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

OFFICIAL PART.

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The Meeting of the Dairymen's Association of the Province of Quebec, 1889.

The next meeting of the above society will be held at L'Assomption on Wednesday and Thursday, 23d and 24th of January, 1889. All the members for 1888 and those who subscribed for 1889, will be entitled to a reduction of their railroad fare on this occasion.

In order to render our general meetings more interesting, all the makers of butter or cheese, and the other members of the association, are requested to make notes, in writing, of all questions that may occur to them, and to submit these notes to the meeting. If they hesitate about reading the notes themselves, they can forward them to the secretary who will provide a *question-drawar*. For the Directors,

J. DE L. TACHÉ,
Sec. Treas.,
Box 1023, P. O. Quebec.

DE OMNIBUS REBUS.

October 23rd, 1888.

Tomatoes.—I see by the report of the exhibition of flowers and vegetables at Quebec that the tomatoes in that district have been a complete failure this year. I do not wonder at it, for as long as people will allow the plant in its infant state to grow as much wood as it pleases, so long will the fruit, in seasons like that of '88, refuse to ripen. Here, as well as at Sorel, those who have followed out my plan of training a single stem to a stake and pinching out every axillary bud as soon as possible after its appearance, have had nothing to complain of, as the ripe fruit was sent to the Sorel market this year on the 14th July, (1) only nine days later than in the terribly hot season of 1887. Several people here have begged me to show them how to manage their plants next summer, which of course I shall be very ready to do.

Turnips.—I have often spoken in this periodical of the wonderful difference that exists between Scotch and English turnips. Whereas our Kentish swedes will only keep a flock of hardy Down-sheep going, Aberdeenshire turnips will fatten a large bullock. Mr. McCombie, the late celebrated Polled-Angus feeder, seems to have had very strong feelings as to the value of roots grown on various soils. He gave his commercial beasts nothing but turnips and straw until a month before they went to the butcher, and never allowed them to taste roots grown on inferior soils: the young cattle and the cows consumed these. The fattening power of grass, too, varies greatly. Pastures that will make good butter or good cheese, will not fatten a beast! For instance: our Gloucestershire lapd lies on the banks of the Severn, sloping down gra-

1) And fetched 50 cents a dozen and \$4.00 a bushel, too!

dually to the valley. On the low land along the river, first rate Cheddar-cheese—formerly Double Gloucester—is made; on the hill, the young stock, &c., are pastured; and just below the hill, half way down, runs a belt of land, not certainly more than one hundred and fifty yards wide, which is the only part of the whole 2,000 acres that will fatten a beast so as to finish it off for the butcher.

Roots.—Topping and tailing the root-crop here seems an expensive job. In England, it costs \$1.36 cents an acre, which, allowing for difference of wages, would be equal to, say, \$2.00, here. The machine for doing the work by horse-power is not yet sufficiently perfected to be trusted in all soils, but it is pretty near the mark, and a great boon it will be to the large graziers on heavy land. Figure to yourself, oh reader, that on the farms of Sam. Jonas, at Ickleton, Cambridgeshire, there used to be, annually, 400 acres of roots grown!

Guernseys.—I was glad to see that at the exhibition of the county of Argenteuil the Guernseys were shown by no fewer than four different breeders; but I was not glad to see that prizes were offered at the same show for Grade-bulls! I fancied that the Council of Agriculture had refused to allow any public money to pass to those societies that encouraged the exhibition of any but thoroughbred sires. If it is not so, the sooner the Council takes some such step, the better for the country.

Harvest in England.—After all said and done, the harvest in England is a fair one. The latter part of the in-gathering was carried on in very beautiful weather, and consequently a large proportion of the wheat-crop is fit for immediate threshing, instead of its having to wait in stack until the wind and frost of winter seasoned it. The average yield of wheat will be about 28 imperial bushels an acre, only one bushel less than the normal quantity. There is little doubt that in the wonderful season of 1887, the yield was 34 bushels all over, or three and a-quarter times as much as that of the United States! The yield of this crop in Scotland is, on an average, five bushels an acre more than in England, and the reason is clear: in Scotland, wheat is only sown on the best land in the best condition, whereas, in England, it is sown every fourth year on all soils, good and bad, invariably, I may say, following the one-year clover-ley, oats taking its place in the Northern kingdom. In 1854, the county of Norfolk alone produced 1,290,373 bushels of wheat more than all the land north of the Tweed, and out of 1,005,135, the total number of acres under tillage in the county, there were 202,971 acres in wheat: more than one fifth of the whole acreage. By the bye, in the same year, there were grown in Norfolk 178,000 acres of mangels and turnips, which, at the rate the root-crop costs here to single, would have necessitated an outlay on the part of the farmers of the county of \$2,136,000. Of course, this is not a fair statement, as wages in England are about 30% lower than in Canada. The real cost of the singling of the above number of acres of root-crop was, probably about \$240,000. Norfolk has always been a well-farmed county since Mr. Coke began the well-known "Norfolk-course" of roots, barley, seeds, wheat, and it has not fallen behind of late years as the averages below will show.

Wheat per acre.....	30	bs.	1	pk.
Barley.....	38	"	2	"
Oats.....	46	"	0	"

Creditable work for a county the greater part of which is a barren soil. A yield of 30 bushels an acre of wheat over an extent of more than 200,000 acres—including the chalks,

hungry gravels, and blowing sands—is a decent crop and shows what good farming has done for the district. There is but a small portion of Norfolk that can be considered as *naturally* adapted for wheat, and it is therefore the more creditable that the farmers have produced such a yield. In 1805, there were only 200,000 bushels of wheat sold in the Norwich market, and in 1868, the number of bushels disposed of there had been raised to 1,360,000. In fact, the change of cultivation and the use of linseed-cake as a cattle-food and of rape-cake as a manure, had converted a rye-growing district into one producing an abundance of the finest wheat and barley in the world. Mr. Barnard astonishes people sometimes by saying that the agricultural produce of the Province of Quebec may be tripled. I see no reason to doubt the statement, considering what has been done before in other parts, even on the "vile sands of Sorel," as they are called by those who know nothing about them.

Basic Slag.—Several experiments have lately been tried in England with basic-slag as a source of phosphoric acid. In 1886, it was compared with superphosphate—26% soluble in the proportion of 560 lbs. of slag to 448 lbs. of superphosphate, on a piece of swedes, with the annexed results:

5 cwt. basic-slag....	15	tons	2	cwt.	per	acre.
4 " superphosphate.	12	"	5	"	"	"

On a pasture-field in Cheshire, 5 tons were applied, at the rate of 5 cwt. per acre, in early spring. The field was not mown, but the beneficial effects of the slag were most clearly seen in the different appearance of the grass where the slag was applied, and in the marked partiality which the cattle showed for that part of the pasture which had been so manured. Professor Kinch, at Cirencester, Mr. Warrington, at Sir John Lawes', and Professor Wrightson, at Salisbury, have nothing but good to say about this waste-product of the smelting furnace, as supplying phosphoric acid for the use of plants. As the acid in the slag is of course in an insoluble state, it should be ground very fine—the whole should pass through a sieve with 100 wires to the linear inch, that is, 10,000 meshes to the square inch. I am writing to Messrs. Downes & Co., Liverpool, to find out all about this new manure, as up to the present time I have had no information concerning the state of acid, whether crystalline or not. It ought to be very cheap, as the supply must be practically unlimited. I should feel inclined to apply it in autumn.

French experiments.—Some simple, but very satisfactory experiments have been tried lately in the "fields of demonstration" of the Department of Vienna, France. At St. Julien Lars, the wheat generally grown in the district was tried against Hallett's pedigree wheat, both with and without manure, the result being very much in favour of the native kind in both cases. The manure used was as follows: 12% of phosphoric acid (no quantity per acre mentioned) and 5% of potash, applied in the autumn, and 200 kilos. of nitrate of soda per hectare, = about 170 lbs. per acre, put on in spring. The whole cost not quite 94 francs, and the extra yield of the native wheat was worth 166 francs = 67 francs or rather more than \$13, an acre.

In the Canton of Charroux, Shireff's wheat was tried against the native sort. The soil being clay, no potash was used, an agreeable confirmation of my idea on the subject, but otherwise the same manure as before was applied. The Shireff wheat yield considerably more on both manured and unmanured plots than the native. The increased yield due to the 91 francs' work of manure being 294 francs for the native and 314 francs for the Shireff's. Our old English

Golden Drop was put in competition with the wheat of another district and beat it in yield.

