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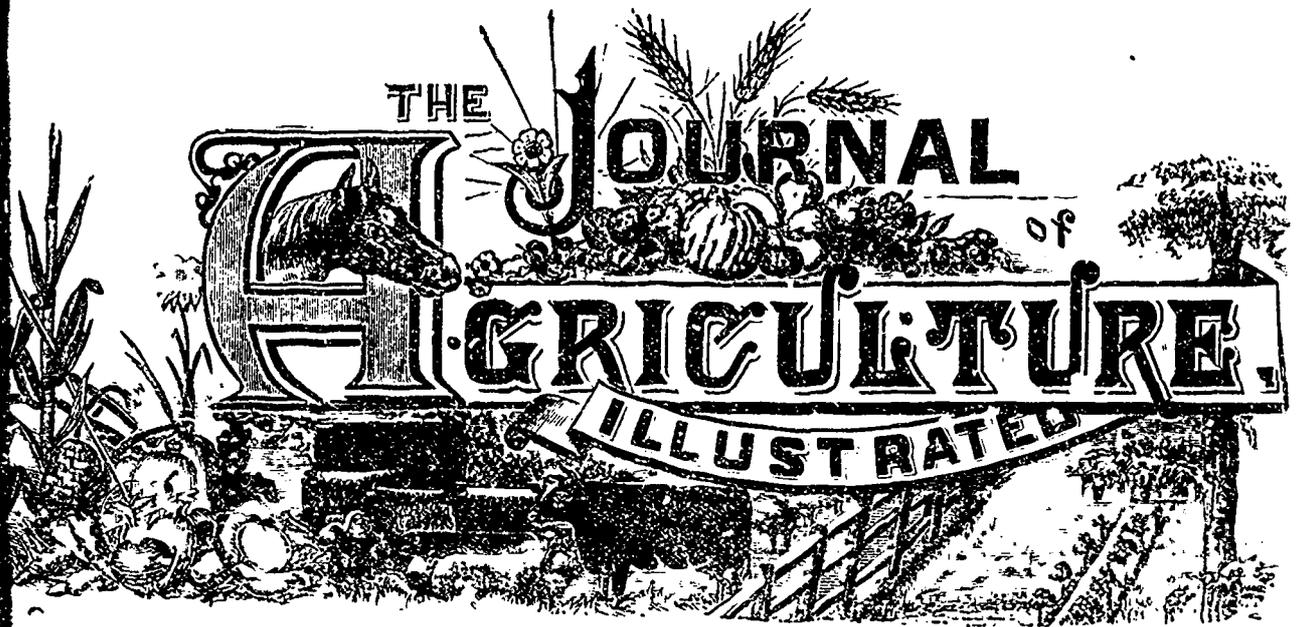
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OFFICIAL PART.

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DE OMNIBUS REBUS.

Upper Lachine, Dec. 5th, 1888.

Pork.—The cry for a more delicate description of pork—more delicate, that is, than the bladders of lard we have been treated to for some forty years—still increases in loudness and volubility. In England, our chief market, curers of the higher orders of bacon positively refuse to buy the over-fat hogs that too many people seem so fond of producing, and if we are not a little more attentive to the demands of the consumers, we shall soon find ourselves left in the lurch, as Denmark, Holland, and Germany, are straining every nerve, and with a considerable amount of success, to occupy a prominent place in the English market, to which end they are importing the very best blood to be found, and creating factories on the best approved principles.

The hog sought after by the English curers as the most valuable when converted into bacon, is a castrated male or spayed female weighing about 200 lbs., and from 6 to 8

months old; in form long rather than *chunky*, with plenty of lean meat along the sides, and with hams coming well down to the hocks. Thoroughbred Berkshire or Yorkshire boars crossed with the ordinary sow of this country, would give about the right stamp of hog. The show-system should be altered so that no prizes be given for overfed and unsuitable animals, a practical curer being always one of the judges, and specimens of pigs suitable and unsuitable to the trade should be exhibited in a dressed state.

As to food for hogs, that will of course depend upon the *locale*: where corn is cheap, and other grain dear, pigs must still be fed upon corn, and sold at inferior prices; but two or three bushels of pease towards the end of the season will make a wonderful difference in the quality of the meat. Oats, except for nursing-sows, are an extravagance.

