohémier, the president, at a meeting of Agricultural Society No. 2 of the county of Terrebonne: he is right.

"Major Alvord, a distinguished agriculturist of the States, in reply to an article in an agricultural paper stating that the ensilage-fever was passed, and that siloes were becoming less and less popular, proved by figures that, far from diminishing, the ensilage of green fodder was increasing daily. Among other things, he said that there were more than 1,000 siloes in Wisconsin alone, and that, next year, several hundreds more would be built. In Massachusetts, according to the census of 1885, the number of siloes was 1,029: there are now 1,300.

We are not very far from Berthier now; perhaps we might be of use to those gentlemen who have undertaken to revivify the manufacture of beet-sugar there!

It is sometimes difficult to preserve the pulp—an excellent cattle-food—as it cannot be consumed as fast as it is made. Let it be ensiled, either in stationary siloes or in siloes on wheels, for distribution along the railroads. The whole would be preserved, and could be sold when the demand was active.

It only remains for me to assure my fellow-members of this association that I shall be always glad to receive a visit from them, whether it be in the fall, to witness the harvesting of the crop and its ensilage, or in winter, to see how the cattle like the silage. I can promise them that they will find more eloquence in the facts than in anything I have said today.

Inquiries and Answers.

ICE-HOUSES.—In your paper of Oct. 3, page 745, you give plan of a silo. Why would it not be a good way to build an ice-house? Would the heat penetrate a solid plank wall 8 inches thick quicker than it would a studded wall boarded on each side and niled with sawdust, having the wall the same thickness? The latter is the way we built our ice-houses down in Maine, and they do not save our ice. Will you suggest or give a plan for a good ice house? E. H.

On which they should keep sheep and foid them at night on the arable fields in the bottoms. A. R. J. F.

a. Clinton, Maine. [There are two distinct modes of building and filling ice-houses, namely, constructing them with single board or plank walls, with a foot of sawdust between the walls and the ice; or with double walls with the space filled in with sawdust. We have given both modes a thorough trial, and prefer the former, as being simpler, more

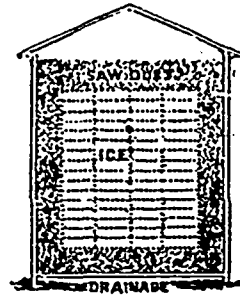


Fig. 1.

easily managed, and less liable to have air crevices in the sawdust. Fig. 1 represents a vertical section of such an ice-house, the contents being built of solid blocks of ice, and the sawdust being compactly filled in as this ice structure goes up. The ice rests on sawdust, and is covered with it of equal

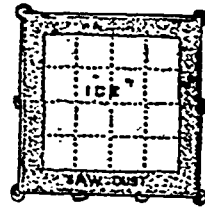


Fig. 2.

thickness. Fig. 2 is a horizontal section of the same. If our correspondent will see that his mass of solid ice is thus incased on its four sides and top and bottom with compact sawdust, and has good drainage below and free ventilation at the top, he will have no difficulty in keeping ice, whatever the



Fig. 3.

walls may be built with, provided they hold the sawdust in place. They may be single plank or boarding, or laid up with timber in the manner suggested by our correspondent, or with double walls. The simplest board shanty will answer, provided it holds the sawdust well, and drainage and ventilation above are fully secured. Fig. 3 represents a cheap and simple ice-house built in this way, the plank siding resting on the inside of the stout posts, and left open above for ample ventilation. A more ornamental effect is shown in fig. 1. The most finished and elaborate structure will fail to keep

ice, if the three requisites are absent—compact casing of the ice on all sides with sawdust, perfect drainage and ventilation overhead. A needless amount of sawdust is often used. A

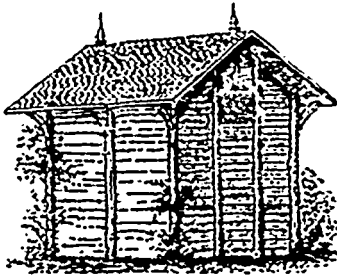


Fig. 4.

uniform thickness of a foot or 15 inches well applied is quite sufficient; two feet is needless, whether in double or single walls] *Country Gent.*

Anthracnose of the Bean.