I do not believe in "pedigree" wheat or other grain, since the *fen grown* barley, when used by the Cambridgeshire and Essex farmers on their chalk soils for seed, though the thickest and darkest of all barleys, produces the finest samples of malting barley in the world, while the fine samples of chalk-grown barley, descended from the same produce, brings when sown in the fen lands, nothing but "chicken victuals." It is neither the seed nor the cultivation that governs the quality of the grain; but the soil. Chidham white wheat, too, when sown on the plastic clays of Kent, loses the fine translucent appearance it bears when grown on the loams of Surrey and Middlesex, and becomes coarse and more like a common red-wheat.

Nets for sheep.—Though wood for making movable enclosures for sheep is cheap enough in this country, I think nets are more convenient and less laborious to the man who has to change the fold from place to place. Nets, 3½ feet high, are advertised for sale by the London Net Co., Newington Green, Ball's Pond, London, England, at 35 shillings per 100 yards. Three hundred yards would be sufficient to make a double-fold of a quarter of an acre, at a cost of \$27.00, freight and, I suppose, 20% duty. I say a *double-fold*, because it will be clear to any one who thinks for a moment, that a new fold must be pitched before the sheep can be let out of the old one. These nets are tanned, and if dried carefully when put away, and kept dry when not in use, will last for many years. Sooner or later, the same alteration in taste that has taken place in the large towns of the Eastern States of the Union will take effect here, and good short-wooled mutton will be sought for with avidity. Then, we shall see rape, vetches, and other crops, grown for sheep, and the real improvement of our worn-out farms will begin. Without sheep this never will be done.

Ontario Provincial Fair.—This exhibition, held at Kingston this year, was not so well supplied with some kinds of stock as usual. In 1887, 224 roadsters were shown, against 93, and 18 Percherons against 2, this year; 120 Ayrshires last year, only 57 this year. In the sheep-classes, Leicesters and Lincolns seem to have lost favour, as do Berkshires among the pigs. In revenge, 113 Shorthorns in place of 60; 100 Jerseys against 38; 69 Holsteins against 33; 58 Merinos in place of 38, an increase of uneatable mutton I regret to see; the Shropshires, Southdowns, and Oxfords, appear in about the same numbers as in the previous show. There were 27 Dorset horned sheep last year and not one this. The puzzle to me is that there were as many Merinoes present as there were Shropshires, i. e. 58 of each breed. What does it mean?

Shorthorns vs. Herefords.—At Toronto's Industrial Exhibition, there were shown 170 Shorthorns against 45 Herefords, and at Kingston, 113 of the former against 51 of the latter.

Apatite.—I am almost tired of the question whether ground apatite has or has not a beneficial effect on crops. All the three principal authorities in England and Scotland—Lawes, Aitken, and the late Augustus Voelcker—say that it has *no effect at all*, unless previously dissolved in sulphuric acid, and yet in the October number of the *Farmer's Advocate* I find the following: "The finer the apatite is ground the more valuable it is; for the surface exposed to the action of the decomposing agents of nature being increased with its fineness, the decomposition is more rapidly affected and there-

fore its value increased." The writer then continues by advising farmers to sow the ground apatite over the mizen as it accumulates, "farmyard manure being generally deficient in phosphates." This method of treatment, if the apatite be, as I believe, insoluble, will be useless; if it be soluble, the probability is that a large proportion of the phosphoric acid will be lost before the manure is safely lapped in the bosom of the earth. How much better to spread the artificials and harrow in.

Treating of guano, the incredible positions are laid down; 1. that it should be applied for fall-wheat a little time before it is sown, 2. that 200 lbs. are sufficient for an acre of any crop—only at most 18 lbs. of nitrogen!—3. that, though "some experimenters claim that to cover this fertiliser eight inches deep is not too much, we would prefer a covering of four inches" (1). Conceive burying guano, or any other concentrated manure one inch deeper than the harrows will just cover it!

Early maturity in sheep.—"A friend," says the English correspondent of the *Farmer's Advocate*, "who has been inspecting some of the Hampshire flocks, says that he has seen numbers of seven months old lambs weighing 140 lbs., live weight, and worth 55 shillings=\$13.75 each." Good Downs are worth about 6 shillings a stone of 8 lbs., dead weight; and a sheep weighing 140 lbs. dead, would give a carcase of about 80 lbs. or if very good, 84 lbs.

Professor Brown.—After eight or ten years of what must have been very disagreeable work, Professor Brown has left the Guelph College of Agriculture, and accepted a situation as manager of another establishment of the same kind in Australia, where I hope he will find better treatment and a more comfortable position than he met with at Guelph.

Before leaving Edinburgh for his long voyage, he addressed a number of gentlemen interested in agriculture on the position of agriculture in Ontario. After giving an account of the Guelph College and its work, he spoke of the creamery in connection with it, showing how magnificent was the prospect of the province as a producer of butter in winter, either through silage, mangels, or other succulent food. As regards the exportation of store cattle to Britain, too much must not be expected in that line, as the farmers did not seem to be breeding for that purpose, but to be aiming at increasing their stock of dairy-cattle. The Polled Angus breed was not in favour, as there was not a single farmer in the province who used a bull of that breed for his own herd: they were altogether in the hands of three men, who bred them especially for the States. One of the failings of the Ontario farmers was that *they did not appreciate the value of mutton and wool.*

Grape vines.—It is about half a century since I saw the great Black Hamburg vine at the palace of Hampton Court. It is still flourishing, though planted in 1769, nine years after the accession of George III. It was started from a cutting taken from a large vine at Valentine House, Essex, and now measures 42 inches in girth, filling a house 66 feet long by 30 feet wide. It is still in excellent health, and produces annually from 1200 to 1800 bunches, weighing, in all, about a ton of grapes.

The vine at Cumberland Lodge, which is now about 75 years old, is much larger than the one at Hampton Court. Its present dimensions are 138 feet long by 20 feet wide. The circumference of the stem is 42 inches where it breaks into two rods. Each of these branches out into two stems, and they are pruned on the close-spur system, the space, 2,500 feet of trellis, for extension, having long since been filled. Its annual produce exceeds 1200 pounds.

Another vine, descended from the Cumberland Lodge one, at Sillwood Park, near Ascot, is upwards of 50 years old, and fills a house 120 feet in length by 12 feet in width. This vine is trained after the same fashion as were those at Pointe Claire and Beaconsfield, and produces annually from 1,800 to 2,000 bunches of grapes.

Working-dairy.—At the Dairy-Show, held last month, at Frome, Somersetshire, the working-dairy attracted great attention, particularly as regards the contest between the butter-makers. The quantity of cream assigned to each competitor was nine quarts and a pint, which quantity, according to our usual calculation in England, should have produced nine and a-half pounds of butter. But the damsels who contended must have been wonderfully skilled in their business, as the turn out of finished butter was as follows :

No. 1.....	10 lb. 14½ oz.
" 2.....	11 lb. 4½ oz.
" 3.....	10 lb. 12½ oz.
" 4.....	11 lb.
" 5.....	10 lb. 13½ oz.

Of course, the contest having taken place at the end of September, the cream would be pretty rich, but after so rainy a term, I should hardly have expected so large a yield; for grass, though largely increasing in bulk during wet weather does not increase in quality proportionally. Mr. Tuck, Messrs. Dawes' *universal foreman*, to whom I was speaking on this subject yesterday, told me that during the last two months their cattle had hardly held their own, in fact, some of them had actually gone back. The very inferior condition in which the lambs of the year have come to market during the last ten weeks tells the same tale.

The competition began at 11 a. m. and occupied till 3 p. m.; a long time, apparently, but it must be remembered that the three sets of participants were required to leave all the appliances clean and in working order before they left the dairy.

