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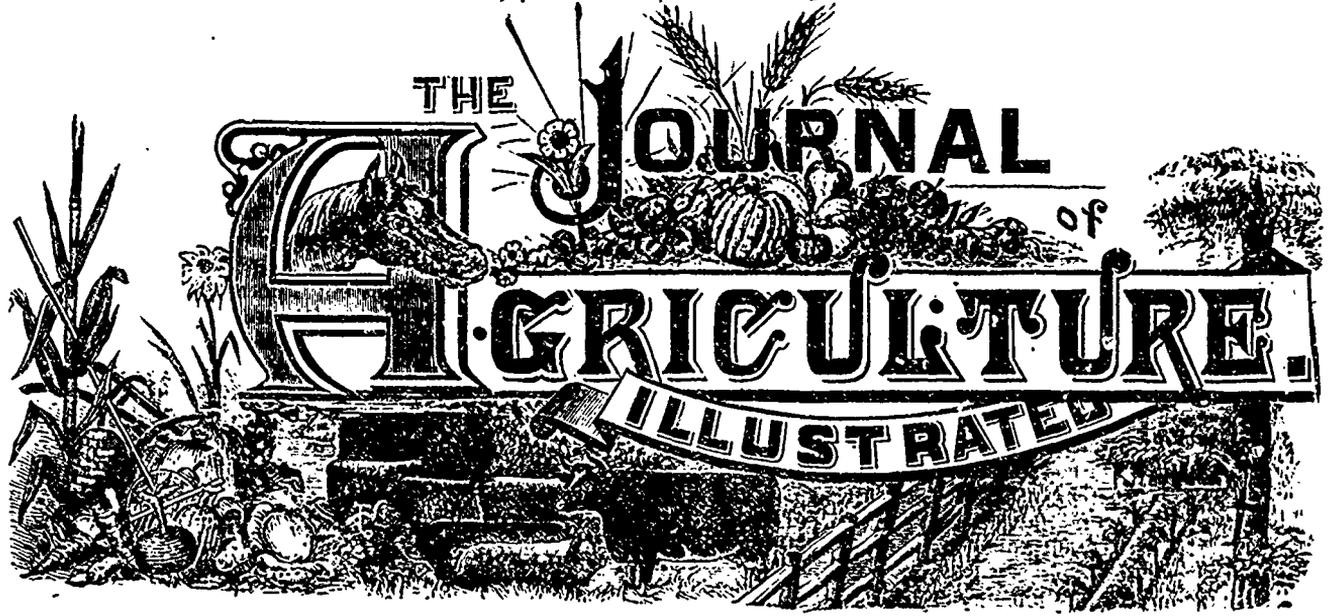
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NOTICE.—The subscription to the Illustrated Journal of Agriculture, for members of Agricultural and Horticultural Societies, as well as of Farmers Clubs, in the province of Quebec, is 30c annually, provided such subscription be forwarded through the secretaries of such societies.—EDITORIAL MATTER. All editorial matter should be addressed to A. R. Jenner Fust, P. O. Box 23, Sorel—or to the Director of Agriculture, Quebec.

OFFICIAL PART.

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Inspection Of Farms.—No III.

Throughout the heavy land district round Saint-Césaire, I was struck with the quantity of wild chicory growing by the road-sides. And if that were all, it would not so much signify, but by degrees this troublesome weed is gradually invading the cultivated land, and promises, in a very few years if it is left alone, to become the dominating ingredient of some of the pastures. M. Aries told me that he never grew buckwheat except for the purpose of destroying this weed. Upon my asking why he did not grow buckwheat as an ordinary crop, he replied, as I expected he would, "because it spoils the sample of grain in the succeeding crops." Mr. Chaffers, on the other hand, told me that he sowed buckwheat occasionally, and when the land after this crop had been kept in meadow and pasture for three or four years, the buckwheat never gave any more trouble, but disappeared entirely! This was quite new to me, but, if the fact be so, I am very glad to know it, as it would remove the great objection I have to sowing this grain. As for separating buckwheat from the cereals by winnowing, that is easy enough with a good machine; but in this neighbourhood, grain is almost invariably sold as it comes from the threshing machine, and, consequently, a decently clean sample of wheat, barley, or oats is, I may say, never seen.

A great outcry here, among all the more advanced farmers, for some means of compelling the more backward ones to cut down their weeds before they go to seed. It is true, that the law enables every man to sue his neighbour for damage accruing from neglect of this duty, as well as from neglecting to keep up his fences, and other lâches of the kind; but upon my mentioning this to M. Aries, he replied, "true enough; but when once two neighbouring farmers get to law, one of them has to take himself off, sooner or later, to another

The Quebec Dairymen's Convention 1886.

The next annual meeting of the Quebec Dairymen's Association will take place at Three-Rivers, on Wednesday and Thursday, the 19th and 20th January instant, 1887. Most important matter connected with dairying generally will be discussed. All interested are invited to attend. Address at once to J. de L. Taché, Secretary, St-Hyacinthe, for member's certificates, securing reduced railway fares, etc.

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place. It can't be done." Both he and Mr. Chaffers seemed to think that the only plan was, for each county, or municipality, to appoint a paid inspector, whose duty should be to keep constantly on the look out all the season for infractions of the law in these respects, and to prosecute the offenders as in that case provided. Well, this, I should think, might easily be done, and at no great expense either; but it would take a considerable time to educate the people into a notion of the necessity of such a step, and, in the mean time, the evil is a growing one.

Clover-hay.—On Mr. Chaffers' farm, I saw a really splendid mow of clover-hay. It had been cut a fortnight or so too late (July 5th), but in spite of that it was the best I have seen for many a day. There had been no shaking about, and, in consequence, the leaves were all there, closely adhering to the stem; and as it had been carried rather green, it was tightly packed together. Though absolutely free from mildew, there was a *gumminess* perceptible on handling it, and I fancy Mr. Chaffers felt rather proud of my evident satisfaction. One ton of such hay I consider to be well worth a ton and a quarter of any timothy hay ever brought to market. The second crop was well forward, and would probably be fit to mow about the 25th of August. The soaking rains of the last week of July and the first week of August, must have benefited the second growth enormously; and I do not doubt but that the two cuts would exceed four tons to the acre.

On all his clover, next year, I hope Mr. Chaffers will apply a hundred or two hundred of plaster. I can understand that, where pease are apt to grow too long in the straw, it is hazardous to use it for that crop; but nobody yet ever had too bulky a crop of clover. Only, of course, if a very heavy crop is allowed to stand too long, as is, from greediness or sloth, too often the case, the clover will get "kneed down," and the lower part of the stems become worthless. Clover cut at the proper time and made into hay by judicious turning and cocking, will, as Mr. Barnard observed in the Oct. number of the French Journal, "increase immensely the general yield of the farm, with a very slight expenditure over the ordinary cost of cultivation, and without inflicting the slightest injury on the soil."

Tuesday, July 27th was an atrocious day. Hot, muggy, rain all day up to 3 p. m., and I could do nothing except chatter with the farmers in the immediate neighbourhood of the village. In the evening, after going over Mr. Chaffers' fine farms, a sudden out-burst of one of the finest examples of the Aurora Borealis, at 8 30, gave me hopes of a change of weather, which hopes were not disappointed, as the 28th, though still hot, close, and terribly relaxing—just the weather I abominate—was sufficiently fine to encourage me to proceed to Rougemont by the South Eastern railroad.

I was received at Rougemont, with great hospitality, by M. Martel, the winner of the *second prize* for the best cultivated farms in the county of Rouville. It was here that Mr. Barnard, M. Chapais and I spent a very pleasant day, some four years ago, when we visited the Whitfield stock-farm in the days of its glory; and M. Martel's obliging disposition has not deteriorated, for he was good enough to devote a whole day to showing me everything worth seeing in the district.

After passing along the road under the hill, where, by the bye, we saw a remarkably nice lot of half-bred Shorthorn calves belonging to my old friends the Standishes, whose butter is still, as I remember it was twenty eight years ago, the best in the country, we came to the farm of M. Paquette, winner of the *third prize* in the county, consisting of 105 arpents, 25 of which lie separately about a mile from the farmhouse.

The home-farm is situated on the lower side of the road

from Saint-Césaire, where the change of soil from sand to sandy loam begins. The lower part gets heavier and heavier as one goes on, and the lowest is a blackish alluvium, bearing good timothy hay, but more productive of straw than of grain. Stones and bowlders in abundance on the upper parts, but what with buildings and walls, M. Paquette has got rid of most of them. In the vicinity of the house, was a newly planted orchard, which promised well for the future. All this land at the foot of the hill has been long celebrated for prolific fruit trees. No finer *fameuse* apples can be found even on the Island of Montreal; but, unfortunately, the older trees are dying out, and if young plantations are not immediately made to succeed them, there will be a gap in the production, and this will be a serious loss to the farmers. It is not every locality that will bear first class fruit, and those who possess the fitting soil should be very chary of allowing it to become naked.

M. Paquette has apparently begun to interest himself in the cultivation of the vine; and he will doubtless succeed, as the exposure and the soil of his farm are all that can be desired for that plant. I hope, however, that he will not carry it too far, as I have no faith in grape-culture, in this part of the province, on a large scale. Every farmer should, if his land is suitable, grow a dozen or two of vines, but looking at the partial failure of the grape to ripen during the last two seasons, the idea of growing them for a market- or a wine-making-crop, seems to me too speculative to be worth trusting to. I have not heard that the Renauds, the Fergussons, the de Beaujets, have succeeded in making their fortunes yet; though M. Renaud, of Longueuil, did tell me, in 1881, that, with his fourteen acres of Italian vines, he meant to establish a *cabaret* at the vineyard, and sell wine at five cents "le demi-ard."

As at least one-third of the cheese-factories in the neighbourhood were closed this season, M. Paquette converted the produce of his cows into butter, and to that end, he arranged a capital dairy in the cellar below his house. Roomy and cool, with means of shutting out the noon-day sun, and admitting fresh breezes no matter from what quarter they may come, this dairy seems well adapted to its purpose. There was no smell of any sort, but the agreeable odour of fresh butter and milk, for as the cream is here churned three times a week at least, or rather seven times a fortnight, the smell of the ripening cream was fortunately absent. A thermometer (!!!) in the cellar-dairy, when I was there, indicated 16° below the exterior heat.

The price at which M. Paquette was selling his butter was seventeen cents 2 pound. At this season, the best creamery was only fetching nineteen to twenty cents, so he may feel satisfied with his sales. Earlier in the season, the skim-milk is divided among the pigs and the calves, but in August, all the calves were weaned, and the pigs, of whom there were about twenty, got it all.

Last autumn, owing to the expected closing of the factories, strippers were selling at from \$8 to \$12 a head; and this spring, newly calved cows of the ordinary, *omnium gatherum* breed, could be bought for from \$25 to \$30. I dare say, from what I heard, that the same foolish plan of giving away sheep was practised when wool last fell in price, and now what would not farmers give to get into sheep-stock again?

ARTHUR R. JENNER FUST.

(To be continued.)

THE POULTRY-YARD.

THE BIRMINGHAM POULTRY SHOW.

The thirty-seventh Birmingham Show, so far as the poultry and pigeon sections were concerned, has been a decided ad-

vance on last year, when, it will be remembered, there was a very serious decline.