(*Colletotrichum lindemuthianum.*)

We have described and illustrated this disease elsewhere (Report U. S. Depart. Agriculture, 1887, p. 361, plate VI.) and while we have no new facts to present respecting it, we believe that an explanation of the cause of the malady will interest the readers of ORCHARD AND GARDEN and perhaps be new to some of them. The season here has been very wet and the effects of the Anthracnose of the Bean have been brought home to us by the injury done in our own garden and it was from our garden that the specimens were obtained from which the present illustrations were drawn. Figure 1607 represents the appearance of a pod which has been attacked by the anthracnose and those who have ever had any thing to do with this crop will hardly fail to recognize it.



Fig. 1.

The disease is wide spread; we have seen it in Maine and have had specimens of affected pods sent us from Alabama, and in Europe it is well known. Here it is too common. All varieties of "string" beans may be attacked, those with green pods as well as the wax or butter beans, and the field varieties are by no means exempt. The damage to field crop is often very considerable, and in small gardens we have seen the produce completely ruined by it. If the disease is light it may simply cause dark reddish well defined but superficial spots on the pods and go no further. In severer cases these spots enlarge sometimes by the union or running together of two or more of them, the cuticle of the pod is destroyed, the diseased area becomes depressed, the central portion assumes a dirty grayish tint and the border a dark livid brown. The destruction of the tissues may proceed inwards through the thickness of the pod and even involve the bean within. If attacked when quite young, as is sometimes the case, the

pods are dwarfed and amount to nothing; if affected later they may attain full size but mature imperfectly and yield an inferior crop. In the case of "string" bean, badly spotted pods are unselectable and a few that are diseased may materially affect the price of a fairly good lot.

The cause of the bean disease in question is a very minute fungus similar in many respects to the parasite which produces the Anthracnose of the raspberry or to that which causes the similarly named disease of the grape. We get a view of this fungus by cutting a very thin vertical section through one of the spots and examining it under a good compound microscope. We thus get a view like that shown in figure 1608. The body of the fungus, composed of a dense growth of mycelium, lies very near the surface, apparently covered only by the cuticle. In fruiting the fungus sends up, perpendicular to the surface, short stalks upon whose summits the oblong, one celled, and nearly transparent spores are borne. These spores readily germinate in water and during damp wet weather are produced in great abundance and serve to rapidly propagate the disease. Other spore forms are unknown and we are also ignorant as to how the fungus passes through from one season to the next.



Fig. 2.

In all the specimens which we have examined microscopically, we have constantly found, intermingled with the short spore bearing stalks, and projecting much beyond them, a few large, dark brown stalks or *hyphae* the presence of which separates our fungus from the genus *Glaosporium*, under which it has heretofore been classed, and places it in the genus *Colletotrichum*, the name here adopted.

As to the treatment of beans in order to prevent this Anthracnose we can only say, in the absence of all attempts or experiments made with this object in view, keep the plants as dry as possible by keeping them free from weeds and planting only in a well drained soil; upon the first sign of the malady spray them with the ammoniacal carbonate of copper solution or use the liver of sulphur solution described in the last number of the ORCHARD AND GARDEN, p. 162. Two or three applications of the latter preparation will doubtless check the spread of the disease and if applied in good season may entirely prevent its appearance.

We give a portrait of the high-bred and individually excellent Holstein-Friesian bull Mercedes Prince 2150 H. H. B., (formerly Jaap 3d 1118,) winner of first prize for Holstein bull and get at the Bay State Fair. He has got by imp. Jaap 452, out of imp. Mercedes 723; was bred by Thos. B. Wales, and is now owned by John A. Frye, Marlboro, Mass. He is said to weigh 2656 lb. *Country Gentleman.*

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