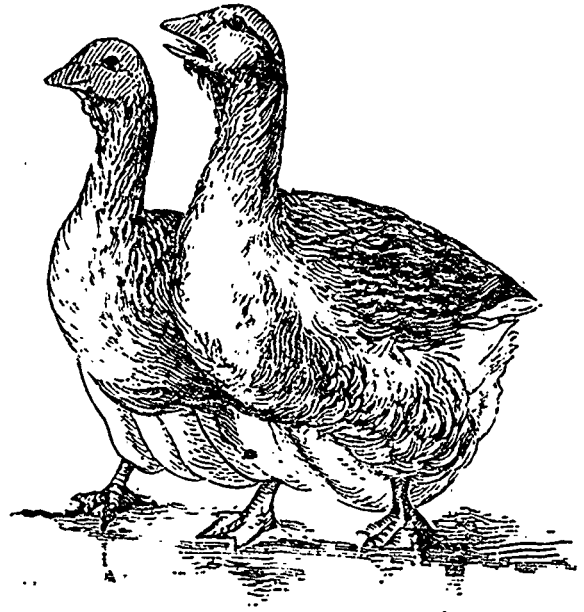
Mangels.—There is no doubt that the orange-globe mangel is a more valuable root than the long-red; but the yield of the latter, in this country, is so much greater than the yield of the former, that I should be inclined to give up the cultivation of the orange-globe entirely. I have tried the two, side by side, six different times, and I have no longer any doubt on the subject.

Harvesting potatoes.—I regret to see such a quantity of diseased potatoes as there are this year. In many fields about Lachine more than half of the crop is rotten. I cannot think it wise to leave the tubers in the ground long after they are ripe. This autumn, many of the crops of this root were quite ready for digging on the 1st of September, and they were left in the ground till the middle of October! On the Cross farm, occupied by the Messrs Dawes, were two pieces of potatoes; the one planted on May 9th, the other not till a fortnight later. The former was perfectly free from disease, the latter had more than half the tubers rotten!

Lean pork.—The cry is still for lean pork—lean, but, of course, well fed—Therefore, it is clear that all young pigs should receive a portion of pease from the time they are weaned. Mr. Idler, of the Bonsecours market, has of late had a very nice selection of small hogs, running from 80 lbs. to 120 lbs. Perfect pork for families should not exceed 80 lbs. in weight, and should be under 20 weeks old. Two-thirds barley- or corn-meal, and one-third pease meal, with lots of skim milk, will turn them out in perfect form. For the smaller, 50 lbs. pig, for roast pork, nothing but skim-milk

and barley- or corn-meal. This sort is meant to be as tender as possible, and profit is not to be considered. A *well bred* pig, properly fed and attended to, should gain a stone of 8 lbs. for every week of his life: the April litter should weigh 200 lbs. a piece in October.

Winter dairying.—The general practice in some parts of this province is to dry off the cows about the first week in November, and to keep them on straw till they calve in the spring. In this, I can see nothing worthy of imitation, neither does that experienced cow-keeper, Professor Alvord, who makes the following statement as to the profit to be derived from winter-



TOLOUSE GEESSE.

dairying: Looking over my record I find that with cows of like age and breeding, those which calved in September and October gave from 800 to 1,000 pounds of milk more per year than those that were fresh in the spring. I also find that the winter milk is considerably richer than that made from succulent pasturage of the spring and early summer, and from one to two quarts less of it is required to make a pound of butter. I estimate that two pounds of butter will bring as much money in winter as three pounds in summer. I can also show that cows fresh in the fall have a longer milking period than spring cows, inasmuch as about the time they would naturally commence to fail, the fresh pasturage comes on and gives them a good send off for the summer."

Potato crop in the States.—I see, by the reports of the general yield of crops in the United States, that the yield of potatoes is said to be *good*, amounting on an average to about 80 bushels an acre! This, at 60 lbs. a bushel, would be equal to 2.40 tons an acre. Now, analysing this yield, we find that, at the usual distance of planting, viz., 27 inches from row to row, and 12 inches from set to set, a yield of 2.40 tons an acre requires that each root should weigh 4 ounces = ¼ of a pound! There must be many blanks in the potato crop of the States, or the tubers must be very few and very small. If the average yield of the wheat crop there is only 12½ bushels, and the crop of potatoes only 80 bushels, no wonder we hear so many complaints of the unprofitableness

of farming in the States! The English crop of potatoes is called a poor one unless it turns out at least 5 tons to the acre. We generally plant about 25 bushels of sets to the acre, and I see that Mr. Terry, the well-known correspondent of the *Country Gentleman*, recommends only 8 bushels of sets. Can this have anything to do with the vast difference in the yield between the two countries. I have never been able to find out what the usual yield of the potato-crop in this province is, as I am always told, when I enquire, that "I planted 20 bushels and I got 200," or words to that effect. Very few farmers seem to be able to give the yield per acre, or the quantity of seed per acre: and these are the main points.

Arbor-Day.—The annual tree-planting day is passed, and, as far as the newspaper reports go, a few trees were planted round the parliament-house at Quebec, and that was all! Our forests are rapidly disappearing, and no one seems to trouble himself about making any suitable provision for the future. And so it has always been. When the long and bloody civil war of the Roses had ruined so many of the foremost English proprietors, and put new men in their places, who had no love for the ancestral trees except for what they would fetch as timber, men's mind began to misgive them. On the restoration of Charles II-1660—men began to perceive that the oak was almost gone; iron had not yet taken its place; and it became a common subject of complaint that the five previous generations had been prodigal and wasteful in the matter of trees, and that while war and cupidity had been busily engaged in felling them, nobody had been replacing the loss by planting. The wise dying advice of old Dumbiedikes, to his son ' Jock, when ye hac nothing better to do, ye may aye be sticking in a tree; it will be growing, Jock, when ye're sleeping," had not yet been given to the world.

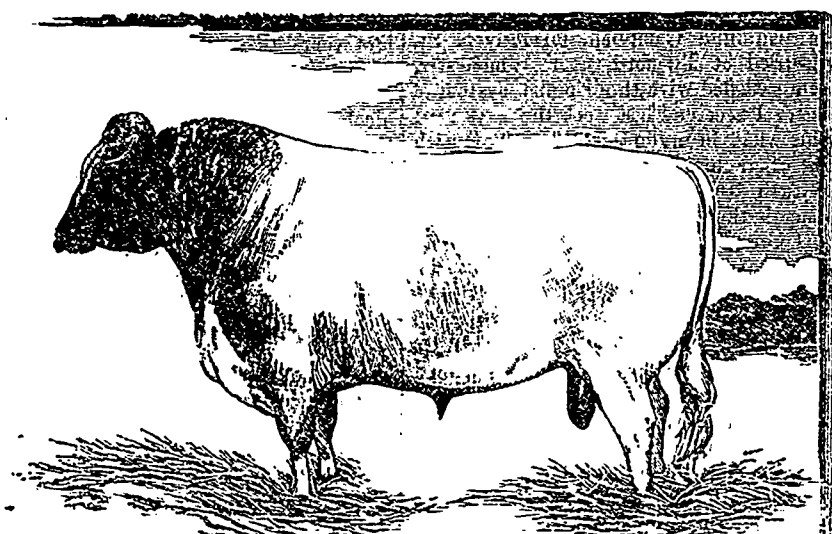
But whenever a great work has to be done, a man is found to do it. And so it happened in this case. The hour came, and with the hour came the man; not in the shape of a great despotic monarch, whom to hear was to obey, not in the shape of a legislature to frame a law and compel obedience to it, but in the shape of a quiet, studious, philosophic country gentleman, with a book in his hand, the facts and the arguments of which were sufficient to convince the nation that a very important duty had been overlooked. The remedy followed speedily upon the public appreciation of the soil. The wealthy English landed proprietors set vigorously to work in the systematic plantation of trees, especially of oaks, and many a noble tree now standing in many a beautiful park and avenue, and many a shady elm by the roadside and in the green lanes of England, owes its existence to the taste thus evoked. This quiet country gentleman was John Evelyn, and the book was "Sylva, or a Discourse on Forest trees and

the Propagation of Timber in His Majesty's Dominions": one of the most fascinating books I ever read; as attractive to many men who never planted a tree or sowed an acorn, as Isaak Walton's Angler, or The Contemplative Man's Recreation, is to many men who never threw a fly for salmon or spun a minnow for trout.

Evelyn was the most enthusiastic of men in the quietest possible manner. His life was pure, though he lived in the impurest of times. A perfect model of a high-bred English gentleman, and the union of enthusiasm and moderation in his book completely won the hearts of his countrymen.