The arrangements of the show were pretty much as usual, except that, as the number of pens was so much larger than last year, more of the gallery was taken up, and none of the ground floor of the main hall, as has sometimes been the case. The pens were supplied by Spratt's Patent, and the arrangement as good as can be effected in so restricted a place. Drewitt and Bastock were busily engaged in looking after the comforts of the birds, which were well attended to. Jeyes disinfected the show with their well-known preparation.

Dark Brahma Cockerels were about the same number as at the Palace (17), but were still a rather weak lot. Light Cocks were a strong class of 20. Cockerels were a very good class of 30. Dark Hens had an average class of 19. Pullets, a long class, but not a strong one. Light Hens were a good class of 17. Pullets were 30 in number, but many of them weak in hackle. The average of color is, we think, better than in former years.

Dorkings are not as numerous at Birmingham as we once remember them, but they are much better than they were five or six years ago. Several years of consistent judgment in favour of the real Dorking type and characteristics have not failed to show exhibitors that it is now useless to send the dark-footed leggy mongrels which for some years won. Silver-grey Cocks were a poor class.

Cochins were hardly up to the average in pint of quality.

Langshans.—The Langshan classes were rather more numerous this year than last, the figures being 52 against 43, but the quality was not at all good.

French.—The French classes were rather more numerous than last year, but this was mainly in Houdans. The quality was, on the whole, fairly good.

Spanish were a decided improvement on last year, the numbers being 56 and 35 respectively.

Andalusians came out well for this variety.

Leghorns were also better in numbers than last year, but though there were several good birds, there is great room for improvement. The average quality was not high.

Plymouth Rocks, as usual, came out well, numbering in the four classes 108 entries.

Minorcas had two classes, in which were 29 entries.

Polish fowls were provided with 12 classes, with 89 pens.

Game fowl, as usual, one of the most attractive features of this show, and on the present occasion their entries exceed 460. The quality generally is very high.

DUCKS, GEESE, TURKEYS.

WATERFOWL, TURKEYS, &c.—The classes for waterfowl were neither well-filled nor well represented; there were a few good birds, but very different to what we have seen at former exhibitions at Bingley Hall. This is to us somewhat unaccountable, as the classes are well-arranged, and the prizes fairly good, and cups in several classes. In Ducks the Aylesburys were such indifferent specimens that the judge—M. J. K. Fowler—could not conscientiously even give a commendation.

The Pekins were more numerous, amounting to 17 pens. They were far below the average to what this most valuable duck has often been shown; and the color, except in one instance, was too white.

The Geese were only moderately good, the great weights of former years not having been attained, neither were the specimens of that decided character which on many previous occasions had been so often noticed. The cup went to a pair of good White Embdens, only weighing 48 lbs. 14 oz.; the second weighed 43 lbs. 8 oz.; and the third, 42 lbs. The Toulouse were handsomer than the Whites, but did not reach

the weight of the latter—the first prize scaling 47 lbs., the second 42 lbs., and the third 43 lbs.

The Turkeys were a grand class, Mrs. E. Williams gaining the cup with a splendid cock bird, weighing 35 lbs. 12 oz.; the second weighed 35 lbs. (Mr. Kendriok), and the third 32 lbs. The birds of this year were excellent, Mr. Kendriok winning the first with a bird weighing 27 lbs. 6 oz. The first-prize and cup Hen scaled the enormous weight of 30 lbs. Altogether the Turkeys made up for any deficiencies of the Waterfowl. Before the Prince left the show he purchased considerably of Waterfowl.

WEIGHTS OF WATERFOWL.

		Ducks.—Aylesburys.				
		1881	1882	1883	1884	1885
		lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
1	..	20 9	.. 20 4	.. 21 11	.. 22 0	.. —
2	..	19 4	.. 19 0	.. 20 11	.. 19 4	.. —
3	..	19 0	.. —	.. —	.. —	.. —
		Rouens.				
1	..	22 8	.. 21 4	.. 22 2	.. 22 4	.. 19 0
2	..	21 7	.. 20 0	.. 22 0	.. 21 8	.. 17 0
3	..	20 1	.. 19 8	.. 21 3	.. 20 8	.. 16 0
4	..	19 4	.. 18 10	.. —	.. —	.. —
		Pekins.				
1	..	13 10	.. 14 12	.. 15 12	.. 17 0	.. 14 0
2	..	13 12	.. 15 0	.. 15 0	.. 14 8	.. 17 4
3	..	13 4	.. 14 8	.. 14 10	.. 11 8	.. 14 4
		Geese.—White.				
1	..	44 4	.. 46 12	.. 47 4	.. 48 12	.. 48 12
2	..	44 0	.. 45 4	.. 47 2	.. 42 14	.. 43 8
3	..	—	.. —	.. —	.. —	.. 42 0
		Grey.				
1	..	37 8	.. 45 4	.. 50 9	.. 49 0	.. 47 0
2	..	37 0	.. 45 0	.. 44 4	.. 42 0	.. 44 8
3	..	36 0	.. 40 4	.. 41 8	.. 39 10	.. 43 12
		Turkeys.—Old Cocks.				
1	..	38 2	.. 38 8	.. 37 8	.. 34 4	.. 35 12
2	..	38 0	.. 38 8	.. 37 0	.. 30 12	.. 35 0
3	..	36 4	.. 36 12	.. 32 4	.. 30 8	.. 32 0
		Young Cocks.				
1	..	23 14	.. 26 8	.. 26 0	.. 28 12	.. 27 4
2	..	23 0	.. 26 0	.. 25 12	.. 28 8	.. 26 0
3	..	22 12	.. 25 8	.. 25 4	.. 26 4	.. 25 8
		Hens.				
1	..	22 0	.. 22 4	.. 24 12	.. 26 0	.. 30 0
2	..	20 12	.. 21 4	.. 23 8	.. 23 8	.. 20 8
3	..	19 14	.. 20 12	.. 23 4	.. 23 8	.. 21 10
		Pullets.				
1	..	16 12	.. 17 4	.. 19 0	.. 18 14	.. 17 8
2	..	16 10	.. 17 0	.. 17 12	.. 16 14	.. 16 0
3	..	15 14	.. 16 8	.. 17 4	.. 16 14	.. 15 0

DE OMNIBUS REBUS.

Box 23, Sorol, Que., December 3rd, 1886.

Prickly Comfrey.—In spite of every thing this much abused plant does not seem to be absolutely extinct. Mr. James Howard, in the Journal of R. A. Soc. of England, says that even well-fed pigs are exceedingly fond of comfrey, and that it is the best green food for them. I wish Mr. William Hale, of Sherbrooke, who, I know, has grown it for at least ten years, would let me have his opinion of this plant. As to its yield, that has long ago been proved to be

enormous, and it never fails to come again. Like orchard grass, it is worthless if allowed to stand too long.

Buckwheat as green food.—"As a soiling crop," says Professor E. W. Stuart, "green buckwheat would be slightly worse than nothing. It is certainly worthless as a green crop. A herd of cows, kept wholly upon this as a soiling crop, would become seriously emaciated in a month's time."

A strong statement, indeed, and a surprising one in the face of Mr. Barnard's idea, that the extreme richness of the milk of his Canadian Jersey cows is chiefly attributable to their being fed upon green buckwheat.

Shorthorn Dairy cows.—A friend of mine proposes to import a small herd of shorthorn dairy-cows from England early this spring. If he succeeds in getting the right sort, and crosses them with his Guernsey bull, I fancy he will have, in time, the best herd of dairy-cows in the country. His land is rather light for such cattle; but as it is his intention to continue his present plan of giving his milch-cows additional food on the pastures throughout the summer, I do not think he is likely to fail from that cause.

I see that it is proposed to establish a dairy-register as an appendix to the American Shorthorn herdbook, "and," says the Rural New Yorker, "it does seem as though Nature intended the Shorthorn for the 'general purpose' cow after all." Well, she has been for years the general purpose cow in England, and I do not see why she should not occupy the same position in this country.

Food for Milk.—When Mr. James Drummond was feeding his cows, at the Sherbrooke Exhibition, on ground meal, he looked at me and winked, as who should say: You know where that comes from. The meal was compounded of oats, pease, and linseed.

Muck as a Manure.—Muck contains, sometimes, (i. e., where the remains of some animal or other are found), 2% and upwards of nitrogen. Now, as one hundred weight of sulphate of ammonia containing 20 pounds of nitrogen, is a fair top-dressing for an acre of wheat, barley, or oats, it follows that ten hundred pounds—one cart-load of muck should answer the same purpose; and putting the value of nitrogen at sixteen cents a pound, it follows that a cart-load of muck is worth \$3.20! Which, it seems to me, is rather what logicians call, a *reductio ad absurdum*.

The mechanical effects of sand on clay, or of clay applied to sand, are, no doubt, excellent, but consider for a moment the extraordinary cost of carting even a hundred loads of either from place to place. In England, when we clay soils, never less than from eighty to a hundred three horse loads are given to the acre and the clay is always taken out of trenches on the spot to be improved. As to sanding clay soils, I fear in three years, at farthest, the sand will be found to have slipped through the clay into the subsoil.

The effect of muck on soils of every description would be to darken the soil, and thereby to enable it to absorb and retain the heat rays of the sun, but, again, would the game be worth the candle?

Dry muck would make an excellent absorbent for liquid manure.

Practice, in all these questions, is the only safe guide, and this question of muck is one that I hope to see thoroughly sifted at the new experimental farms.

My opinion is shortly this, that our seasons are so short, and our labour so dear, that, except as an absorbent in the

stables, for *celery* and *tomatoes*, carting muck can never pay. Mixing muck with lime for a top-dressing to meadows is Lord Meadowbank's plan of one hundred years ago. Lime costs, here at Sorel, 40 cents a bushel, and I leave my correspondent to judge of the expediency of using it on land at that rate. Less than ten bushels to the acre would have no *chemical* effect, and less than 120 bushels to the acre would have no *mechanical* effect. I cannot see what would be gained by mixing sulphate of lime plaster—with muck, though perhaps the organic acids might make it a little more soluble.

And it is not on every soil that plaster acts. Here, it seems to have an immense effect on all leguminous plants, but none at all on the grasses. The very first thing I should do on a new farm would be to try plaster on clovers; but as 120 pounds are enough for an acre, I should spread it broadcast instead of composting it.

American Horticultural Society.—The address of President Carlo to the above society at its annual meeting is of great importance. A few extracts will be found at p. of this number of the Journal.

ARTHUR R. JENNER FUST.

OUR ENGRAVINGS.

Group of Lincoln Ewes.—Great roomy sheep are the Lincolns. Capital legs of mutton, but too fat all along the back and on the brisket to be economical meat. The original stock of the county were coarse boned, straggling brutes, and they owe their improvement to crosses with Bakewell's improved Leicesters. Like the Kents, the Lincolns are sold from seen out of their own county, where, on the rape grown in the fens, they attain great weight of carcass, and clip a vast coat of wool. One or two rams of this breed are occasionally met with at our exhibitions; but what good they or the Scotch blackfaced are expected to do here in Canada I cannot conceive. The day for keeping sheep for their wool alone is long gone by.

Romeo of Saint-Lambert.—A Jersey bull bred by Mr. Reburn of Saint-Anne, whose ardour is the propagation of this strain of blood is known over all the world, *ed in altis sit*.