Professor Hunt, of the Illinois College Farm, who has been feeding hogs experimentally, says that it requires 4½ lbs. of shelled corn, and 4½ lbs. of corn meal to make 1 lb. of pork. or, in other words, 1 bushel of dry shelled corn will produce 14½ lbs. of pork, and 1 bushel of corn ground into meal and fed dry, will produce 12½ lbs.

Corn fed pigs, the professor says, made about 4½ lbs. a week—about half what a well managed, well-bred pig ought to do. For hogs, as well as for all other domestic animals, a mixed ration is the best.

Dorset-horn sheep.—A correspondent asks if the Dorsets are prolific. I should rather think they were! At Dorchester fair, Oct. 25, the great autumn fête of these sheep, a pen of ewes was sold "which lambed down in December 1887, fattened their lambs, and were now sold with their second crop of lambs at 64s. a couple" (i. e. lamb and dam). "and were two months gone again in lamb. On October 25th, 1887, a pen

of Dorset Horn ewes were sold which lambed in November, the greater part had twins, and their second crop of lambs were sold fat in Dorchester Market in August last. One ewe in particular lambed on the 26th October, 1887, twins, which were sold fat at 34s. each; she afterwards produced a second crop of three lambs, which were sold in August 1888, in Dorchester Market at 22s. 6d., the ewe then being worth 50s. to the butcher, making a total of £9 6s. 6d. in ten months."

Métis crops.—I regret very much to find that my prophecies of a *diselette* at Petit Métis and its neighbourhood have been justified by the results of the harvest. I hear from Mr. McGeoghan, secretary-treasurer of the school-commissioners of the place, and a large and intelligent farmer, that the wheat was frozen before it was ripe, the potatoes, though free, as usual, from disease, never ripened at all, and are, in consequence, shrivelled and unsaleable. This is a serious loss to the farmers of the district, as they have been in the habit of sending several schooner-loads of potatoes to the Quebec and Montreal markets every year. The cattle, too, owing to the dearth of pasture, have gone into winter-quarters a month earlier than usual, and of course in very inferior condition, which will not be improved by the bad quality of the hay, which suffered greatly from the persistent rains of the past autumn. And the losses will not end here; for the cows will necessarily come out to grass next June in bad condition, and instead of producing at once the normal quantity of milk, they will take half the summer to put a little flesh on their bones.

Importations of stock into the U. S.—I was surprised to see in a statistical return that the number of stock imported into the States during the present year was only 626! This must exclude the importations of sheep and horses, one would think.

Fire at Guelph.—The noble barn and stables recently erected at Guelph for the Agricultural College of Ontario, at an outlay of \$25,000, have been destroyed by fire—supposed to have been the work of an incendiary! Fortunately, all the stock was saved, and I hear that, as they have no shelter for them, the whole of the animals, except a few of the choicest males, will shortly be offered for sale by public auction.

Price of roots in England.—The appreciation of roots in England may be judged of by the following report of the market held at Stratford, Essex: Swedes, 22s. a ton gross = \$5 per 2,000 lbs.; mangels \$4.60, do. *Meadow* hay sold for \$19 a ton, and *clover* hay for \$30! a difference of \$11 a ton; which shows that the clover must be very different from the rough stuff brought to market in Montreal. If we ever have an Agricultural College in the province of Quebec, I should like some one who has seen clover-hay made in the neighbourhood of London to try his hand at putting up a stack of it here. I say a *stack*, because, carried as green as we carry it in England, it would probably burn a barn down. (1)

Failure of grass-seeds.—Mr. Tuck, Messrs. Dawes' foreman, tells me that he has been obliged to resow the whole of the season's grass seeds over again, the drought of the early summer having caused the entire failure of the May sowing. Do we not, as a rule, fear covering our seeds too much? Half an inch would not hurt them. On the other hand, I have always had an idea that the practice of attaching the grass-seed box behind the broadcast machines so much used at present might endanger the success of the seeding by bury-

ing the clovers, &c., too deeply. I should sow the grain first, harrow it well to a finish, then go over the land with the seed-box at work, but the grubber-teeth fastened up, and finish off with a chain- or bush-harrow.

Shorthorns—Shorthorns are looking up again. At the dispersion sale of the Hilldale herd on Nov. 21st, 22nd, ten representatives of the Duchess family sold for an average of \$2,500 a piece; one bull fetched \$3,000, and 8th Duchess of Hilldale, \$6,600. The average of the 75 animals, young and old, was \$560.60; total = \$42,045.