We have no "landed proprietors" in this province, or rather all our farmers are landed proprietors, though on a small scale comparatively speaking; but surely some one out of our numerous "Lumber-men" will be tempted, sooner or later, to expend a portion of his profits in the restoration of those forests to which he owes his wealth, and thereby earn the reputation of having well deserved of his country. (1)

Wheat acreage in England.—Ten per cent. more acres of wheat in England this year than in 1887, looks as if wheat-



ENGLISH ROYAL SHOW PRIZE SHORT-HORN BULL, MARIO.

growing there was recovering itself. A good fall-seedtime and the increased value of straw, which is now selling for £2.10 a ton, may partially account for this improvement; but, after all, wheat is a paying crop in England, whatever people may say. Many farmers grew seven quarters an acre in '87, and, even at 30s. a quarter, that gave them \$52.00. This year, the same farms on which seven quarters were grown last year will not probably give more than

five quarters, but the recent rise in price will make this near by as valuable as the previous crop, five quarters at 42s. being worth just as much as seven at 30s. The price of barley varies very much this year in England: fair malting runs from \$1.25 to \$1.35, and the very finest fetches \$1.50. Our own barley-crop turns out very badly except where it was sown early, as was the case in the Lachine farms, where the Messrs. Dawes carried the last load of barley on the 28th July. I saw three carloads of barley at the station here, consigned to the Dawes' brewery, that I do not think the proprietors would accept. It was of three different colours; grown in part; and just as it came from the mill, having never been winnowed or huddled. The skimmings on the steep would be at least 20%. (2)

(1) Evelyn was fully justified in the boast he made in the third edition of his Sylva: I need not acquaint Your Majesty how many millions of timber-trees (besides infinite others) have been propagated and planted throughout your vast dominions at the instigation and by the sole direction of this work, because your gracious Majesty has been pleased to own it publicly for my encouragement.

(2) It was all refused.

Sheep prices.—The flock-masters in England must be in high glee. In the month of August, lambs at Britford fair—Hampshire-downs—sold as high as 53s. = \$12.70 a head, and prices in general were from \$2.50 to \$3.00 a head higher than in '87! Good ewes were worth \$13.75 apiece. Is it not a pity that we cannot have our share in these good prices?

OUR ENGRAVINGS.

1. English R. A. Society's first prize shorthorn bull, *Mario*. The best shorthorn bull of the season.

2. *Royalty*.—Cleveland-Bay Stallion. The Queen has in the royal stables about twenty pairs of powerful coach-horses of this stamp. I remember one morning about five o'clock seeing the whole stud leave the Mews in the rear of Buckingham Palace for exercise, and a fine sight it was.

3. *Standard*.—Imported Southdown ram. His breeder, Sir William Throokmorton, is the representative of one of the oldest Roman Catholic families in England.

4. *Toulouse geese*.—See p. 188.

Hay-making.—Capt. Edmund Campbell, formerly of St. Hilaire, who is now settled at Twyford, near Winchester, England, does not seem satisfied with the English system of making hay. In a letter I received last week, he says: "I have noticed this year, what in my opinion is a fault with our farmers in making their hay when the weather is very wet, that is that they turn it too often and leave it out too long and the consequence is that it gets so thoroughly soaked that it never recovers. I know that in Scotland they do not do this, and they generally manage to save their hay in as good condition as is possible. I wonder if you will agree with me."

Well, I suppose I must say that I disagree with Capt. Campbell *toto celo*. I know the West of Scotland pretty well, including Dumbartonshire and Argyllshire, and I must say that I never saw a decent stack of hay there. The fact is, the hay we call in the south of England *meadow-hay* can hardly be said to exist in Scotland. The grass there is, almost invariably, rye-grass and clover, laid down for two or three years, and only part of the first year's ley is made into hay, the manipulation of which is simply turning it over once or, at most, twice, and getting it into cock as soon as possible. If Capt. Campbell will observe, next June, he will see that the same method is pursued by the Hampshire farmers in the treatment of their clover, saint-foin, and clover and rye-grass crops. But the making of *meadow-hay* is quite a different thing. It must be *broken out* perfectly *immediately after mowing*, or else the thick tufts of the bottom-grass can never be separated; frequent turnings—at least four a day—are necessary to preserve the colour; and cocking—first in small *grass-cocks* and then, in gradually increasing in size, *hay-cocks*—is practised to prevent the bleaching effects of the night-dews. In very wet seasons, like that of 1887, the less hay is moved about the better; but, unfortunately, the South of England farmer is not an adaptive character, and the force of routine is so great *chez lui*, that he persists in conducting his haymaking operations invariably in the same way whatever the weather may be.—*Jenner Fust*.

CORRESPONDENCE.

To MR. A. R. JENNER FUST.

Dear Sir,—You did me the honour to publish, in the last number of the Journal, my lecture on the physiology of digestion. You also had the goodness to comment on it, or rather to criticise it, by interjections and exclamations. Not trusting to my own interpretation of these expressions, I con-

sulted several of my friends who are as familiar with your language as with mine. They all agreed in saying that it was an emphatic way of telling a person that he did not understand what he was talking about. I suspected as much before I consulted them.

I am excessively obliged to you for having said with so much delicacy a thing as disagreeable to the person who said it as to the person to whom it was said.

I should have wished to explain myself, but upon reflection, I find the disapprobation so peremptorily expressed, that it would be an act of rashness on my part to try to reply; so I submit without a word. At the end of my lecture you have the complaisance to say that you do not understand what is the "black principle" (*principe noir*), in oats, and you do me the honour to ask me to explain myself on the subject.

As I have not, on this point, incurred your formal disapprobation, I will endeavour to dissipate the doubts you have about this matter.

Under the name *principe noir* was formerly designated one of the active principles of oats, which principle gives to this cereal that special, exhilarating, characteristic property which it exerts on the constitution of the horse alone. Of late years, the name of *avenine* has been given to this *black principle*, by Samson, and it is now known by that name.

"*Avenine* resides in the perisperm of the seed from which alcohol removes it by dissolving it, the alcoholic extract of this principle showing itself to be more active than oats; lastly, it can be isolated from the alcoholic extract." (*Samson. from a communication of the Central Society of veterinary medicine of France.*) It is an alkaloid which combines with acids and forms salts. Samson has prepared sulphates, nitrates, and chlorohydrates of it.

Here, then, dear Sir, are a few explanations on the subject. I do not know whether they will be sufficient or not. Should they not suffice, pray have the goodness to let me know, and I will write at once to the author, who enjoys a certain reputation among the savans in France, and who will esteem it a duty and an honour to give you all the information in his power.

Pray receive, Sir,

The expression of the most respectful sentiments of your most humble and most devoted servant,

J. A. COUTURE, Veterinary Surgeon.

(Translated from the French.)

I regret excessively to find that my laconic notes on Dr. Couture's lecture before the meeting of the Dairymen's Association should have so deeply wounded the feelings of the author. I trust he will believe me when I say that I had not the remotest intention of conveying to the minds of the readers of the Journal that Dr. Couture did not understand the subject which he was treating. On the contrary, I selected the lecture in question for publication because it seemed to me to be a very clear and concise exposition of a matter with which every farmer ought to be acquainted. I was requested some time ago by the Director of the Journals to annotate the articles selected for publication, and I have, in consequence, long been in the habit of doing what I am sorry to see has so much annoyed Dr. Couture, viz., when I differ in opinion from the writer of any article, expressing my idea in a short note, or, as Dr. Couture very properly calls it, "interjection."

I thank Dr. Couture for his kind explanation of the phrase "*Principe noir*" or the "*black principle*" from which oats derive their peculiar force. I was, of course, though my knowledge of chemistry is sadly superficial, aware of the existence of *avenine*, (nicotine, thine, &c.) and, in fact, in a paragraph that has been in the printer's hands since the 1st

November, had suggested that it was probably to that principle that Dr. Couturo referred in his address. I know very well how excellent a work Dr. Couturo has carried out in the Quarantine at Quebec, and how earnest and painstaking his labours have been for the improvement of the department with which he is connected, and I hope that he will no longer consider that I was actuated by any unworthy motive in penning the notes to which he refers above.

ARTHUR R. JENNER FUST.

New Experiments on Ensilage by M. l'Abbé Chartier.

At a meeting at Three-Rivers, last winter I described to you, in reference to ensilage, some experiments I had previously made, and I intimated at the same time that I would relate to you this year another experiment I then proposed to make. I will now proceed to tell you of the results of this experiment.