Lady Fawn of Sainte-Anne.—Calved October 1st 1870. See performance below.

Ste-Anne de Bellevue, Nov. 8th, 1886.

ARTHUR R. JENNER FUST, ESQ.

My dear Sir,—I have sent by same mail as this a photograph of one of my Jersey cows. Now I am aware that the Guernseys are your favorites, but still I think you will agree with me when I say that there are few cows of any breed can beat Lady Fawn's record at the same age. When we tested her she was not forced, forcing a cow to test is a thing I don't believe in. She was on very poor pasture. I could not keep her with the other cows, as she was very lame, and could not keep up with them, therefore was compelled to put her on a four acre lot, on which I had kept five Exmoor and Shetland ponies all the season, until she was put there with another cow to keep her from being lonely.

She was fed with from 20 to 24 lbs. oats and pease (mixture 1 bus. pease to 2 bus. oats ground by ourselves with a Vessot 2 horse grinder) and 2½ to 3 lbs. ground oilcake per day. You will find test on back of photograph. We kept her milk record for 88 days she gave 2,715 lbs. of milk, and thirteen days of that time she was kept in the stable (on dry bran no grain whatever); she decreased 101 lbs. milk from the previous thirteen days. I have sent you a copy of the Jersey Bulletin of Dairy World which contains a woodcut of her by

Wiseman. You will see that it is taken from the photograph and not improved in any way whatever.

The herd is doing well and increasing fast; it now numbers fifty-seven (pure St. Lambert blood), and I shall have over sixty before the end of the year. Prices are still good. I sold six since last spring, the average for the six (five bulls and one heifer) was \$675.00: one, a son of Lady Fawn, I sold for \$800.00; he went to Troy, N. Y., to head a herd of over one hundred and sixty Jerseys.

I remain

Yours very respy.,

W. A. REBURN.

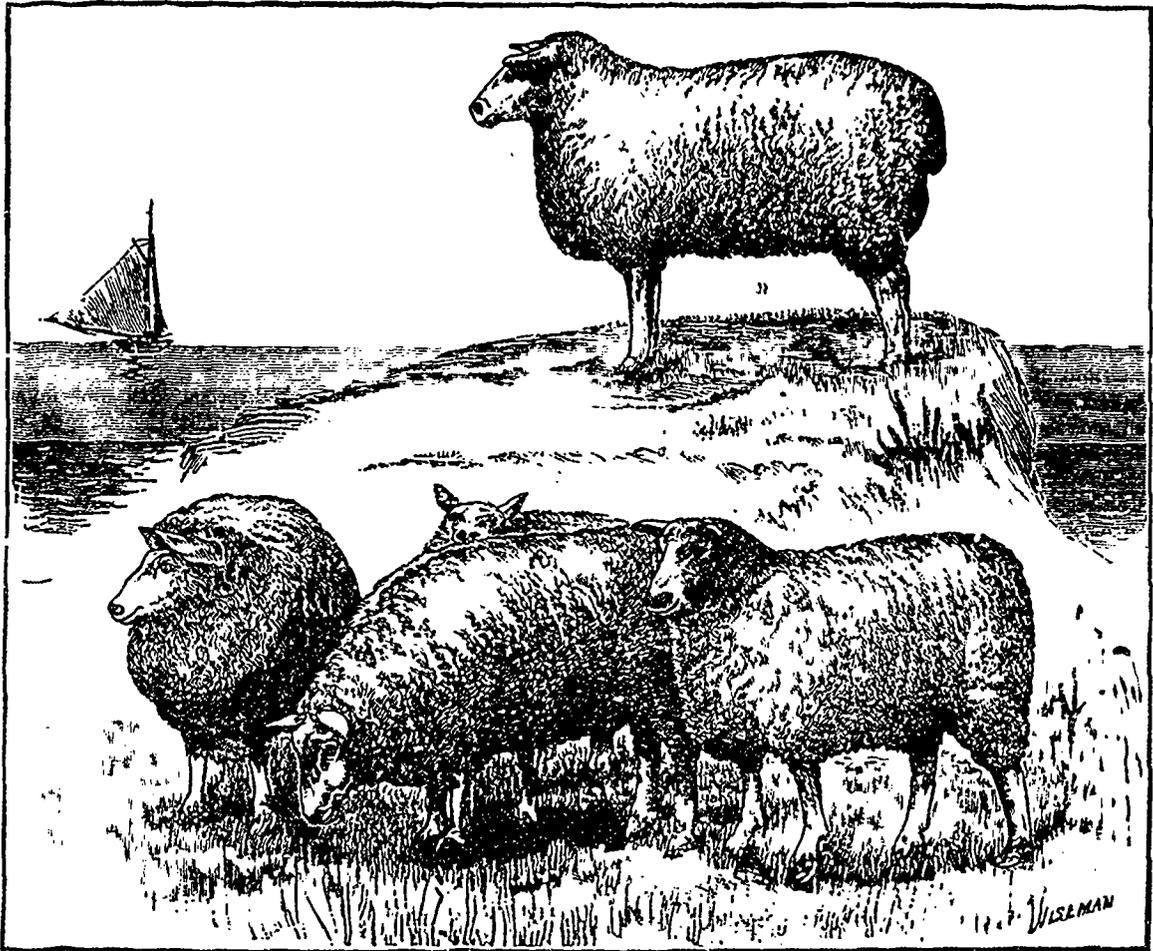
but after our experience of the last two years, we are convinced that the plan is an advantageous one, and we advise farmers in general to try the experiment, feeling sure that after a fair trial they will confirm the testimony which we have now given.

[Signed,
From the French,

J. B. GUVREMENT, SÉNATEUR.
SÉRAPHIN GUVREMENT.

Food Value of Green Corn for Ensilage.
QUEBEC PAPERS, No. 4.

Now that so much interest attaches to ensilage, it be-



GROUP OF LINCOLN EWES.

DO ROOTS PAY?

We, the undersigned, after having cultivated root-crops, on a fairly large scale, for the last two years, wherein we have followed the instructions of Mr. Jenner Fust as to the manner of hoeing, singling, &c., both with horse-hoe, and hand-hoe, have come to the conclusion that it pays well to grow roots; for, since we have bought a horse-hoe, and learned how to use a hand-hoe properly, we find that the expenditure in labour is not great in proportion to the yield of the crop and the value of the roots, even if they are grown entirely for the use of stock.

Before we tried root-growing, we were under the impression that the labour employed therein would be too costly, and, in consequence, that the system would not be profitable;

comes important to compare the feeding value of the varieties of corn grown for such purposes. Farmers everywhere are very apt to attach more importance to quantity per acre in tons than to quantity of real food obtained. Here in Canada, where only the early varieties of corn mature, farmers generally sow Western seed-corn for ensilage. This Western ensilage corn, I believe, hardly contains fifteen per cent of solids. The expected returns being thirty tons per acre, or more, the quantity of food thus obtained would amount to 9,000 pounds per acre and 51,000 pounds of useless water. On the other hand, the earliest and best varieties, with the same care and manure, should give twenty tons of sufficiently matured food, containing, I take it, as much as twenty-five per cent of solids. This would amount to 10,000 pounds of solids and 30,000 pounds of water. If my ap-

proximative figures be right, by sowing early varieties of corn only, the farmer would obtain ELEVEN PER CENT MORE FOOD per acre, and would lift and carry THIRTY-THREE PER CENT LESS OF USELESS WEIGHT from his field to the cutter, then to the silo, and then to the stock—thus saving himself the useless lifting and carrying of THREE TIMES TEN TONS per acre! Unfortunately for my views, I am without the exact results obtained in your various experimental stations on this very subject. However, if my memory serves me right, my approximative figures are not far wrong. As this question is of great interest indeed to all dairymen who feed green food to their stock, you would oblige us very much by quoting the exact results obtained on this subject by your best American authorities.

ED. A. BARNARD,

Three Rivers, P. Q.

REMARK BY THE AGRICULTURAL EDITOR. - Unfortunately these results are not easily accessible, but we shall try and collect some of them soon.

Hamilton, Ont., Dec. 9th 1886.

ARTHUR R. JENNER FUST, ESQ.

DEAR SIR. — In the November issue of "Agriculture" I find a description by you, under the heading of "Dominion Exhibition 1886", of the Dorset Horn Sheep, which were exhibited there.

I purchased the whole importation that Mr. Standford made, including those remaining on his hands, and Mr. Rolph's. They have dropped me lambs, beginning to lamb about the middle of October. All the lambs are doing extremely well, growing very rapidly, and have been fattening very fast, and I have received unusually good offers for as many as I desire to sell for the Christmas market at Toronto.

Can you tell me where I can procure any work giving a history and mode of proper treatment of these sheep. We have constructed for them a long shed, 20 feet in breadth, 19 feet long, built up well from the ground on posts; flooring oak, tongued and grooved; so that it is tight, match boarded on the outside and match board on the inside, height of ceiling about 8 feet. It appears to be very dry, and we have plenty of ventilation. We are feeding them about a pint of oats, clover hay and turnips. We have about 4 in each pen, (mothers) with little passage ways cut between each pen large enough for the lambs to go through but not for the mothers, so that the lambs have a run from one pen to another, and in the centre we have a pen in which we have a trough for them to feed from where they will be alone and not disturbed by the mothers.

I know nothing as to the care of sheep, and have to depend upon a man who claims to be a good shepherd, and to be used to the care of sheep in England. Is this treatment about right? I should esteem it a very great favor, any hints you could give me as to their care, feed, management, building, &c.

I must say I was never so much taken with any sheep before. All the ewes who have lambed, other than shearlings, have produced two a piece, and the shearlings one, and thus far I have only lost one lamb, and that was injured by one of the ewes falling on it when it became frightened in a stable that we were then keeping them in before moving into this shed.

I should add that the shed or barn over head is packed full of hay to keep it warm over-head.

I see in your last issue that you have a picture of Faith of Oaklands. It is rather a poor one.

We have a better cut than that. We have a most excellent cut of Mary Anne of St. Lambert, if you desire to use them.

Yours truly,
VALANOEY E. FULLER.

ECONOMICAL CHEESE BOXES.

D. M. Macpherson, the *Cheese-King* of Canada, sends us the following important circular respecting cheese-boxes which explains itself:—

Alexandria, Ont., Oct. 30, 1886.

DEAR SIR,—Our connection with the cheese-industry during upwards of twenty years has given us the opportunity to trace the development of the business in its many phases, and during that time we have always taken the lead in improving the position of the cheese-manufacturer by introducing labor-saving machinery to improve the quality and cheapen the price of factory supplies.

We have been engaged in the manufacture of cheese-boxes ever since the beginning of cheese-manufacture on the factory system in Canada, and have led the reductions in the prices of the same from twenty-five cents per box, until today we propose to lay before you our latest departure in the manufacture of boxes by which you may lay your boxes in your factory at a cost of about eight cents or less, per box.

We assume that every factory has steam appliances for heating water, and propose that every cheesemaker shall also be his own-box-maker.

To do this would require no special skill and no outlay further than a bending machine to make the boxes on, and it would occupy but a few minutes' time of each day to make the boxes required for each day's make of cheese, and which time the cheese-maker always has at his disposal while waiting for the airing of his cheese.