Potato-crop in the States.—I really thought, when I was speaking last month of the average yield of potatoes in the United States, that there must be some error in the statistical returns. But they were correct enough, as is shown by a more detailed account of the crop which I have since received. "Potatoes," it says, "are the best and largest crop ever known with but a single exception. Three poor years have been succeeded by a fairly good season, and the yield per acre is large enough to show that neither the crop, the seed, nor the soil, is running out in this country, as some have contended. The crop of 1888 is believed to be about 196,000,000 bushels, or 79 bushels an acre on 2,460,000 acres, the average yield for the past eight years being 160,828,000 bushels." Taking this latter sum to represent the yield of the 2,460,000 acres during the eight past years, we have an average of 65 bushels of tubers to the acre, which reduced to gross tons is equivalent to 1½ ton per acre, equal, at 30c a bushel on the spot, to \$19.50. Now the cost of manure, rent or interest of capital, labour, &c., on an acre of potatoes cannot, in the States, amount to less than :

2 ploughings.....	\$5 00
Harrowings, drilling up, planting, &c.....	4 00
Seed.....	3 00
Horse- and hand-hoeing.....	2 00
20 pair-horse loads of dung.....	20 00
Harvesting.....	2 00
	\$36 00

leaving a loss of \$16.50 an acre to be recovered from the succeeding crops of the rotation. What does it mean? Nothing less than 160 bushels of potatoes to the acre are fit to be called a crop, and here we have the average of land in an extensive country not bearing half as much! And yet the *Rural New Yorker* makes a bet that it can grow 700 bushels an acre, and nearly wins its wager! I say again, I cannot understand it!

Root-crops in England.—It has long been the custom of Messrs. Proctor & Co., of Bristol, England, manufacturers of artificial manures, to give prizes every year for the best crops of roots grown with their manures only, that is, without the addition of any farmyard manure or other assistant fertilizer. As the general run of the farmers of the province not only never use any artificial, but do not believe in their utility—and I speak of the British—as well as of the French-descended farmers,—I think it is worth while to republish the list of prizes; and the statement of the crops that were victorious in the contest, as I find them in the Gloucester Chronicle of the 17th November, 1888, the past half-year.

H. AND T. PROCTOR'S ROOT CROP PRIZES.—The prizes given by Messrs. H. and T. Proctor, Catnay, Bristol, for the best crops of swedes and mangolds grown *with their manure only*, have been awarded by Mr. R. W. Lync, Barton, Marlborough, who acted as Judge, to the following competitors, the figures at the end of each paragraph denoting the average

(1) Mr. Deming will see that I am incorrigible. A. R. J. F.

weight per acre of five statute acres.—Fifteen guineas (or plate of like value) for the best crop of five acres of swedes, grown with their prepared manure only, upon any farm within the counties of Hereford, Monmouth, Gloucester, Surrey, Berks, Wilts, Hants, Dorset, Devon, Somerset, Brecknock, Radnor, Glamorgan, Carmarthen, and Pembroke, to Mr. J. Gare, Wales Farm, Queen Camel, Bath; 32 tons 16 cwt. Ten guineas (or plate of like value) for the second best crop, to Mr. R. T. Griffiths, The Hill, Eyton, Locominster; 26 tons 1 cwt. 1 qr. 4 lbs. Five guineas (or plate of like value) for the third best crop, to Mr. W. Rugman, Marlwood Farm, Thornbury, Gloucester; 23 tons 17 cwt. 3 qrs. 12 lbs. Ten guineas (or plate of like value) for the best crop of five acres of swedes, grown with their prepared manure only, upon any farm in England or Wales, to Mr. W. Roberts, Ripperston, Little Avon, Haverfordwest; 39 tons.—Fifteen guineas (or plate of like value) for the best crop of two acres of mangold wurtzel, grown with their prepared manure only, upon any farm in England or Wales, to Mr. E. C. Harding, Abbey Farm, Montacute, Somerset; 51 tons 5 cwt. 3 qrs. 4 lbs. Ten guineas (or plate of like value) for the second best crop, to Mr. D. R. Brake, Houndstone, Ycovil; 46 tons 4 cwt. Five guineas (or plate of like value) for the third best crop, to Mr. T. S. Corpe, Preston, Ycovil; 45 tons 6 cwt. 3 qrs. 20 lbs.