In making ensilage, I did not desire to follow the teaching of books on the subject. I thought that we could afford to run the risk of a complete failure, and I incurred that risk, in order to find out the way of making ensilage at the least expenditure of work and money, that the objections of those who fear that the cost might be too great or the labour too fatiguing might be obviated.

At Three-Rivers, I told you that having the previous year put nothing but straw on the silage, we lost about twelve inches of the upper layer, it having become carbonized.

To be successful in preserving our corn silage, it was clearly necessary to find some other way of proceeding. This year, I made a trial of one. (1) We put a row of unplanned planks on the ensilage, after it had become heated up to 130°F. and placed eight inches of earth on the planks. With our manner of filling the silo, it takes about an hour to cover the ensilage with eight inches of earth, for we fill in the corn from above, by means of a box, raised by a horse, for which purpose a pulley is fixed to the ridge-pole.

I made another experiment this year. Last year we only worked for one day, and waited until the heat of the silage had mounted to 130°F. But this delay caused us to run the risk of being caught by the frosts. This year we have tried the experiment of working for a day and a half. We began at noon, and continued till the evening of the next day, and then waited till the silage showed 130 degrees of heat. In this way, we succeeded in ensiling 60 tons of corn in 4½ days work, working at three intervals. As the layer generally takes two days to heat up to 130°F, the two first stents were done in the same week, and we were able to finish the following week.

Having thus ensiled our corn during the early part of September, we found ourselves safe from all danger of getting it frozen.

The question of the door remains. Last year, besides the loss of the upper twelve inches of ensilage, which, from being left uncovered, were carbonized, there was a considerable loss at the doorway (there were from 15 to 18 inches spoiled across the whole width of the door, though less in the middle), and at the sides, wherever there were joinings.

All this I was anxious to get rid of. This year, we shut the door before we began, and filled the silo through the gable. Using our box made this less difficult, and we did not lose any time by it. The door having been closed before beginning to fill in, we could tread down the sawdust between the two linings regularly, from the bottom to the top.

Now, I may tell you that with this covering of earth above,

(1) The Reverend Mr. Chartier might have stated that his trial consisted in copying exactly what was very fully explained at Three Rivers and in practice, on Mr. Barnard's farm, where two silos were visited by many members of the convention, treated, as described in Mr. Chartier's trial, with complete success.

and with the closing of the door before beginning, we did not lose a basketful of silage! All of it was bright, and had the silage small; not the least taint of mouldiness.

In consequence, I am prepared to state that pressure on ensilage is not necessary.

I do not think it is even useful; for I believe that without it we have obtained as good a quality of silage as can be desired.

By these experiments, we have it at any rate in our power to say, that it is no longer necessary to lift 5 or 6 tons of stone to the height of 10 to 15 feet; we may be satisfied with putting on a cover. As a cover I used earth; perhaps, I might as well have added tarred-paper.

The whole success of ensilage depends on the exclusion of the air. Steps must be taken to prevent at least the circulation of the air.

But it will be said: how comes it that corn out into lengths of three lines, and thrown into a small building, compacts itself sufficiently to exclude the air? I reply: by the heating and the fermentation. When corn heats up to 130°F, it is thoroughly softened, and you can perceive it sink. It presses itself together by its own action, and sufficiently so to arrest the circulation of the air, if not to exclude it altogether.

I can state, gentlemen, that by the observance of this fundamental rule of excluding the air, and I even believe by simply using something to arrest the circulation of the air, we can obviate any loss at the top of the silo.

I shall try no experiments next year. All we have to do is to put the earth on the silo, and this earth is very useful to mix with our manures. I shall be on as before until some new discovery is made, and I feel sure of being successful.

As to the value of ensilage, I will repeat here what I have previously said in other places: every farmer ought to try to make some. It would oblige them to have chaff cutters, which are very useful implements. It will not take you long to pay for one, if you cut up all your fodder and mix the different kinds together, not feeding out straw alone but hay and straw together, and something else with them if you have it.

At St-Hyacinthe we have certain advantages. Our cows pay us better in winter than in summer, in spite of the expense of wintering them, because we have a sale for the milk. I cannot say how that would pay in the country, but a cheese-maker told me the other day that his milk, converted into cheese, payed him \$2,00 a hundred.

Well! for my part, I have done well at \$1,60, but admitting that what the cheese-maker told me was true, I believe that cheese making in the country during winter would be profitable.

Believe me that if you have 50 or 60 tons of ensilage to give your cows, even without any meal, they will not be in bad order in the spring. Cows generally calve before going out to grass. Supposing then that a cow calves in March, she will not be at grass before the end of May, and she does not pay you well in the stall. But if you have fed out 25 or 30 tons of ensilage to your cows during the winter you will reap the benefits of it in spring. Your cows will be fat, in good health, and ready to return you a good profit until the grass is dried up in the pastures. You know well that the entire season of profitable cow-keeping, by those who do not take good care of their stock, only lasts from the beginning of June to the end of July. But even if you only had the advantage of drawing a good profit from your cows from the month of March up to the grass season, I believe that profit would pay you well for the pains you had been at in building a silo.

As to the construction of a silo, enough has been said about it, and there is no use in going over it again, but you know now, that a man who can use his hands can build a silo

for an outlay of \$25 to \$30. So, that it is not worth while to be without one.

Of course, some one will object, that to make silage properly a chaff cutter is necessary. If you ever have a chaff cutter, I hope you will not use it solely for ensilage, but cut up all your fodder with it.

A man alone cannot undertake this work of silo-building, but one with children can do it, and the economy of the fodder, and its greater value, will pay for the chaff-cutter the first season; for all the different sorts of food being mixed, the animals will digest their food better, they will enjoy better health, and, consequently, give greater profits.

CONSTRUCTION OF THE SILO

M. Archambault.—Will Mr. Chartier tell us how much a silo for ten cows would cost?

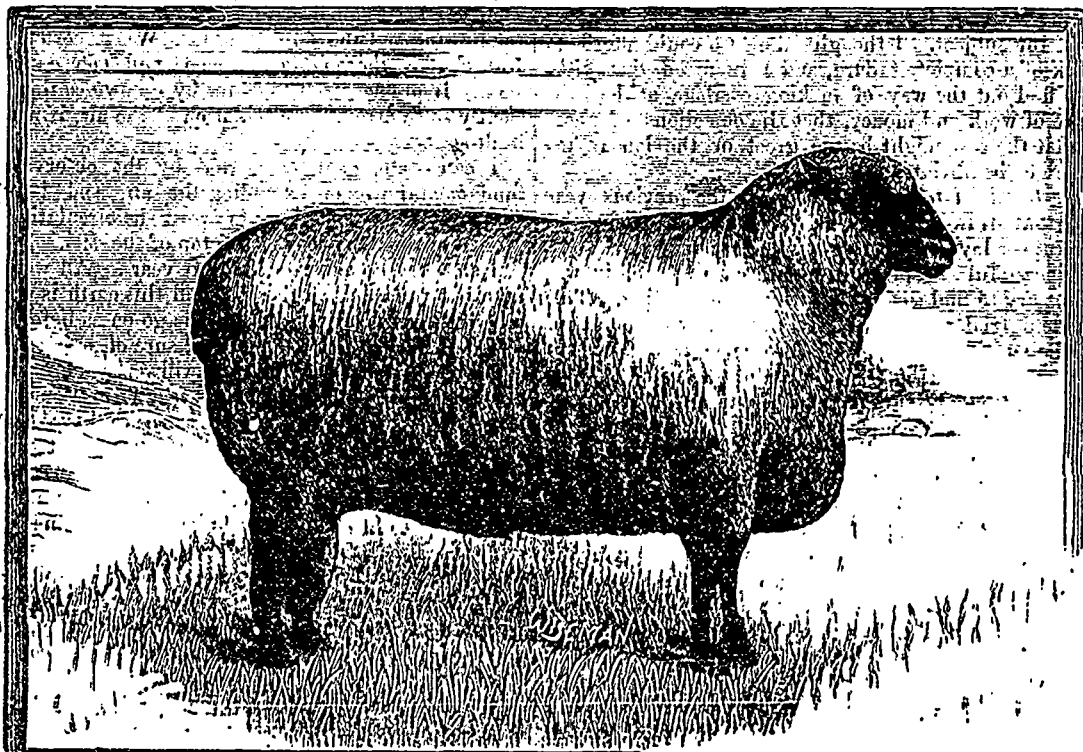
break, and the difference of price is not worth attending to.