We shall be pleased to ship the material that is, the bands, heading and tacks—on board the cars here for $6\frac{1}{2}$ cents a box, and can ship in the winter, so that you may have your stock on hand and suffer no delay or loss from want of boxes during next season.

We have a large stock of material ready for shipment, and those parties ordering early will be served first, but after our present stock is shipped we cannot then ship more until May next.

You will see at a glance that the cheese manufacturer by this means will be able always to have his supply of boxes on hand, will be liable to no loss from broken boxes, and will secure his supply at less than the actual cost to a box-maker at the mill.

If you think favorably of this proposition write us for further particulars at once, as you cannot do so too early. The early buyer will have the same time for payment as the late buyer.

We are, yours respectfully,
MACPHERSON & SCHELL.

Can Clover triple the yield of crops in the P. of Q. ?

According to the last census (1881), the average yield of wheat,—taking the whole province—is somewhere about eight (8) bushels per acre. Other grains and vegetables are in the same low proportion. On the other hand, it is a well ascertained fact that our French Canadian farmers still sow, comparatively, little clover. My experience leads me to believe that not 10 lbs. are sown annually, on an average, per hundred acres. And yet this small seeding in clover is an improvement on olden times, when little or no clover at all was sown. It is also well ascertained that neither potash, nor phosphoric acid, nor lime, are given to the soil, as a rule, outside of the

poor, scanty, water-leached and sun-dried manure made on the farm.

I firmly believe that if, in a proper rotation, 10 or 12 lbs. of mixed clovers were sown per acre on well prepared lands intended to bear a crop of either wheat, oats, corn or potatoes, and a top dressing of, say, 10 bushels of live ashes and 200 lbs. of superphosphate given;—the clover fed;—the manure all saved;—all such clover ploughed in after the first crop;—the average crops would certainly be tripled—on all such farms, not clover-worn, where butter is produced as the main source of return. Am I wrong?

QUEBEC.

THE DAIRY.

QUESTION AND ANSWER.

—"F. R." says: Can any of your readers explain the cause of cream when, as usual, put into churn not making butter? The temperature of churn is as on other days, when butter is perfect. This occasionally occurs, though a day may be spent in the churning, trying to bring the butter; and, of course, this is a heavy loss to the dairyman. Also kindly say whether you consider prickly comfrey good as provender for milch cows.

Prickly comfrey is capital food for dairy cows. Mr. E. C. Tisdall has grown and used it largely for his dairy herd. The question of butter not coming we leave for the usual throng of correspondents who have had similar experience. As I showed last year, the Devonshire mode of making butter entirely obviates this trouble.

A. R. J. F.

Ensilage for Dairy Stock.

Last year we reported the results of ensiling on the farms of Mr. G. W. Goodison of Coniston Bank, near Lake Windermere, and of Messrs. Harrison, Ainslie, and Co., Lindal, Lancashire. Mr. Goodison gives the following results of his work:—The two silos, when full, hold about 85 tons of ensilage, or, after weighting and settling, about 65 tons. In 1884 we filled both twice, the first time with seed-grass and meadow-grass, and afterwards with a second crop of seed-grass, at the end of September. We filled up the silos very rapidly in two or three days, and weighted immediately, about half of the grass being carted and put into the silos in a very wet condition. This system of rapid filling and weighting ought to have produced sour silage. The silage had anything but a sour smell; it reminded me rather of the smell of grains in the brewery. We also tried a load of green oats, and a small experimental patch of maize, the former put in the silo long, the latter chaffed into lengths. Both were a great success, the cattle being very fond of them. Altogether, in 1884, I put into both silos about 60 tons of grass. We weighted with planks and stones—1 cwt. to the square foot. Last year we did not stop for weather from start to finish. Results:—Most of the cattle and some of the horses took to it at once; all did after a few days. After that, the cattle, especially, were exceedingly fond of it, and much preferred it to hay. The milch cows were all fed through the winter as follows:—30 lbs. of silage in two feeds, night and morning; 8 lbs. of hay in the middle of the day. In addition we "tubbed" them with 12 lbs. of swedes, 5 lbs. of chaff, 4 lbs. of cake, and 4 lbs. of meal. (The cattle are large-framed Shorthorns, and Mr. Goodison's farm is at the foot of Coniston Old Man, adjoining the residence of Professor Ruskin.) This mixed diet kept them in splendid health and condition. They also milked well, and the butter was infinitely better than any winter butter we ever had. It was, to my mind, quite as good as it was subsequently in June and July, when they were on grass. In March I took off half the silage, and doubled the quan-

ty of turnips, when there was a falling off of two or three degrees in the quantity of cream. The calving cows and heifers, some of them valuable animals, were fed entirely on silage through the whole winter, in addition to the cake and meal. They never had any hay, and they always maintained—in fact, improved their condition. In conclusion, as to last year's results, with a very poor grass crop, much below the average, I consider by the use of silage I was enabled to keep 25 or 30 per cent. more stock through last winter than I should have been without it. We have, of course, filled the silos again this year, notwithstanding the grand hay weather we have had during the summer. We have had much heavier crops, and have made two-thirds more hay than we did last year, in addition to putting 10 to 15 tons more grass in the silos. We have filled the silos in altogether a different way to the one adopted last year. We have tried to make "sweet" silage by filling up the silos very slowly, only adding three, four, or five loads of grass daily, thus allowing the temperature to rise considerably; as near 120 degrees or more as we could get it, then adding a few more loads of grass, and so on until completed. The temperature was taken by means of a hollow tube, driven four or five feet into the grass every morning before commencing to fill up for the day. Sometimes, if the weather was not suitable, or if we wanted to do something else (we carried on haymaking simultaneously), we left the silos for a day or two without adding any grass, taking care always to keep the grass well trod, and particularly at the sides. We only put on the weights once, which is a great saving—at the completion of the filling, which occupied about a month. Whether this makes sweet silage, and whether it turns out to be better than last year's, remains to be proved. I am inclined to think it will be an improvement on the other system, as it seems to me the more common-sense way of preserving fodder for winter consumption. It possesses also the advantage of allowing you to do other things—haymaking, for instance—at the same time. You need not also work on very wet days, although I do not know that the silage is any worse for being stored in a wet condition. I was so pleased with my experiment with green oats last year, that I have pitted about one and a half acres this year unchaffed."—R.

A NEW TEST FOR MILK

The well-known difference in the quality of pure milk enables adulterators, when prosecuted for their misdoings, to plead that, although the milk may be below the standard quality adopted by the analyst, still, the milk in question was the genuine produce of the cow. Hitherto no easy and reliable means are known by which to distinguish the water of pure milk itself and water added from another source. J. Uffelman, in the *Milch Zeitung*, believes he has solved the problem, and proposes a new test for milk adulteration to determine the presence of water added to milk. He maintains that nitrates are present in nearly all waters, but that there are none in milk. He, therefore, proposes a delicate and simple test for nitrates which, on application, will detect the presence of added water. He places a quantity of diphenylamine the size of a split pea in a crucible and pours on it 25 minims of sulphuric acid absolutely free from the slightest trace of nitrates and stirs the mixture with a clean glass rod until it becomes of a pale rose colour. Three or four drops of the respective milks are allowed to trickle down the sides of the capsule, which must be kept motionless. If much nitric acid, he says, be present, there will instantly form at the point of contact between the fluids a bluish stripe, which gradually spreads throughout the whole. If the quantity of nitrates be small, the colour will not appear for several minutes, but even the slightest trace will sooner or later pervade

the fluid with a delicate blue. All this reads very well, and the test may possibly be of some utility when Continental waters are used for adulteration, but it will evidently be of little use here in London. Under the heading "The interpretation of the results of water analysis," Sutton, a standard authority, in his "Volumetric Analysis," gives a table showing the amount of nitrogen as nitrates or nitrites in several waters that had been analysed. I find that it is *nil*—at the respective dates of examination—in the artesian well, Trafalgar Square, the Whitehaven water supply, the River Medlock at Manchester, and even in London sewage, in February and June, 1869. The average amount of nitrogen as nitrates or nitrites in the water of the London water supplied by the Southwark Company in 1870, was 0.206 in 100,000 parts and 0.247 in that supplied by the New River Company.

replied to your appeal, and that he has done me the honour to notice my letter of the 25th of August last. As his answer was not finished in the November number, I prefer waiting for its conclusion before I offer him my humble observations on it. I would rather not interrupt my honorable opponent; still, I trust he will leave me an open field for the January number.

I wish, however, to say something on a subject which is intimately connected with our present discussion, namely: In order to preserve indefinitely the fertility of our soils and even to increase it, is it sufficient to consume by cattle the greatest possible amount of the vegetable productions of the land?

Monsieur Marsan replies to this question in the affirmative. Here are his own words, taken from the 4th Report of



LADY FAWN OF SAINTE-ANNE.

Now, even if a milkman adulterated his milk 10 per cent. from the waters of the New River Company and the Southwark Company, the proposed test must be capable of detecting two parts of nitrogen either as nitrates, or nitrites in a million parts of the adulterated milk. I doubt if this is possible. Besides colour tests are not the most reliable. However, as by the proper test it would evidently be possible to adulterate London milk with London sewage without detection, its application would be of little use to us, whatever its merits may be, in dealing with milk contaminated with German water.—M. E. (1)

The Enrichment and Impoverishment of the soil.

Sir,—I observe with pleasure that Professor Marsan has

(1) The test, though perhaps useless in England, would serve a good purpose in the neighbourhood of large towns, badly drained, on this continent
A. R. J. F.

the Dairymen's Association, page 78, to which quotation I beg my reader's attention:

"The increased number of stock augments the products of the soil, which augmentation, in its turn, permits of an increase in the number of cattle. And, an important fact, this increase of products coincides with a proportionate diminution of the labour expended on the land, or on the ploughed surface, and with a constant improvement of the latter."

Another distinguished agronomer, Mr. Schmouth, speaks strongly on the same side. His words are still more impressive. See page 70, of the report already quoted:

"The earth, that generous and unwearying mother, provides those matters which support the animals of the farm, and they, in their turn, while using these matters for their sustenance, transform them into marketable matters, more easily disposed of, providing, in addition, manure, by the use of which land is enriched, and compelled to yield more abundant crops."