As we generally, here, calculate our root crops by the bushel, I may state that a bushel of turnips, or rather of swedes, weighs about 42 or 43 lbs.; so, the best crops of swedes would equal about 1,700 bushels an acre; and as to mangels, a difficult root to measure, I suppose Mr. Harding's crop of 51 tons 5 cwt. 3 qrs. 4 lbs. would be equal to 2,500 bushels an acre.

Now it must be remembered that in the case of these and other artificial manures, all the labour and expense of centing and spreading bulky matter are obviated; no drilling up of the land and splitting the drills to cover in the manure are required; but, when once the land is clean and sufficiently pulverised, the half-dozen bushels of manure are sown broadcast by hand, the harrows work it in, and the seed is sown in rows by the large three-row drill, the roller finishing the job.

And what may the cost per acre be? Nay, I should ask, what may the cost per bushel of the crop be? The cost of the manure as a general thing would be, at the most, £10 or \$50 a ton and 5 cwt. an acre would be, a very large dressing. Now, taking the swede-crop of 1,700 and \$12.10 as the cost of the fertiliser per acre, it is clear that each bushel would cost for manure rather less than $\frac{7}{10}$ of a cent! The mangels would cost still less, about half-a-cent a bushel! Really, these things are worth attending to.

Linseed.—The English Agricultural Gazette is one of the most conservative of papers, and yet it is compelled to confess that:

“As a substitute for the linseed cake it might be worth while trying the linseed itself if you have the power to grind it. The seed is usually worth more in proportion to its price for feeding purposes than the cake itself at ordinary market quotations. The oil in linseed is more assimilable in fattening than any other, so that you cannot very well leave it out of a ration altogether.—P. M.”

The real reasons why English farmers in general prefer oil-cake to any other form of cattle- and sheep-food are, 1. that it has been in use for about a hundred years; 2. that it is handy to carry a-field to the sheep and out-lying cattle and 3. as Sam. Jonas told me: Why, if I, with my 250 bullocks and 2,000 or 3,000 sheep, all fattening, were to use your mixture of bean-meal and crushed linseed, my shepherds and stook-men would steal half of it for their pigs!

Salt for stock.—Is salt necessary for farm-stock in general? The usual argument in favour of salting cattle is that, as men cannot do without it, neither can our domestic animals. In England, where the air is full of salt from the surrounding sea, very little is supplied to horned cattle, though a lump of rock-salt is often to be seen in a little covered hut—about 2 feet square—in the fold when sheep are feeding off rape or turnips. At any rate the human argument is worth nothing, for the Maori, of New Zealand, and the Guachi, of South-America, never touch salt. I do not quote *Friday*, as being on my side, though my readers may remember Crusoe's eloquent description of his prisoner's horror at the first taste of the condiment.

A MONTREAL contemporary comments upon “the poor, craggy three and four-year-old steers and heifers” which have lately been put on board steamers there for British ports. It is stated that a great many of the cattle recently exported have been valued at 3½c. per lb., and would not be used by the best Canadian butchers, “and (we read) consequently they must be bought for store purposes on the other side.” It is alleged that the reason of these poor grades being exported, instead of the choice fat cattle shipped in former years, is that Canada had not her usual quota of fat stock this year, and in order to fill space, lean store cattle are being exported. Some of the leading Canadian butchers regard this as a sign of a scarcity of good fat cattle during the coming winter, and this appears to be the general opinion. One incentive which induced breeders to part with their store cattle last winter was the unremunerative prices of fat cattle. Some authorities, however, maintain that the losses all fell upon shippers, not upon the breeders; but, be that as it may, the fact remains that Canada is exporting to Great Britain a larger proportion of poor cattle than usual. It is stated, moreover, that “late sales in the British markets have been very unsatisfactory to shippers.”

I see by the Montreal market reports of yesterday, December 6th, that many *leanish* cattle were sold at less than 1½ cents a pound, live-weight. Of course, this cheapness is owing to the want of fodder, but if any one has, like my friend Séraphin Guévremont, five or six acres of good swedes and mangels, he might make a good thing out of buying a dozen so of these low-priced beasts. I remember Mr. Warnes, from whom I learned a good deal about feeding cattle, used always to pick up as many *leanish* bullocks as he could find—he knew the value of them as well as any dealer—and he always said that, although they took longer about it, they paid him better than those originally in first rate condition. After all, it is a question of *price* and *judgment*, and I should not recommend a farmer of limited experience in fattening stock to try the experiment.