I should lay wall-plates (sablères) which need not be very stout—4 x 6 is enough—and bolt them also with iron, so that the whole frame will be iron-bolted.

Now, for a length of 15 feet, I do not think it necessary to strengthen the wall-plates. Still, if the builder fears that they are not solid enough, or if, when the silo is filled, it begins to give at all, a joist bolted with iron, may be placed on the top. With a frame such as this nothing can shake the silo.

Now a separation must be made, that is, what I believe are called scantlings must be placed every two feet to prevent the boards from giving way. The dimensions for a building like this may be 2 x 6.

The door should be three feet wide, to allow of the passage of a man with a basket.



IMPORTED SOUTHDOWN, "STANDARD" 286.

Ans. You will be satisfied, I presume with three tons per cow for the winter?

M. Archambault. Yes.

M. Chartier.—I reckon that a silo to hold 30 or 40 tons ought not to cost a *habitant* more the price of the wood and nails.

M. Archambault.—Will you kindly give us the details?

M. Chartier.—Take 12 x 15 feet for the superficial measurement by 12 feet in height. If the conditions are favorable, it would be well to make it higher; but when it is necessary not only to build on the surface but even on a slight mound, twelve feet is sufficiently high.

There must be four ground-plates (*soles*). You know, better probably than I how much 50 feet of these would cost. Thy should be of red-spruce, if possible.

These ground plates I would advise to be bolted with iron, and posts should be bolted to the plates with iron, too. Iron of $\frac{1}{2}$ inch is sufficient. It is important that nothing should

And now about the roof. The farmer can choose what kind of roof he pleases, ours is made of boards: some would prefer one covered with shingles.

If the silo be made in a building, the barn for instance, it would not cost as much as I said.

M. F. Dion is present, from St Thérèse. He has a silo in his barn, and will tell you how he set about making it.

M. Dion is one of the pillars of our meetings. I am glad to congratulate him before the whole of this assemblage. I do not believe he has missed one of our meetings. He does not waste his money, but he finds that his time and his money are well spent in attending our meetings.

As for me, I have no silo in the barns.

M. F. Dion—My silo is a very simple one. It is part of the interior of a barn that I chose, and I raised a square frame in it with posts 3 x 6. The corner posts are bigger. The whole is joined together at the top, as Mr. Chartier explained just now. I put two ranks of boards, one upon the

other, all round, to hinder the air from penetrating. There is no stuffing of sawdust.

M. Archambault.—Several gentlemen have asked me how my silo is constructed. I have two, but I consider they cost too much, and that is why I asked Mr. Chartier what a silo, built with the greatest possible economy, ought to cost. I said that a silo for ten cows might cost from \$20 to \$25, at the most, if one had the necessary wood; do you agree with me?

M. Dion.—The Rev. Trappist Fathers are present. They say they built one for \$20. Theirs measures 16 x 16 x 16.

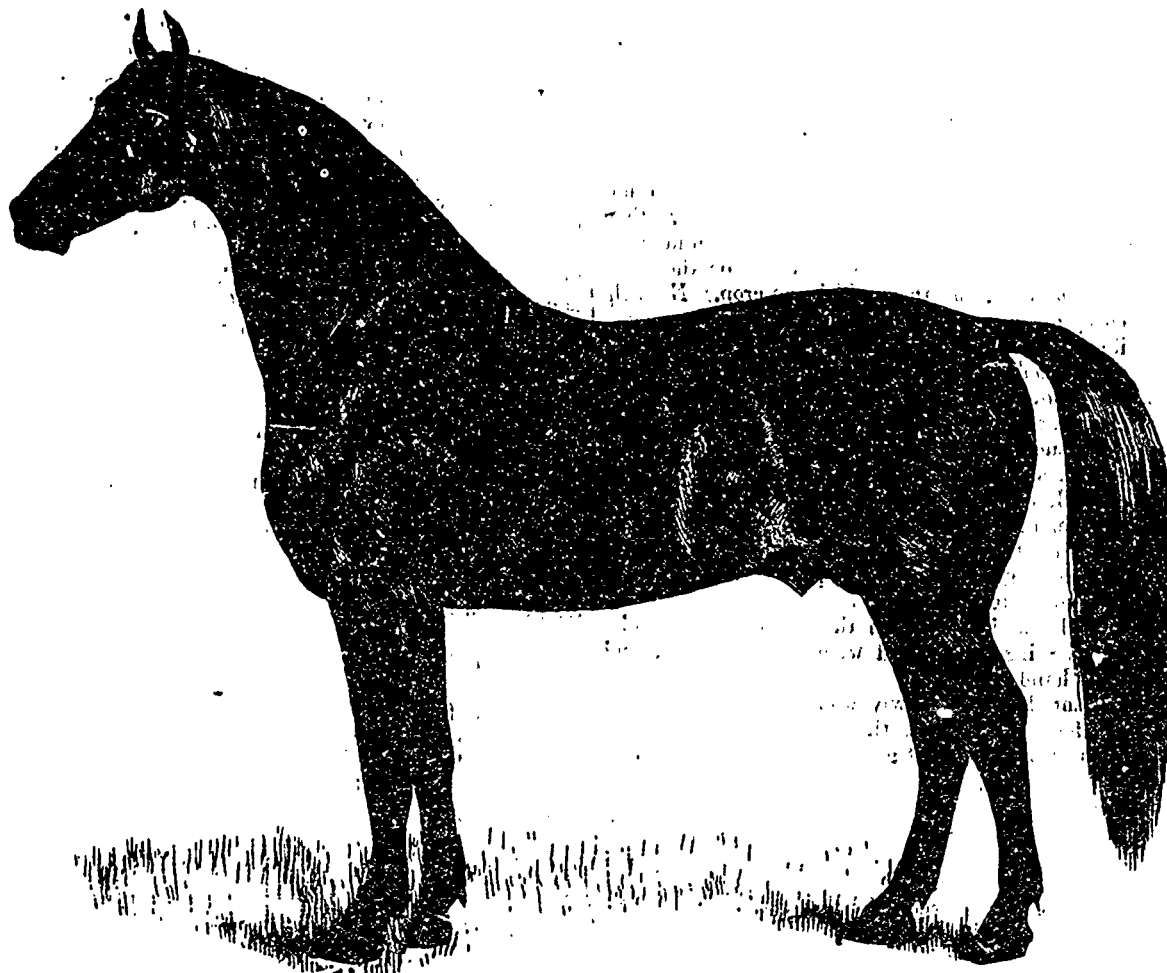
M. Archambault.—One of my siloes measures 21 x 16 and is 12 feet high; the other is 6 inches less in length.

M. Dion—My corn is perfectly well preserved, and I use neither paper nor sawdust.

THE CULTIVATION OF INDIAN CORN FOR GREEN FODDER By M. l'Abbé Chartier.

I do not propose to offer my system of cultivating corn as a model to be necessarily imitated. I am convinced that there are some who do it much better than I, and who probably reap much better crops thereby.

As the land is never too rich for corn, and as it generally pays us in proportion to what it has received, I make a practice, as much as possible, of folding my cows at night on the piece intended for corn. We first take a piece of land, about



A TYPICAL CLEVELAND BAY; "ROYALTY."

They cost me \$50 each, but I had to buy everything, and, being absent from home, I had to employ men to do the work.

M. Dion.—I have calculated everything; the wood and the frame, which I had prepared, and my silo costs me nearly \$80.

M. Archambault.—I have two ranks of tongued-and-grooved boards.

M. Dion—Mine has only one rank of tongued-and-grooved boards. The other rank is of boards with squared-joints.

M. Coté.—Is that as good as if they were tongued-and-grooved?

half an arpent in extent for 35 or 40 cows, so that, although there is sufficient room for them, they must lie down to rest pretty near other. We have a fence that is moved back as soon as the land in the fold is sufficiently manured. In the course of the summer, we generally manage to manure 3 or 4 arpents. After a few days, when the night fold has become too confined, it is about time to change its position.

I have already grown corn with this dressing alone, and it was superb but sometimes we add more dung before ploughing.

We give a good deep furrow.
If we have had time to plough early in the autumn, a spring furrow is unnecessary. For by early ploughing the roots of the weeds may rot during the winter. If we have

ploughed late, I generally plough again in the spring, but only just before sowing the corn, in order to allow the roots of the weeds to spring up before stirring the earth. It is of the greatest importance to destroy as much as possible of this growth, as it is a great source of trouble to us: the richer the land, the greater the trouble.