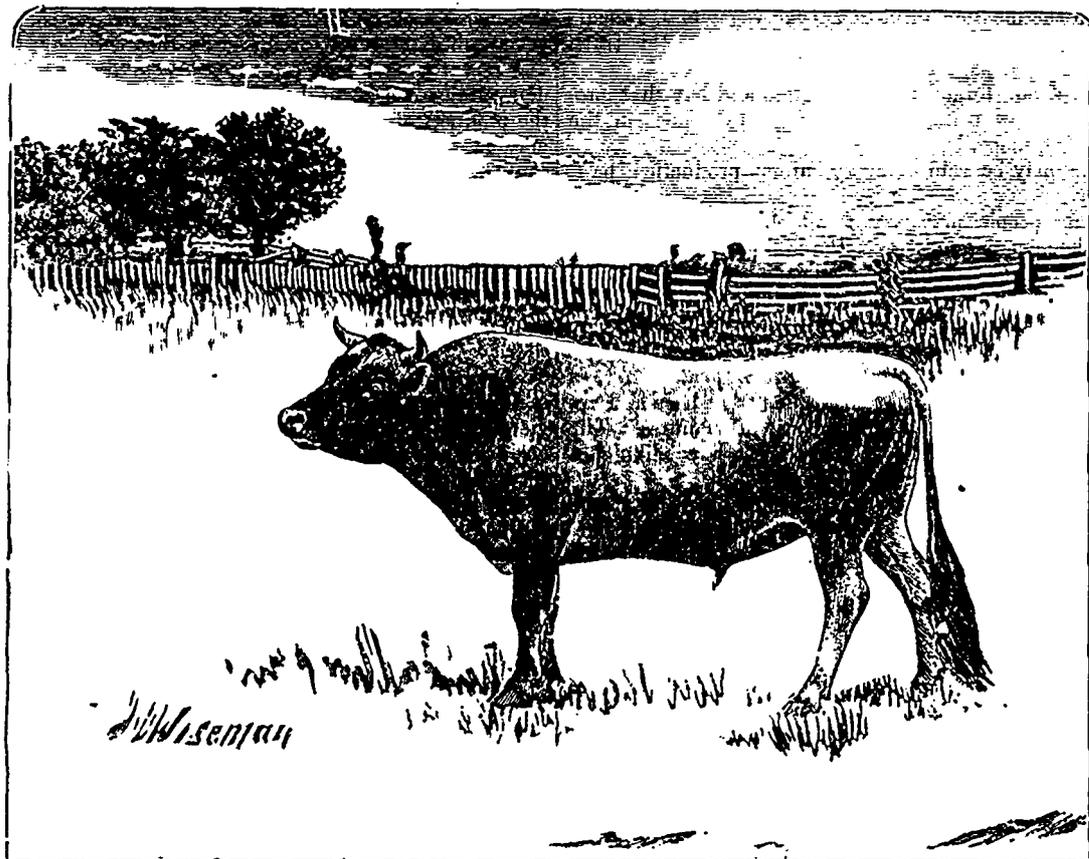
"In farming, then, the soil and cattle cannot exist apart; and, when the farmer tries to improve the one, the other necessarily shares in the benefit of his efforts. If, by a good system of cultivation, the soil becomes improved, the cattle immediately improve too, and furnish products and manure in *increasing abundance*; and, again, this additional supply of manure contributes in a *still larger degree* to the improved fertility of the land."

It is certain that a farmer who sells the whole of his crops off his farm without returning any manure to his fields is rapidly exhausting his land, and that in spite of the "meliorating crops" so dear to certain agronomes. If, on the contrary, he consumes the crops with cattle, a certain compensa-

this increased production, and, unless a full compensation is afforded, the land must infallibly degenerate. The degeneration, it is true, will be much less rapidly brought about than if the crops were sold off the farm in their natural state, but it is none the less inevitable.

To make up for the losses suffered by the land from the sale of the crops, the manure must be as rich as the food consumed. To add to the fertility of the soil, the manure applied must be richer than the food consumed. Now, it is clear that such a theory is inadmissible. It is materially impossible that the excrements of cattle should be richer in manuring principles than the food whence the excrements are derived.

An example will show more clearly what I mean: Give an



ROMEO OF SAINT-LAMBERT.

ation is made to the land, by the restitution of the dung made from the food the animals have eaten. The question now is: does this restitution of fertilising principles equal or even exceed the loans which cultivation has levied from the soil, as Messrs. Marsan and Schmouth assert, or is this compensation only partial? For my part, I hold that it is only partial.

According to my learned friends, when the greater part of the crops of a farm is consumed by cattle, and the dung thence derived applied to the soil, a complete and even superabundant compensation is made to the land. I, for my part, conceive that this compensation is incomplete and insufficient. To aim at the permanent improvement of the land by consuming the forage-crops by cattle, is to pursue an empty dream. It is true that we can succeed in putting into circulation a greater amount of the matters borrowed from the soil, and thus obtain, for the time, more abundant crops, but we shall see, presently, that it is the soil which must furnish

animal a hundred bundles of hay. Gather up with perfect accuracy the liquid and solid excrements resulting from the digestion of this food, and you will never find in these excrements the whole of the fertilising matters contained in the said bundles of hay.

Put on one side all that an animal eats, and on another side all its excrements, and you will soon see that the manure represents but a trifling fraction of the food consumed. (1)

With the excrements resulting from the consumption of one hundred bundles of hay, it is impossible to re-make the hundred bundles of hay without borrowing from the soil a certain amount of nutritive matter.

The food during its passage through the animal, leaves

(1) Here, I must beg to differ from M. Lippens. According to Lawes' most carefully conducted experiments, the relation of food to

behind it the greater part(?) of its fertilising constituents. (1) All the elements that serve in the formation of the bones, flesh, blood, milk, wool, hide, &c., are extracted from the food, and can never be recovered in the excrements. An animal which at its birth only weighs a few pounds, weighs, at the age of maturity, ten times as much. Does it not derive from the food it consumes the matter demanded for its complete development? All that is stored up in the organism, all that supplies the secretions, is taken from the food, and is lost to the manure. M. Boussingault, with much reason, says: cattle are not producers but destroyers of manure.

Forage-crops exhaust the land directly, and cattle exhaust it indirectly. The animal creates nothing, and it owes its development to the assistance of the materials furnished by the soil, through the medium of plants. Like vegetables, animals live at the expense of the soil. M. Marsan admits this truth implicitly, when, at page 79, he says:

"We must not forget that it is grass and hay that produce milk, the cow being only a machine to transform the forage into that shape."

The same may be said of every animal production, be it what it may.

But some people may say: all this is theory; and practice and science do not agree. Pardon me: the facts, properly understood, all lead to the same conclusion.

In England, Flanders, and Denmark, the growth of cattle crops and the feeding thereon of cattle have been pushed to their extreme limits. Three-fourths of the acreage of those countries are occupied by plants for animal food. Now, in these very same countries, enormous sums have been and are expended by the farmers in the purchase of manures. The bowels of the earth and the depths of the sea have alike been ransacked in search of fertilisers.

Not only do they take the greatest possible care of the farm-manure, but they import manures from abroad. Bone-dust, guano, peat-ashes, rags, &c., all are got together, are utilised, and made to yield a profit.

Millions of dollars' worth of fertilisers are annually imported into the above-named countries.

Is it without necessity, think you, that these farmers expend such enormous sums? Experience has taught them that which science is teaching us: that animal production is

manure in the case of the fattening ox, sheep, and pig, is as follows:

NITROGEN STORED UP AND VOIDED FOR 100 CONSUMED.

	Stored up as increase.	Voided as solid excrement.	Voided as liquid excrement.	In total excrement.
Oxen	3.9	22.6	73.5	96.1
Sheep	4.3	16.7	79.0	95.7
Pigs	14.7	21.0	64.3	85.3

ASH CONSTITUENTS STORED UP AND VOIDED FOR 100 CONSUMED.

	Stored up as increase.	Voided in total excrements
Oxen	2.3	97.7
Sheep	3.8	96.2
Pigs	4.5	95.5

And these two, the ash and the nitrogen, are the most costly constituents of the food, and they contain the only valuable manure constituents: nitrogen, phosphoric acid, and potash. A. R. J. F.

(1) See Lawes' article p. 13 of this number. A. R. J. F.

incapable of repairing the losses caused by the production of vegetables.

If, as M. Marsan would say, to increase the head of cattle tends to increase the productions of the soil, and if the increase of the crops admits of the increasing of the number of cattle, and if this augmentation of products is synonymous with the constant improvement of the soil, is it not clear that the English, Flemish, and Danish farms would by this time, aided by their owners' immense investment in both cattle and cultivation, have acquired such a fund of fertility that they would be self-supporting?

For years and years the farmers of these three countries have much more than fulfilled the conditions exacted by Messrs. Marsan and Schmouth for the indefinite preservation and increase of the fertility of the soil, and yet they have not yet attained the result promised by these two savans.

I repeat what I have already said: to aim at repairing the depreciation caused to the soil by the severance of a crop by the products of the same soil, is to pursue an empty dream. It may be said perhaps that what is true of the above-named countries is not true of our country, and that our soils are so abundantly rich in mineral matters that the law of restitution need not be so rigorously observed here as there. M. Schmouth himself shall put an end to this delusion. It is he, not I, who shall sound the alarm-bell. Listen to his words (p. 71); they are singularly significant:

"The Canadian soil, from the time when it was won from the forest, and subjected to a course of cultivation, has gradually decreased in productiveness. Our family traditions teach us that at first the yield was most abundant, wheat yielding thirty for one, and barley, thirty-five for one. Even now, newly cleared land yields twice as much as our older soil.

"Such differences of yield are explained by the fact that newly cleared land contains vast riches, while long cultivated farms are almost if not entirely deprived of their fertility. On the former, the lapse of long years has caused a vast accumulation of remains of all sorts, which, by decomposition, has become a rich manure. Clearing the land has enabled the farmer to avail himself of the abundant deposit of agricultural wealth. Successive crops diminished the yield in a hardly perceptible manner, and thence the unfortunate conclusion was drawn, that the soil was inexhaustible.

"But, as time wore on, a decrease of the yield was perceptible, and they learned by a disastrous experience that the best land was not inexhaustible. It then became evident that the fertility of our soils had departed, that our national agriculture was verging on bankruptcy, that the reserve of fertilisers, which for ages upon ages had been accumulating, had been spent, and that the matters which the crops had extracted so completely from the soil must be restored to it.

"One only means had the farmers of repairing the imprudence of their predecessors, and that was, to enrich again the land which had lost its fertility. At the same time, they had to abandon their improvident practice, and cease to exhaust the rich soils they possessed."

With all my heart I applaud these remarkable words; but the remedy pointed out further on by M. Schmouth is insufficient.

"We must produce as much dung as possible, at the least expense," says he. "In order to satisfy the first of these conditions, we must keep as heavy a stock as the fertility of our land will admit of."

Thus, from the moment that you keep on your land as large a stock as you can feed well with the produce of your land, the first condition laid down by M. Schmouth is satisfied. He asks nothing more. I think I have fully shown that that is only the beginning of the reimbursement, and that the means indicated is insufficient. It is absolutely in-

dispensable that the losses suffered by the land through the crops and thorough the animals raised from the crops, should be supplied by imported manures. It is elsewhere than on the farm that the means of a complete restoration must be sought for, and the materials for that purpose must be sought for abroad.

The commencement of an improved system of cultivation demands that we cease to regard the soil as an inexhaustible mine. The farm which receives no other manure than that furnished by the consumption of its own products must gradually become worn out. The sole means of avoiding this degeneration consists in restoring to the land, by carefully selected *importations*, the elements of which it has been deprived by the *exportation* of its animal and vegetable productions. This is, as regards farming, "all the law and the prophets," and this restitution can be carried out, directly, by the purchase of manures, or, indirectly, by the purchase of food for stock. In both ways, the land will be benefited and enriched.

As far as one can judge from the writings and reports published up to the present time, this teaching does not appear to be the teaching of our schools of agriculture. On the contrary, we find in the teaching afforded there the theory of the amelioration of the soil by means of plants and the animals fed upon these plants, presented in every fashion, and prepared to suit the palates of every individual.

B. LIPPENS.

Rue d'Aiguillon, 11, Québec.

20th November, 1886.

(From the French.)

Canadian Pacific Wheat.