Pace of churning.—Those farmers' wives and daughters who contended for the prizes for butter-making at the Dairy-men's meeting at Islington, seem to have varied very much as to their pace in turning the churn. In the contest for the championship, the first prize was awarded to Miss Fanny Holmes, of Ashlyns Hall, Berkhamstead, with Miss Keel, Bristol, second, and Mrs. Holmes, third, the other three competitors gaining a *vhc.* Miss Holmes was able to get her supply of cream cooled down to 56 deg. Fah, and commenced churning at eighty strokes per minute and afterwards at seventy. Butter came in thirty minutes in a beautifully granulated condition, and was shown round to the onlookers. Mrs. Holmes churned at the same rate as her daughter, while Miss Keel began more slowly but afterwards increased. Mr. Walker, the winner in the first day's competition, also churned fast and had butter in twenty minutes; while Mr. Coltman

by going at under fifty per minute, took seventy minutes to get butter. Miss Keel and Miss Barron churned at over fifty. We may here remark that we do not think that slow churning is desirable with an end-over-end churn. We have never been able to bring butter with one of these kind in a reasonable time, at less than eighty or ninety per minute. Of course, a great deal depends on how full the churn is, as a small quantity of cream will received more "dashing" than if there is too much. In the case of churns provided with dashers, however, slow work will do, as these practically have a double action.

On the Wednesday, the largest competition took place, thirty farmers' wives and daughters having entered the lists. As it was impossible to have all these going on at one time, they were divided into three lots and taken one lot after, so that the trials lasted from 11.30 a. m. till about five in the afternoon. The cream was given out at 61 degrees Fah., but by the use of ice some got it cooled down to 60 deg. There was a vast difference in the styles of churning between the different competitors. One girl drove at an immense speed. We timed her, and found it was 120 strokes per minute—the highest we have ever seen. Of course the butter came correspondingly quick—in some 17 or 18 minutes, and though it did not look so bad in the granular stage, must have been soft. The others varied from fifty to ninety, but one was as slow as thirty-five strokes per minute. The majority brought butter in from 20 to 30 minutes, but one took 45 minutes.

I am not acquainted with the pace at which our best creamery workmen turn their churns, but I imagine that most of our farm dairy-women keep a moderate pace going, though, in the old days, when the butter was gathered in lumps instead of grains, I remember to have seen the pace accelerated towards the conclusion of the job to something like 120 turns a minute: In fact, only last September, at the farm of Senator Guévremont, Sorel, I saw a boy firing away at the rate of at least 100 turns a minute, but upon my hinting to Mr. Guévremont that his butter would be soft, he immediately checked the lad's ardour. Butter churned too quickly *must* be soft. I of course do not refer to the Devonshire way of making butter, as that is almost butter before the stirring begins—it is never put into churns—and a couple of minutes' work brings the butter in grains.

Ontario Agricultural College.—The orchard department of the college at Guelph does not seem to be in a flourishing condition. According to the report of the gentleman selected by the Dominion Farmers' Council to report on it, it is a total failure! The choice of position for the orchard seems to be a curious one: the land is the lowest on the farm, taking the whole of the drainage from the back of the next farm, which in a wet spring must inundate it with water. This site, singularly enough, seems to have been picked out by a deputation of the Fruit-growers' Association, Mr. Saunders, of the Ottawa Dominion Experimental Farm, and the well-known Mr. Beadle, being among the members of the committee.

And even in this wet spot, there was hardly any attempt at drainage. Myself, I do not believe in covered drains for woods and orchards, for the roots of the trees soon stop up the conduit whether of pipes or of stones, but good deep open ditches will carry off stagnant water, and nobody, I should think, would dream of planting an orchard in land abounding in springs.

The grapes were not much better than the other fruits, very few of them—none of the white sorts—having ripened. The strawberries had not been renewed for two or three years, and the raspberries were a mass of young canes, never having been thinned out. Of course, in experimental plots failures must frequently occur; but at Guelph, it seems that nothing

in the orchard or fruit-garden succeeded. The only excuse made for the Fruit-growers' selection was that the site had been chosen in winter, when there was fully two feet of snow on the ground, and at that time the ground presented a much higher appearance than it really had.