When we can, in this way, avoid spring ploughing, by an early autumn furrow, we give the land a good stirring with the grubber. It is important to pulverize the soil as much as possible.

We level it with the harrows, and when this is done, we make the drills, with an ordinary plough, about three inches deep. A little boy following the plough, sows the corn. A bushel an arpent is about a usual seeding for ensilage.

Other corn we sow thicker, about $1\frac{3}{4}$ bushels an arpent, to prevent its growing coarse. This we cut for green meat for the cattle, when the grass is beginning to dry up or harden.

We cover in the corn with a rake. Last year I did it with a sort of double mould-board plough used for earthing up potatoes, and it answered famously. This job only took half a day to do four arpents.

We do not sow broadcast. There are people who, having sown corn broadcast have reaped splendid crops, but do not let them trust too much to this plan. Sooner or later, they may be sure, a cold spell of weather will befall them in June and then, however well prepared their land may be, the weeds will overpower the corn, and there will be no crop. No help can be given by horse or hand-hoe to broadcast corn.

For our silo as it is arranged at present, we require 4 arpents of corn. The plough makes the drills and a small boy sows the corn.

We intend to sow 7 arpents with 6 bushels of corn. But I have proved that the bigger the corn is the more, in proportion, it weighs, and the better it is for the silo. When sown thick, corn grows spindly, and weighs less.

The Western horse-tooth corn produces ears that are not to be despised among silage. Almost every good sized stalk bears one ear at least, and we cut it when the grain is in the milk state, or just beginning to harden; it is then in good condition to be given to the stock.

Next, comes the hoeing. When the season is favorable, we succeed in clearing the ground with our horse-hoe, and can do without hand hoeing.

Corn is a plant that starts slowly, doubtless because it has many roots to form; but, from the moment the root have taken a good hold of the land it grows rapidly. Then, when the season is propitious, and the corn does not linger too long in the ground before showing itself, we can do the business with the horse-hoe. If the corn takes long to break through the ground, it is better to use the hand-hoe as well; the use of it is profitable.

The moment corn attains the height of two feet and a half the work of hoeing must stop. Besides, there are no weeds then.

At the Seminary, we pay for all the labour employed on the farm, and our cultivation is not done by lavish expenditure. Farmers can do as we do, but we cannot do as they do. Come and pay us a visit at any time, from the first day that work is possible on the land until the last, and you will find all our people at work. Let a farmer show me that he does as much. We cannot do as the farmers do, but they can do as we do. We farm after a practical fashion; we take all possible care of the manure, and we try to do our cattle well during winter that they may go out to grass in good order in spring.

There is one thing against us: we have no good pastures, for the land when we took it was in a dreadful condition. I hope in time we shall succeed in improving them.

But I fear I am setting you against me, pay us a visit, and you shall see how we get through our work: it is by working every day.

CULTIVATION OF INDIAN CORN.

M. Casavant.

L'abbé Chartier has requested me to give some account of my manner of growing corn. The plan I follow is a very economical one, and, will give it to you in as few words as possible.

The piece I selected for corn, last year, was the night-fold for the cows. I did not plough the land until just before sowing.

I sow corn from about the 15th to the 20th of May. If the spring is a warm one, it may be sown a little earlier. I prefer waiting for warm weather, that the corn may start into growth as soon as it is in the ground.

As soon as the land is ploughed, I harrow the surface lightly and sow with the seed-barrow, leaving 13 or 14 inches between the rows, that there may be room for the hoe to pass.

The land having been newly ploughed, when the seeding is done there are no grasses or weeds ready to grow.

Moreover, the land remains light. In land ploughed and stirred at once, vacant spaces remain under the surface, so that although rain may follow, the soil does not jam itself together, and the corn does well.

For 15 years I have been growing corn for my cows, and I find this the most economical plan to follow.

Again; as to growing corn for green-meat, it is advisable to sow it at intervals, that the stalks may be all about the same age when they are given to the stock. If you sow the whole of it early, part of it will be too old and hard: good for the purpose of ensilage, but not fit for cows at pasture. But if you sow some on the 15th of May, and the rest at the end of that month, or even at the beginning of June, your corn, when the cattle get it, will be always young and fit for green-meat.

M. Timothé Brodeur, St. Hugues.—How do you cover in your corn?

M. Casavant.—The seed-barrow I use does that as it proceeds. With it, we can sow from $1\frac{1}{2}$ to 2 arpents a day. I sow about $1\frac{1}{2}$ to 2 bushels per arpent. The corn is only fit for green-meat.

I can assure you that it is hardly possible to follow a more economical plan of growing corn. (1)

This year, I am certain that it has not cost more than a day's work of a man for each operation of sowing and hoeing and the land is perfectly clean. Only a few weeds showed themselves during the summer.

I have discussed this point with Mr. Brodeur, who ploughs both in autumn and in spring. I have tried his plan, and here is the inconvenience of it: if the land intended for corn has been in meadow or in pasture, or has been used as a night-fold for cows, and has not been ploughed sufficiently early in the autumn to allow the turf to rot completely; in the spring, if a moist season happens to come, the weeds start up, and you cannot get rid of them.

In the West, they stir the land with the grubber before they sow the corn, and that is all the cultivation the land gets. (2)

And this is all that my plan requires, except a slight harrowing, so slight that the buried weeds and grass are not brought up to the surface again.

The cultivation of corn in this way is not expensive; you are sure of a good crop, and the rain does not injure the land at all.

(1) Why! it is well proved that to be profitable as food, corn should be sown for fodder, or ensilage, very much as if a crop of maize was expected. This supposes a seeding of about four gallons to the acre. Such thin seeding would produce evidently less stalks but more real stock food per acre.

E. A. B.

(2) Why, again! In the West the common practice has been for many years to cultivate with the smoothing harrows several times, until the stalks attain 5 or 6 inches in height. After that, the horse hoe finishes the work of hoeing. This necessitates generally two or three distinct horse hoeings.

E. A. B.

I advise you all to try this system; it is the best way of convincing yourselves of its value.

A Voice.—The grass you plough under, is it injurious to the cornroots?

M. Casavant.—We had a dry spring this year, and my corn-crop was splendid. Mr. Frey, a young Frenchman, who has studied farming in France and in England, told me he never saw a piece of fodder-corn finer than mine.

The spring was very dry. When it is moist, the corn, cultivated after my plan, is safe from the invasion of weeds.

For fodder corn, I have the rows at 13, 14, 15, or more inches apart. I believe in sowing fodder-corn thickly.

I agree, besides, with Mr. Chartier in what he said on this subject. If you sow corn thickly it is more difficult to work; if you sow it thinly, it has more substance, and is better for the silo.

But I speak of its use as food for cows at pasture, and I say corn should be sown thickly, that the stalk may be tender and, therefore, be entirely consumed by the cattle.

My corn, when it grows coarse, the cattle refuse it; but, on the contrary, when fine and slender, it is all consumed.

M. Brodeur.—I proceed to tell you how we grow corn.

I take a piece of land, as rich a piece as I can find, night folded or manured in some way. I plough it in the fall, and, in spring, I make the drills with the plough, from 16 to 20 inches apart, laying the plough flat, so as to make the drills as wide as possible.

In sowing, I proceed just as if I were sowing broadcast a ridge of pease, eight feet in width, at two casts. A stroke of the harrows, and the operation is finished. Is that economical and expeditious enough?

I use about two bushels of seed to the acre.

It is now the eighth or ninth year since I began to grow corn, and I have always followed, nearly, the way I have spoken of, only improving on it: my improvement consists in getting the work done faster and faster.

From centre to centre, my rows are about 18 or 20 inches, but my drills are about 6 or 7 inches wide; I like to have them wide, that the row of corn may be large. I leave enough room for the passage of the horse-hoe. I go a *bout* in every row. After that is done, I draw out my furrows, and water-furrows, and that is all.

When the corn begins to show itself, after hoeing I plaster it, and if I see any weak spots afterwards, I plaster them again.

I keep from 30 to 40 head of cattle; I have a silo for winter-supply; and in this way I succeed in growing ensilage-corn.

I do not say this to contradict M. Chartier, but simply, that you may form your judgment on the different ways of growing corn.