ITS PRODUCTIVENESS AND USEFULNESS.

Last winter, the Canadian-Pacific Railway exhibition car distributed some 65,000 small packages of wheat, each weighing exactly two and a quarter ounces, well filled, to different farmers in the Eastern and Lower Provinces, requesting them to sow the grains and watch the result. The average result has been, one peck of wheat harvested from the seed contained in each of these packages, or from 15 lbs. to 16 lbs., from 2½-ozs. of seed, thus proving that the change of the seed from the climate of the far west to the east, has been productive of the best results. It is considered probable that in the future, the wheat seed from the Canadian North-West will be the favorite seed for European countries. The fact of Canada carrying away the highest distinctions and medals for grain at the Antwerp exhibition, has created a large demand for samples of Canadian grain to be experimented upon in different European countries. Among others application has been made, by Il Commendatore Nuragha on behalf of the Italian Government, by Dr. Willmack, Professor of Botany at the Royal Agricultural College, Berlin, as well as by a society on behalf of King Oscar of Norway. Throughout there is a general desire to give Canadian wheat a trial, if not a preference, and it is fair to predict that the Canadian North-West will shortly become one of the greatest, if not the greatest, wheat supplying centres of the world.

Preston first-prize Arable Farm.

We give here the greater portion of Mr. Edwards' capital report in the current number of the Royal Agricultural Society's *Journal* :—

CLASS 1.—FIRST PRIZE, £50.

Mr. W. Gore Ashton, Roby Farm, Liverpool.	
Arable.....	160 acres.
Grass.....	6 "
Total	166

This farm, the property of the Earl of Derby, is hired from year to year, with no restrictions as to either cropping or sale of produce. Rent and tithe, £391.

The present tenant has occupied this farm for 36 years, and succeeded his father, so it may be presumed that there is a good understanding existing between owner and occupier. The system of farming adopted by Mr. Ashton sounds simple in the extreme; it consists of selling at Liverpool everything which the farm produces, and loading back with manure, *principally from stables using sawdust-bedding*, but also from cattle sheds and latrines. The only exceptions to the carrying out of this system to the letter being in the case of autumn aftermath, which is let to cattle salesmen for grazing purposes, and realises about £60 a year, and also the produce of six acres of permanent pasture used for the grazing of stock (1)

T. H. Hoskins, M. D., Editor, Newport, Vermont.

QUEBEC PAPERS, NO. 3.

LEAKAGE IN MANURE CELIARS?—Professor Henry Stewart, in the *Rural New Yorker* of October 2d, speaking, as he says, after thirty years experience, added to "the conclusions reached by a careful study of the science of manuring," asserts positively,—I take it,—that no liquid manure is wasted although dropped in a manure cellar dug "in the sandiest of sandy soils." He says it is all filtered and the manurial elements retained at the surface, within three inches. I am anxious to know what Sir J. B. Lawes and other authorities on such matters would say of such a theory? My study of the matter, from the reading of various authors, leads me to very different conclusions. The total droppings of a milch cow, I read, are composed of about 86 per cent. of water, and 96 per cent. of the whole manure is soluble in water. It has been shown, by actual weighings, that a cow of 1,000 pounds weight, fed on sixteen pounds of hay and thirty-five pounds of potatoes gave sixty-two pounds of manure. Allowing eight square yards, superficial measure, to each cow, the droppings through the winter should amount to as many cubic yards, or more, without any admixture of absorbents. Is it possible that such a mass,—96 per cent. soluble,—can be thus filtered and yet retained without loss after six months winter? Professor Stewart does not mention absorbents. It would be a different matter of course if enough absorbents were added. But then it would take fully twenty-eight pounds of dry straw to absorb the fifty-five pounds of liquid dropped in twenty-four hours! In order to save the liquid manure, my cellar was excavated dish shape and carefully covered with six inches of well beaten blue clay over the leaching sand. Who is right? I certainly would wish Professor Stewart to be, as it is no small matter to carry 86 per cent. of useless water from the cellar to the distant fields? ED. A. BARNARD.

REMARKS BY THE AGRICULTURAL EDITOR.—We might all, with Mr. Barnard, rejoice if Professor Stewart were correct in his belief that plant-food (manurial matter) in solution will not penetrate the soil, or be washed in deeper than a few inches. What a grand settlement this would be to the vexed and perplexing questions of sewage and soil pollution! And how deceived those farmers in Northern Vermont must be, who have been excavating beneath their father's old lean-to tie ups, six feet in depth (about as deep as a man can conveniently throw out the dirt), and still find manurial salts strongly impregnating the soil at the pit's bottom! They have spread this excavated earth upon their meadows, and have found its effect in promoting the growth of grass to be far

(1) So much for sawdust being injurious to the land! A. R. J. F.

greater than an equal bulk of the best stable manure. It is quite true that the color and odor will be removed from manure-water or urine by filtering it through a few inches of soil, not, however, clear sand, as Professor Stewart says, though even to the clearest silicious sand some of the constituents of the liquid will adhere, and so far, for a little while, be removed. But this soon ceases, and even when good loamy soil is used as a filtering medium, it shortly becomes charged to its full capacity, and the most putrid liquids will come through such an earth filter but little changed. We are greatly astonished that a man of Professor Stewart's experience and reputation should have written an article so full of transparent errors as the one in question. We are expecting to see Mr. Bliss, whom he was criticising, overwhelm him with the numerous and most positive citations of proof which he is so well able to marshal effectively. If we did not know how capable Mr. Bliss is of doing such work, and how he would enjoy doing it, we should, ourselves, have felt constrained to express, in the *Rural*, our strong dissent from the positions taken by the learned professor, whose article has so naturally attracted Mr. Barnard's attention and criticism.

Vermont Watchman.

The establishment of Experiment Stations in connection with, or under the direction of our agricultural colleges, is another work, important alike to every interest of both agriculture and horticulture, which the Government should not longer delay the commencement of. An excellent bill covering these wants was before Congress last year, which I think had the general endorsement of our agricultural colleges and societies. What can we do to help this measure along?

We need a more thorough research than has yet been possible into the conditions surrounding successful fruit culture in Russia, China and other inter-continental countries, whose severe climates correspond to our own interior climates, which, as we know, prove disastrous to nearly all varieties of fruit originating in countries under the influence of the sea. The fruits of Central Russia have endured the test of centuries of winters and summers, worse perhaps, than our country can parallel, and they are grown in great quantities in a latitude six hundred miles farther north than that of Quebec. And there almost under the Arctic Circle, has been building up through hundreds of bitter winters and arid summers a race of fruits, from which all weakness has been bred out, the fittest qualities only surviving. If these varieties are not all, or many of them, as good in quality as our modern tastes demand, they at least will furnish the foundation for new and harder races of fruits that will withstand the trying climatic vicissitudes covering half of this continent, under which our older varieties cannot be successfully grown. Is there any pomological question more important than this? We want to know more about Russian and Asiatic fruit culture. We want to know all about it that years of investigation, by a competent commission, can secure. This is certainly a work for the Government to undertake. The work has been nobly begun by the enterprise of two honored pomologists, whose labors can not be too highly commended; for Mr. Gibb and Prof. Budd have already given the country a service which entitles them to great honors. The Government should take up and complete their work.

But the most important subject to which we can call the attention of the Government is the work of forestry. This is the one grand question that overtops all other questions of public economy to-day. The rapid destruction of the vast forest areas of this continent has unbalanced the forces of nature. Our seasons have changed their temperate courses. Destructive floods are followed by consuming droughts. Our crops become more uncertain. Our climate becomes full of

extremes. The situation is one that challenges the attention of every thoughtful man, and that every year of timber waste makes worse. The forests of Europe, so far as saved at all, have been largely preserved and built up by the strong arm of the Government. And we must look to the State Governments and to the National Government for the saving and the upbuilding of our forest interests. What woodlands we have should be preserved by absolute force where the Government has the right, and by all encouraging legislation where it has no control. And by every possible measure, State and National, should forest planting be encouraged. There are very few if any of the states but what have passed the limit of safety in work of deforestation. I cannot here argue this question at length, but a single fact will illustrate the imminent necessity for action. This State of Ohio where we meet to-day, in 1853 had 54 per cent. of its surface covered with forest. In 1884, but 17 per cent. of the area remained in timber. Thus in a single generation two-thirds of all the forest in existence at the beginning of the period had been destroyed, and but one-sixth of the surface of the State is now protected by the garments with which God covered these hills and plains.

Do you wonder that the valley of the Ohio is almost annually desolated by inundation? That climates change, and always for the worse? That winters are harder, and summers hotter, and drouths more destructive? Do you wonder that there are no more sparkling brooks that run and sing all summer, but only muddy torrents, and the dried up beds of streams? The great conservative equalizing power of the forest is gone. The State of Ohio would seem to be making hasty strides towards the agricultural condition of Arabia. And Ohio stands for America. I quail before the inexorable penalties which nature has in store for all states and peoples who will ruthlessly destroy so glorious a heritage of forest as the American people once possessed. Without forest no successful agriculture is possible, and no high civilization can be maintained. It surely becomes the duty of every intelligent citizen to use all available influences through state and national legislation, and by the diffusion of light among the people, to save what remains of our American woodlands, and to grow new forests over the vast treeless plains where they are both an economic necessity, and an indispensable factor of a profitable agriculture.

T. H. HOSKINS.

HAY MAKING AND ALSIKE CLOVER.

The following letter from the venerable LEWIS F. ALLEN to the London Agricultural Gazette, under date of Buffalo, N. Y., Aug. 30, will be read with interest here:

I am much interested in the letter of the 16th instant from your correspondent "Waltham Abbey" in his account of hay-making the present summer. In comparison with him, I give you an account of my own hay harvest in the months of June and July past. I had a trifle less than 200 acres in hay-grass, composed of clean timothy, timothy and medium red clover,⁽¹⁾ and alsike clover mixed in various proportions to each other, laid down two to four years ago with winter rye, spring wheat and oats, and a seeding of about seventy-five acres spring seeding of 1885 with the same crops. Of course the last year's seeding was the largest growth in clover, these grasses overtopping the timothy, as the first year's growth of the latter is less rank than the succeeding one. The proportion of different seeds which I have adopted are as follows:—Six quarts of timothy, four quarts of medium red, and two quarts of alsike clover per acre. The smaller size of alsike seeds are equivalent in number to the double quantity of the red, giving an equal number of shoots with the other. They come into full bloom

(1) *Trifolium medium* is the genuine cow-grass. No seed of it could be had in Montreal last spring.

A. R. J. F.

at about the same time, when the timothy is just heading out, and when out together at that period make the finest quality of stock hay for cattle, horses, or sheep.

SUPERIORITY OF ALSIKE CLOVER.