Manurial value of cattle-food.—It would seem that the difference between the practical value of the manure of cattle fed on oil-cake and its theoretical value, as established by Lawes and others, is very great. Lawes represents the money value of the manure from one gross ton of cake, costing, as it did when his computation was made, £12 10 = \$62 00, as £4 12 6 = \$22. 00, or rather more than *one-third* of the prime cost. The practical men of the Central Chamber of Agriculture, however, give *one-sixth* of the cost of linseed, or cotton-cake, to be allowed to the outgoing tenant for the quantity consumed during the last year of his tenancy.

Sore and inflamed teats.—When cows are dried off too suddenly in the fall, or when, as is too often the case with the "family cow", she is allowed to dry herself off without any care, garget, or inflamed udder, often supervenes in the spring after calving. The loss of one or more quarters is no joke, and very sensibly diminishes the value of a cow. The following recipes I have a high appreciation of, as they are from the MS of a thoroughly educated veterinary surgeon.

Give each of your two cows with bad udders and teats, 1 oz of bicarbonate of soda, and 2 drachms of powdered b.ladonna leaves, daily in their food. Apply an ointment to the teats, composed of oxide of zinc, 1 drachm, vaseline 1oz., each time after milking, and once in two days, in addition to this, well bathe them with a lotion made with solution of alum, 1 oz., tincture of myrrh 1 oz., water 6 oz. When milking, the operation should be done carefully, and with a full hand, and the teats not drawn with finger and thumb. To the lumps in the udder, I should advise you to apply a little Lugol's solution of iodine, with a flat stick, twice a week; should the skin get tender, miss doing it for two or three times.

French wheat crop of 1888.—The agricultural and grain-trade journals of France put the wheat crop of that country at 30,621,000 quarters = 244,968,000 bushels, the produce of 16,619,000 acres = nearly 15 bushels an acre. (1)

Devonshire butter.—Miss Maidment has been engaged by Sir Thos. Dyke Acland to teach his tenants how to *finish off* their butter. Being all Devonshire people, it would be unnecessary to teach them how to treat the milk, but as a rule the *potted butter* from the Western counties of England is not what it should be, though the fault is more in its appearance than in its flavour. The process I need not repeat, as it has been spoken of in this publication *usque ad nauseam*. The Devonshire girls used to stir the clouted cream with the hand, but the wooden *spatula* is certainly better. The butter made from Devonshire or Cornwall clouted cream always *comes* in the granulated form, so that is not Miss Maidment's invention. During her stay at Killerton, Miss Maidment will visit several farms in the neighbourhood, in order to give instruction in dairying. She shows how to make good butter either with the use of a Laval Baby separator, or on the Devonshire system. In demonstrating the latter system at the first meeting of her class, she showed that butter could be made quite as granulated as churned butter. She used scalded cream, and the only appliances were a pair of Scotch

(1) At p. 10 of the January number, last paragraph, the yield of wheat in France was given as 37 instead of 17 bushels an acre.

hands—which, the uninitiated should be informed, are two pieces of flat wood with handles—and an ordinary dairy tub. Stirring the cream with one of the Scotch hands until it assumed a granulated form, she washed it in brine, and made it up into pats, and it was found to be equal to that made by the butter worker. None of the butter made by Miss Maidment was touched with the hands."

Shoing smiths.—There is, it seems, among the numerous companies in the City of London one called the Farriers' Company. At a meeting of this society, a remanot of the ancient *guilds*, the freedom of the Company and the freedom of the City of London itself were conferred upon—not a great General—but upon Messrs. Palfre and Clay, the winners of the first and second prizes in the shoing contest at the Nottingham meeting of the Royal Agricultural Society of England in July 1888! Rather a more suitable selection of free-men than in the case of Hanlon, the oarsman, to whom the aldermen of Toronto proposed to present the freedom of their city after his victory in Australia.