Though I was not able to do it this year, when the corn is fit for the silo we cut it with a harvester: it all falls in heaps.

As to my silo, it is made like Mr. Chartier's, only we use stones instead of earth. I think earth is better.

M. Côté.—How many tons of corn do you grow to the arpent?

M. Brodeur.—It is difficult to say; but we get a good deal.

M. Taché.—How much corn do you grow?

M. Brodeur.—Rather less than four arpents.

M. Taché.—How much silage does that give, measured in the silo?

M. Brodeur. I ensile from 55 to 60 tons of corn. My silo measures 20 x 13 x 15.

M. Côté.—Does Mr. Casavant grow as much?

M. Casavant.—I must say, that it would be difficult to

get more corn than I do. It is generally 12 or 13 feet high, and very thick in the rows. But to close this discussion, I will say that the system to be adopted is that most suitable to the soil.

On my farm, there are neither open nor water-furrows; the land is all laid flat, in ploughing, and is either naturally or artificially drained. But Mr. Brodeur farms his land in accordance with its nature. It is stiff land; perhaps, if he were only to work his land at the season when I work mine, it would be too compact. Light, porous soils preserve the moisture and resist drought much better than stiff soils: the latter dry up and become as hard as a brick.

For my part, I am convinced that my plan is the best for my soil and I shall stick to it.

M. Frs. Couture.—Will you tell us, please, M. Brodeur, how high your corn generally is?

M. Brodeur.—About 10 or 12 feet. It depends entirely upon the thick or thin sowing of the seed.

M. Couture.—We, too, grow a little corn, and I will try to describe our system. M. Chartier said just now that broadcast-work was never successful.

L'abbé Chartier.—I did not quite say that broadcast-work always fails; but that we should not practise it, even if it answered one season.

Mr. Couture.—Any how, this is how we do the work:

Our soil is sandy, and pretty rich; we cart out manure, which has rotted during the winter; this is done in the fall. Then we plough the land.

Those who have spoken before me do not mention a practice I have always followed; that of steeping the seed-corn to accelerate its germination.

We sow corn broadcast, and thickly; then, we harrow it only, and roll it very well. And we succeed capitally.

The stalks touch each other, and run about eight or ten feet in height. The weeds are destroyed by the corn.

L'abbé Provancher.—Some one said just now that ploughing down the grass, as Mr. Casavant does, warmed the plant, I feel I ought to say that this warming of the plant does not injure it, but, on the contrary assists its growth materially. The skin of corn is very hard, and is very hard; and if warmed it will germinate all the more rapidly.

In Illinois, I have seen the farmers break up virgin prairies, which had borne grass for centuries, and when the furrows were turned over, they made a hole with an iron dibber and put the seed into this hole. This must heat immensely and still the corn succeeds marvellously well.

Besides, if you immerse a grain of corn in boiling water, it does not lose its germinating power.

M. Marsan.—Since every one has given his opinion on the cultivation of corn, I am tempted to add my voice to the concert.

I have made experiments in growing corn during the last few years, and am perfectly satisfied with the results. In every point I have followed Mr. Brodeur's plan.

Still, the first year of my trials, I sowed part of an arpent broadcast, and I will tell you how I went about it: the land had been dunged and ploughed in the previous autumn; in the spring, after well harrowing it, I sowed 6 pecks to the arpent, broadcast, and ploughed them in with a light furrow. When the corn was about 2 inches high, we gave a harrowing with light harrows, across the furrows, to prevent the growth of weeds and grass.

In every instance, whether in rows, after Mr. Brodeur's system, or in broadcast work, we obtained the same results.

But, as M. Chartier said, broadcast work may have its dangers. I understand him; for the broadcast corn had more grass among it, than the other, though the former, having conquered the grass, gave good returns.

Last year I sowed the same quantity of seed to the arpent, but the summer was drier, and our crop was not so good. It may be, too, that the crows injured the yield by carrying off some of the seed.

The corn I sow is the Western horse-tooth corn.
(From the French.)

Toulouse and Embden Geese.

Geese are among the most profitable fowls which the farmer can keep, for they cost little or nothing to keep after the first month or two. They are excellent foragers, and do not leave much that is edible for any that may come after them. They are especially useful on the stubbles after harvest, and in some parts of this country (England) geese are employed to do the greater portion of the "stubbleing" of the farms. It is only necessary to keep them away from fresh pastures, as they will nip off the young grass closer than will sheep. It has been stated that cattle will not feed upon a pasturage which has been overrun with geese, but this is by no means a general experience. Where any one has waste ground, or access to open lands, geese can be kept for a mere nothing, and as they bring a good price during the latter months of the year, they are indeed profitable fowls. They do not ramble as far as do ducks, nor eat the garbage which those birds delight in, but when kept in quantities it is desirable to have some one to watch them. They require to be drily housed, and if provided with plenty of litter, either fresh straw or leaves, they will supply a splendid manure. They do not absolutely require a pond, but are all the better for it, and nothing in the way of vegetable food, which is their staple diet, comes wrong to them.

Toulouse Geese, or as they are frequently called "grey geese," are preferred to the Embden, or white geese, and of the two varieties they are the stronger, but in other respects there is very little to choose between them, both being rapid growers, fleshy and of a large size. For early killing, the Embden are to be preferred, as the Toulouse does not lay on its flesh until farther advanced. On this point a goose breeder recently said: "Toulouse goslings grow bone very fast, and being loose in skin they soon fill the eye and the exhibition pen. But they are very deceptive weighers when young and raw; even under favorable circumstances many strains of them will not gather flesh and fat until fully matured, when they can then be fed to an enormous size and weight, unsurpassed or unequalled by any other variety; they are, therefore, not so well adapted for early maturity, and are seldom fit for the table before Christmas, previous to which they dress very loose and blue in appearance, and are quite out of season as green or Michaelmas geese. Used, however, as a cross with any other variety of geese, they produce, mature and fatten very rapidly." Both male and female should be very massive in all proportions, with deep, perfectly divided double breast touching the ground and extending well to front of legs. This gives the bird, when standing at ease, a square appearance, but it is capable of raising its body to a majestic height and presenting a bold front; the head and bill are very strong, joining with a uniform curve which gives the head a pleasing and uniform expression; the throat is "dewlapt"; the color of bill and feet is dark orange; the head, neck, back, and thighs, a dark shaded brown grey, the outer edge of each feather distinctly and boldly laced with a very light, almost white, shade of grey; the breast is of the same color, but descending evenly lighter beyond the legs, from which to the tail is perfectly white, presenting an attractive contrast. The grey feathers on the thighs should form a perfectly three-quarter circle; tail white, with broad grey band across centre of top; wing flights very dark shaded self-colored grey. The Toulouse breed very truly, are very uni-

form in color, the male and female being alike. These geese are as a rule non-sitters, in which respect they are distinctly different from the Embden, and wonderfully good layers. As a rule there is not much trouble with the goslings, which hatch out and thrive well. The weight attained by the Toulouse is often most extraordinary, and at Birmingham specimens have been exhibited scaling over thirty-five pounds. Young birds at twenty-pounds are by no means uncommon, and the best breeder and feeder produce numbers upwards of twenty pounds. As already stated it is somewhat slow in filling out as compared with the Embden.

Emden Geese.—The other principal variety of the goose is the Embden, which is entirely white in plumage, with a flesh-colored bill and orange-colored legs and feet. It is not quite so squat in appearance as the Toulouse, and has a somewhat more erect appearance, but in other particulars, such as shape, the two varieties are very similar indeed. In consequence of the color of the plumage, it is necessary to give the Embden more water than is needed for the Toulouse, but with this exception the methods of management and of rearing are identical. The white goose does not usually attain the same weight as the grey by several pounds, and this is a decided disadvantage except for early stock, as then the Embden can claim the first place, growing more rapidly than the Toulouse. Still many Embdens have attained great weights, and pairs have occasionally been exhibited at Birmingham, weighing nearly sixty pounds. This variety takes its name from Embden, an Hanoverian town in Germany, in the district around which large numbers of white geese are bred and reared. The best of the English birds originally came from Holland, which has thus been the country whence we have derived several varieties of poultry. It has also been pointed out that the feathers of the Embden are more valuable than those of the Toulouse, being pure white, and where there are enough birds bred to make the feathers a consideration, this is one of the points to be considered. The flesh is about equal in quality in both breeds.

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