Red clover in our American soils usually stays in the ground not much longer than two years. Its long tap roots penetrate the ground deeply, and in our severe winters, sometimes freezing two feet or more deep, are apt to be thrown out in the early spring and lie dead on the surface, thus destroying the expectant coming crop of hay. Alsike, on the contrary, throwing out its fibrous roots near the surface, are not drawn up by the frost, and retain life for so many years as to remain permanent. Such has been the several years' experience of those who have tried it in my own vicinity. I will here remark that the soil of my farm is a strong, naturally fertile clayey loam, much of which has yielded good crops of grain and grass for more than forty years without stable or other artificial manures, although they might have been the better for it, and to which I am now applying, by aid of the Kemp manure spreader, some 1,200 loads on the meadow grounds, at about twenty loads per acre. In feeding the mixed hay I find the stock invariably pull out from the mass the alsike in preference to the other varieties, its flavour probably being sweeter in taste than the others. Branching immediately from the surface of the ground, unlike the red variety, its shoots are finer and more delicate than the other. I have found, after two years' growth, and not being thrown out of the ground by winter frosts, that the red kind largely diminishes in quantity, and the alsike holds in place with the succession timothy, and makes a permanent crop for years. Yet it is not well to cut the second or after-crop of alsike, being better to be fed off, not severely or closely, by cattle—not by horses or sheep, as they gnaw it too closely to the ground; while the second or after-crop of red clover may be cut either for hay or seed, such being the only advantage which the latter may have over the alsike. (1)

THE COW FOR GENERAL PURPOSES.

Is there such an animal? I know that the champions of special breeds deny it—one going so far as to say that the claim that the same breed could be excellent for the production of both beef and milk was an "absurdity"; though why there may not be an animal of capacious frame, with vigorous digestive powers, which in season could convert abundant food into milk and butter, a generous yield, and when that season is past, assimilating that same liberal feed into flesh and fat upon that large frame, does not very plainly appear.

It recalls the scene in Shakespeare's *Henry IV*, where Hotspur says:

"And there the snog and silver Trent shall run
In a new channel, fair and evenly;
It shall not wind." * * *

and Glendower answers:

"Not wind? It must; it shall.
You see it *doth*."

I always thought the vapping Glendower had the best of that argument, and when the advocates of some Pharaonic breed assert it to be absurd to expect milk and beef from the same animals, the only fitting answer is: "But there are such."

I have one in mind, that took her twelve-hundred weight into a butcher shop seventeen years ago. She might have been a *Herd-Book Short-Horn* for all, anything in her appearance to the contrary, but probably was only a high grade. It was before public tests were customary, but when fresh in

milk she gave 24 to 28 quarts daily, making at least 10 pounds of butter weekly, besides all the milk used upon the table for two or three families—and that upon eight quarts of milk feed per day, and pasturage upon the suburban commons of an Ohio town, or what hay she could eat in winter; and after milking more than two years, she was still giving a good mess, after trying for six weeks to dry her off.

Such an animal is certainly better fitted to our needs—to produce, besides abundant milk, steers that will grow full size and fatten well, and heifers that will be like herself—than a beast of bony frame, whose steer calves will not fatten, and which will yield only a hide when her milking day is over. A brilliant eccentric once asserted, in excuse for his own oddity, that beings of symmetrical development were always mediocrities; but it will hardly be disputed, of man or animal, that well-balanced faculties and capacities are most universally useful.

QUERCUS ALBA. (1)

Country Gentleman.

Ploughing under Green Crops.

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

IN times like the present when almost everything connected with Agriculture is in a state of depression, a variety of remedies are sure to be put forward which at other times would attract little or no attention. In *The Agricultural Gazette* two totally opposite systems of farming have recently been ventilated, one that of cultivating arable land and consuming the whole products by stock; and the other that of cultivating arable land and keeping no stock at all. I propose to deal with the latter system, which was advocated some little time ago by Mr Blundell who is described in *The Gazette* as an experienced agriculturist, with the further advantage of residing in Hampshire a county famous for its breed of sheep.

A subject of this sort is just one of those that can be treated by science combined with practice. Mr Blundell advocates the ploughing under of green crops instead of feeding them. It must be admitted at once that a certain amount of the fertilizing ingredients of the food consumed by animals is absorbed and retained in their bodies; consequently a green crop ploughed in would contain more fertility than one that was fed. In the Woburn rotation experiments, red or white clover has been fed off by sheep both with, and without artificial foods, and on an average of eight years one acre fed without the addition of artificial manures gave an increase in live weight of 248½ lbs., and a second acre gave 250½ lbs., the mean of the two was therefore 249½. The sheep which received in addition 728 lbs. of cotton-cake gave 362 lbs. of live weight per acre. According to our experiments two thirds of the increase of fattening sheep consists of carcass, we have therefore in the first case 166 lbs. of carcass obtained by feeding one acre of clover, this amount at 9d. per lb. would be worth £6. 4s. 6d. The sheep which in addition received the cake would produce 76 lb more carcass, worth at the same price an additional £2. 17s. and the increase obtained by the cake would about pay for its cost, leaving the manure gratis.

The amount of manure ingredients removed in the 249 lbs. of increase of animal is extremely small, probably the sheep passed through their stomachs in the clover from 100 lbs. to 150 lbs. of nitrogen, and retained 5 lbs. (2) The manure from the cake would add about 40 lbs. of nitrogen to the land, which would thus be obtained without cost. The sheep were shorn while in the field, but I have not got the particulars, nor have I made any charge for attendance, or interest of

(1) I should like to know *Quercus Alba*, personally. A. R. J. F.

(2) I commend this sentence to M. Lippens' attention.

A. R. J. F.

(1) Is the long tap-root of the red clover of no use? A. R. J. F.

capital, or value of the wool; but after making allowance for all such items, it is evident that wherever there is a demand for meat, it is much more profitable to feed green crops with stock than to plow them under. (1) A sale of meat to the amount of £5 or £6 per acre would go a long way towards paying the cost of cultivation, instead of throwing the whole of this cost upon the succeeding crop of corn which must be done when the green crop is ploughed in.

In districts of the United States where there is little or no demand for meat, I have often advocated the ploughing under of such green crops as peas, and clover, as being a much cheaper method of fertilizing the soil than can be effected by the application of nitrogenous manures. In this country on the other hand the cultivation of arable land without stock, and fertilizing the soil by ploughing under green crops, as also the continuous growth of corn crops by means of purchased manures appear to be processes which can hardly be supported by practical science.

BREEDS OF SHEEP.

What are the differences and characteristics of the Down sheep? Are they all from the old South-Down sheep? Which breed is best for all purposes combined in one flock—mutton, early lambs, wool, to sell as breeding stock, to be kept in yards on meadows with movable fences? M. A. D. Lawrence, Mass.

[Answer by JAMES WOOD, Westchester County.]

The Down breeds are all descended, in greater or less purity, from the sheep that have occupied the chalk hills in the southeastern portion of England from the times of the earliest mention of sheep in that country. Those occupying the country south of London received the name of South-Downs from the hills they grazed upon. This is the oldest and the purest of the Down breeds, and the smallest in size. Westward, the chalk hills run into Wiltshire, Hampshire, and Dorset, with a deeper and more productive soil. Here, with better feed, the Down sheep attained larger size. But they also had a mixture with a large, strong native breed called the "Notts," and thus the Hampshires were produced. They are South-Downs increased in size, made coarser and stronger, with earlier development and quicker maturity.

In Oxfordshire, where the land is very productive and furnishes heavy crops for fattening sheep, the farmers were long in the practice of buying Hampshire ewes from the adjoining counties on the south, upon which they crossed Cotswold rams from Gloucestershire on the west. The result of this cross was the Oxfordshire-Down. This is the largest of the Down breeds, and clearly shows its parentage. (2)

In the western-central portion of England is the county of Salop. Upon its extensive Morfe common was a native breed of sheep of great vigor. These sheep were improved by infusing Leicester, South-Down and Cotswold blood, in what proportions it is impossible to say. Thus the Shropshires were produced.

All these breeds are very valuable. The South-Downs are beautifully symmetrical, and give flesh of the highest quality. The Hampshires will stand either poverty or affluence, and give excellent flesh. The Oxfords are grand animals in size and attractiveness, and respond well to the highest feeding. The Shropshires are good, practical, every-day sheep, and are deservedly popular in their native district. They and the Hampshires are extending over additional territory at the expense of the other breeds. From present indications it would appear that three breeds of sheep are likely to occupy nearly

all England—the Border Leicesters in the north, the Shropshires in the middle, and the Hampshires in the southern portion.

M. A. D.'s inquiry as to which is the best breed, is one that cannot be answered positively. Only opinions can be given in reply. Opinions as to the best are as numerous as the breeds themselves, for each has its admirers, or, of course, it would cease to exist. Where there is sufficient food and good care, the Oxfords will give the heaviest carcasses and the most wool. The flesh is the coarsest and the wool the longest of the class. The Shropshires' wool comes next in coarseness and length. The flesh is something better. Its ewes are prolific; it is a good all-purpose sheep. The remaining two breeds have neither Cotswold nor Leicester blood, and give the best flesh of the class. The Hampshire is scarcely equal to the South-Down in this respect. The Hampshires are remarkable for strong, vigorous lambs, quickly ready for the butcher. Their wool is shorter and closer than the Oxfords and Shrops. They are more uniform in type than either of these. They and the Shrops, are remarkably free from disease. (1)

The South-Downs are the gentleman's breed. Where quality is the chief object, they are unrivalled. They have so long received such skilful care that in other hands their excellence cannot be maintained, either in this country or in England. Their wool is the shortest and closest of the four breeds.

All the Down breeds stand close-folding very well. Perhaps the Oxfords are superior in this respect.

Country Gentleman.

—CABBAGES FOR COWS.—Mr. J. Chapman says:—My cows have lately had a quantity of cabbage on the grass. Might I ask you if they would give the butter the very strong taste it now has? and, if so, is there anything I can use to take out the taste? The cows have had some oats—what they would eat.

We had better give you the full answer to this question, including cabbages and all other foods likely to affect the quality of milk, which appears in "The Dairy of the Farm" (Bradbury's Handbook series), here somewhat abridged:—The taste of milk is affected by the food of the cows. It occurs in the milk of cows at pasture, sometimes when the buttercup is in full bloom, or when wild garlic has been eaten. It is, however, a more general difficulty during winter time, when cows receive turnips, cabbages, and mangold wurzel. In all cases, the best method is to attempt by heat to dissipate the aroma. This is to some extent possible by cooking the food to which the taste is owing: a mess of steamed turnips and bean-meal, and oat-meal and linseed will produce perfectly sweet milk. But if after milking, it be found to possess the disagreeable taste, then if it be placed in hot water and allowed to steam for half an hour or so before placing it in the vessels in the dairy, the taste and smell will in great measure leave it. The following are among the devices our correspondents have adopted for the more thorough expulsion of the taste:—No. 2 says: Do not feed your cows with turnips until they have been previously milked, by which means the animal has twelve hours to get rid of the flavour of the vegetable. (2) Good hay must also be given in sufficient quantity. Great cleanliness must be maintained, not only in the dairy, but in the cow-house. No stale pieces of turnip should on any account be allowed to remain in the manger, which should be cleaned out before feeding.—No. 4 recommends that as

(1) I have the honour to agree with Sir John Lawes in the most emphatic style.

A. R. J. F.

(2) Following of course the true rule of crossing: the dam should be the harder of the two.

A. R. J. F.

(1) Barring the foot-rot.

A. R. J. F.

(2) I prefer giving the roots after the evening's milking. This in most cases, would give 14 hours for the digestion to carry off the turnip-taste. Mangels leave no bad flavour.

A. R. J. F.

soon as the milk is brought into the dairy (warm from the cow), there should be poured into it half a pint of boiling water to every gallon of milk; cover it over with a cloth four times doubled for half an hour; then strain and pour it into milk dishes to stand for cream. The cloth will absorb the steam, and entirely remove any unpleasant taste.—No. 6 says: My butter is made from the milk of cows fed, morning and evening, on swedes; the only precaution adopted is that the cream, before being placed in the churn, should stand in a room with a fire, and raised to a temperature of 65° F.—No. 10 recommends the preventive system—it is better than the curative. If cows eat old and decayed grass in the meadows you cannot have good butter; if they get at strong-scented herbs the butter will partake of the smell; if the cream is mismanaged before and during churning, you must not expect pleasant butter; if your cows are too stale milked, the butter will be rancid. If cleanliness and attention to the diet were looked to, cases of failure will be very rare.—The following also is an extract from another chapter in the book:—Cabbages of various sorts, open and hearted, early and late, are liked by cows, and may be made to yield a succession of food from May all through summer, and on till the end of the year. (1) Land yielding successive crops of cabbages may be made to yield an enormous amount of food—even 40 or 50 tons per acre during the season. Not more than half a cwt. a day, supplemented with more substantial food, should be given to a cow; and care should be taken to remove any spoiled portions of the food, which, if consumed, would greatly aggravate the disagreeable flavour which, under the most careful management, they are apt to give to the milk. E. A. B.

British Dairy Farmers' Association.

THE PRESIDENT'S PRIZE FOR THE BEST HERD OF DAIRY COWS.

The following is the report of the judges and their award:— In compliance with the instructions received, we visited the competing herds in the following order:—

- Mr. Neild, Fernhurst, Haslemere, on July 15th.
- " Hobbs, Bampton, Farringdon, " " 16th.
- " King, Elm Farm, Chewton, " " 17th.
- Keyusham, Bristol, " " 17th.

Here we had to discontinue our work, owing to the illness of one of our colleagues. We met again at Kendal on August 26th, and visited

- Mr. Mason, Water Crook, Kendal, on August 26th.
- " Hothersall, Lightfoot, Broughton, Preston " " 27th.
- " Parton, Chorlton, Nantwich " " 27th.
- " Chester, Broomhall, Nantwich " " 28th.
- Mr. Nunnerley, Dearnford Eall Farm, Whitechurch, Salop " " 28th.
- " Vale, Breadsall, Derby " " 29th.
- " Evans, Burton, near Lincoln " " 31st.

In addition to inspecting the herds, we weighed the milk from each cow, and sent a sample of the mixed milk from each herd to Mr. Lloyd for analysis.

On a consideration of the various points on which the award depends, viz., best selection of cows, best milkers, best average of milk per cow, greatest weight of milk given by entire herd on day of judging, least number of acres per dairy cow, greatest number of cows, greatest total of solids in mixed milk of herd, greatest percentage of fat in mixed milk of herd, the total number of points comes out as follows:—Hothersall, 6; Vale, 1; Chester, 1½; Nunnerly, 1½; Mason, ½; and Parton, 1.

It will be seen that Mr. Hothersall, of Lightfoot House, Broughton, Preston, heads the list with a large majority, and we therefore award the prize to him. As Mr. Hothersall ob-

tained the first prize for the best dairy farm under 100 acres, given last year by the Royal Agricultural Society of England at their Preston meeting, it is unnecessary to allude here to the management of the farm, it having been so recently described in all the agricultural papers. Suffice it to say, that when he took the farm nine years ago, he found it would only milk 18 cows, and now on the same quantity of land we found 54 cows, though he only had 48 at the time he entered for the competition.

THE FOLLOWING IS A TABLE SHOWING THE RESULTS OBTAINED UNDER THE VARIOUS HEADS BY EACH HERD:—

Name.	Date	Acres.	No. of Dairy Cows entered.	Average of Acres in per Cow	No. of Cows in Milk.	Total weight of Milk on day when weighed.	Composition of Milk.				
							Total Solids.	Water.	Fat.	Casein and Milk Sugar.	Mineral Matter.
F. Neild.....	July 15th	547	27	20.26	25	690	12.56	87.44	3.28	8.60	0.68
O. Hobbs.....	July 16th	438	41	10.68	31	982½	12.46	87.54	3.38	8.39	0.69
G. F. King.....	July 17th	191	39	4.89	30	712½	12.31	87.69	2.95	8.64	0.72
E. Mason.....	Aug. 26th	80	32	2.50	24	490	12.66	87.34	3.52	8.37	0.77
E. G. Hothersall.....	Aug. 27th	81	48	1.68	41	1,232	13.39	86.61	4.02	8.68	0.69
T. Parton.....	Aug. 27th	166	61	2.72	60	1,139	12.39	87.61	3.82	7.84	0.73
P. H. Chester.....	Aug. 28th	240	54	4.44	37	927	12.94	87.06	3.37	8.36	0.71
W. Nunnerly.....	Aug. 28th	187	46	4.06	45	1,142½	13.16	86.84	4.06	8.36	0.74
E. Vale.....	Aug. 29th	124	50	2.48	36	997	13.25	86.75	3.96	8.51	0.78
J. Evans.....	Aug. 31st	933	25	37.32	6	139½	14.68	85.32	5.09	8.90	0.69

Mr. Evans' herd gave by far the greatest quantity of solids, together with the greatest quantity of fat in the milk—viz., 14.68 solids, of which 5.09 was fat, an extraordinary result, but at the time of our visit only six cows were in milk. Mr. Evans, who is farming 933 acres, has only recently turned his attention to dairying, and we were pleased to find so useful a foundation for a herd. We also found that Mr. Evans was the only competitor who weighed the milk from each cow morning and evening, and kept a record of the result. This is a move in the right direction, and one which will prove of immense value to him hereafter.

Upon all the farms a certain amount of purchased food was given to each animal in milk during the summer, but with regard to the feeding of the cows, the general system of the

(1) In England, of course, not here.

management of the best herds, and the utilisation of the milk, we shall hope to report more fully in the Society's journal.

We must not omit to notice an extraordinary case of successful thrift, and that too, so far as we were enabled to judge, by no means niggardly thrift. Mr. Mason, who is now only about 43 years of age, left home as a boy with 4s. 6d. (1) in his pocket. He arrived at Kendal with 7½d., and as a farm labourer, he saved in time sufficient money to purchase two cows, and has ever since continued to improve his position, notwithstanding the depressed condition of agriculture during the last ten years. He has now felt himself in a position to compete for this prize, paying the entrance fee and the fare of the judges from London to Kendal. He is farming 80 acres, and has 32 cows upon them; his rent, including tithes, &c., averages about £3 10s per acre. The management of the farm, and the selection of his cows, does him very great credit.

E. C. TISDALL.
J. WILLIAMS BELL.
ALGERNON FAWKES.

English Agricultural returns.
COMPARISONS FOR YEARS 1884-5.

Taking the figures for the whole of the United Kingdom, including the Isle of Man and the Channel Islands, it will be observed that there is an increase over the returns of last year of 54,000 acres as regards the total cultivated area. Corn crops have a less acreage, while green crops have a larger one. There is an important extension in rotation grasses due to large additions in each division of the United Kingdom, but permanent pasture, for the first time since 1870, has diminished in area by about 51,000 acres owing to the decreased acreage under this head returned for Ireland.

Cattle and sheep have again increased considerably in number, but in pigs there is a further decline both in Great Britain and Ireland.

The following table shows a comparison of the figures for the United Kingdom, including the Isle of Man and the Channel Islands, between the years 1884 and 1885.—

ACREAGE.	1885.	1884.	1885 compared with 1884.	
			Increase.	Decrease.
Total cultivated area ...	Acres 47,895,770	Acres 47,840,977	Acres 54,793	Acres. —
Total of permanent pasture	25,616,071	25,667,209	—	51,135
Total of arable land ...	22,279,699	22,173,771	105,928	—
Corn crops ...	10,014,625	10,113,264	—	98,639
Green crops ...	4,765,195	4,733,860	31,335	—
Clover, &c, under rotation	6,738,206	6,392,402	345,804	—
Flax ...	110,639	91,444	19,195	—
Hops ...	71,327	69,259	2,068	—
Bare fallow ...	579,707	773,512	— (2)	193,835
LIVE STOCK.	No.	No.	No.	No.
Horses ...	1,909,200	1,904,515	4,685	—
Cattle... ..	10,868,760	10,422,762	445,998	—
Sheep	30,086,200	29,376,787	709,413	—
Pigs	3,686,028	3,906,205	— (3)	219,577
Turkeys	1,288,174	1,210,343	77,831	—
Geese... ..	3,029,137	2,783,237	245,900	—
Ducks	6,080,325	5,006,711	73,614	—
Fowls	20,542,564	19,943,958	598,606	—

(1) Come! It is invariably half-a-crown that these lads start with

(2) A most important decrease.

(3) A most important increase, showing that the *rol* has disappeared.

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

Sugar beet.—The extended acreage of sugar beet mentioned in last year's report as having been returned in Suffolk, does not appear to have been continued. It appears that the average yield per acre of all countries for the years embraced in the table is rather over 217 cwt. The rate of produce of sugar per owt. of beet root used being for Austro-Hungary and Germany—the only countries for which this information is available—taken together, about 10½ lbs., (9 per 100 lbs.) while the total quantity of sugar produced per acre averages nearly a ton.

The average value of sugar produced from an acre of beet (at import value, in 1884, viz., 14s. 2d. per owt) appears to be about £14 sterling.

Cultivation of No Use.

A. P. Paine of East Bethel, Vt., says in the *Mirror and Farmer* :

I have read a good deal by different authors of the benefit of stirring the soil, but in my own case could never realize any benefit except to kill weeds or to prepare land for crops. I have left several rows of corn in a cornfield, a section by itself, without hoeing or cultivating, and could see no difference in the yield of such sections and other parts of the field. Have talked with experienced farmers in this part of the town (Randolph), and all seem to agree in the same experience as mine. Would like to hear from others, to know how to obtain benefit from such practice of stirring the soil, if there is a difference in localities as to amount of benefit derived, &c. Also would like to have you enumerate and explain the scientific principles involved in stirring the soil which induces fertility, and explain, if consistent, why some soils may not be affected thereby.

Haven't any of our readers a different experience?

Cheap roof for Sheep-shed.

Principals placed 13 or 14 ft. apart, with light purlins, 4 in. by 3½ in., about 4 ft. 6 in. to 5 ft. apart. The covering material consists of rough ½ in. deal boards, 9 in. wide, which are placed vertically, but do not actually touch. About ½ in. openings are left; about ¼ in. from the edge of the board is a groove ¼ in. deep. The boards are nailed to the purlins, but prevented from actual contact by the presence of three clout nails which carry the boards about ¼ in. above the purlins, and thus any moisture which forms on the under side of the boards can run down without injuring the purlin. It is quite remarkable how little rain, even when driven by wind, penetrates: much less than if the boards were in actual contact. The groove also catches some moisture, and the globules of water run down the open space without breaking. The origin of this very cheap roof was a discovery made by a brick-burner in Nottingham, that shelter boards placed round the kiln protected best when not touching each other, and, requiring a shed in which the men could work in hot weather, he covered the roof with rough boards placed close but not touching. This shed was erected 22 years since, and, without any repairs, is doing duty still, and appears to have many more years service.

NON-OFFICIAL PART.

A NEW WONDER

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