Fodder-corn.—A variety of opinions on this subject was expressed or the October meeting of the Dominion Farmers' Council: 1. 20 000 acres more fodder-corn were grown in 1888 than in 1887, in Ontario; 2. frequent cultivation is essential to vigorous growth; moulding—earthing up—is of no benefit to the crop; 3. a bushel an acre is enough for broadcast corn; 4. every hundred acres should have 12 acres of fodder-corn; 5. half an acre of fodder corn is equal to 3½ tons of hay; from which statement I draw the conclusion that ten tons of fodder corn are equivalent to 3½ tons of hay, and therefore an acre of fodder-corn is worth—hay being taken as being worth \$8.00 a ton at home—\$56.00. So far, Professor Robertson; but Mr. Leitch differed entirely in this valuation. 6. Southern corn was said to be inferior as cattle-food to the small northern kind; 7. The only advantage Mr. Leitch could see in ensilage was that by its use cows were prevented from being chilled by drinking a large quantity of cold water at a time, the ensilage—like roots—giving them by degrees a large portion of the water they required. Of course, warming their water would have the same effect; 8. Jerseys and Guernseys are too tender for the climate; the common Canadian cow would stand more hardship, and was consequently better adapted to the climate. All very well, but I fail to see what hardship a *good* farmer's cows have to endure if they are, as herein advised, housed early in October and kept in warm stables till the middle of May. 9. the very best Ontario cheese only sold in 8½ cents a pound, and the average price of the Guelph Model Farm creamery butter was 17 cents. At these prices dairying would prove disastrous

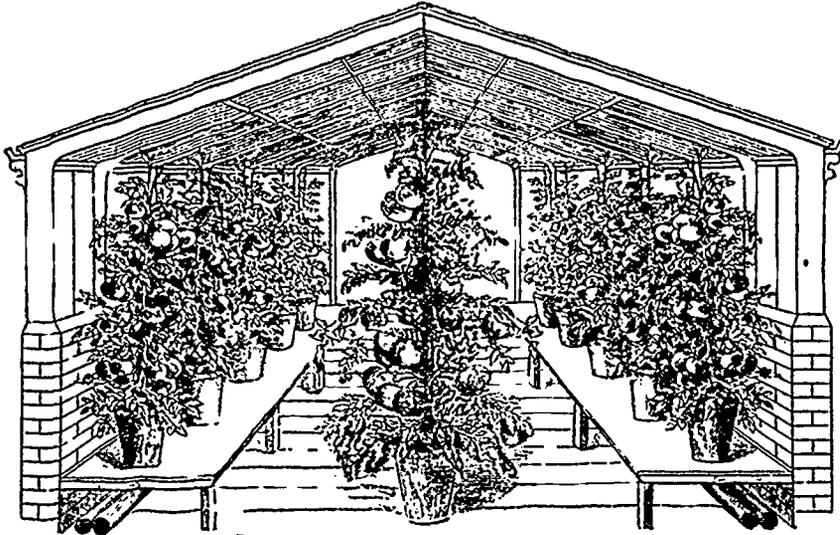
to the farmers of Canada. 10. A few years ago, Prof. Brown, of Guelph, advocated with considerable *gusto* (*sic*) the introduction of permanent pasture, but the experiments resulted in failure. The merits of the Model-farm were over estimated; the young men were encouraged in idleness. The institution was paraded too much like a circus—by *blow* and *bluff*, whatever that may mean.

Ensilage.—Corn for ensilage, it is now as good as proved, should be sown thin, and allowed to pretty well mature its ears before it is cut. The thin, spindly stalks, of which we see so many, in the broadcast system of cultivation are nearly worthless, and the foreman at Messrs. Dawes' farm tells me their Jersey cows, 8 in number I believe, fell off three gallons of milk a day when fed upon such stuff. The Herefords and Poll-Angus, strange to say, would not eat it at all! Perhaps, they changed their minds afterwards: if they did, I will say so later on. (1)

Hampshire-downs.—All my readers know how very high

my opinion of the Hampshire-down sheep is. I have bred them, fed them, and eaten them and I honestly believe them to be the sheep best adapted to the wants of this country, their virtues being that they are hardy, prolific, bear a heavy fleece, are easily kept within bounds, and furnish the finest possible mutton at the earliest possible age.

I reproduce from "The Field" an article published in its issue for the 6th



LORILLARD TOMATOES IN A FORCING HOUSE.

October last, on which I have a few remarks to make.

It is just forty-five years since I first went to Ewell fair, held in October, to buy my first lot of Hampshire-down 2 year-old wethers. There were no sheep in the fair with horns, and the Southdowns and Hampshire-downs there present were as easily distinguishable as a Jersey cow can be distinguished from a Guernsey. The Hampshire downs retained then, and still retain, their strong, hardy character, and although I do not mean to say that no cross has ever been made with the Sussex sheep, I firmly maintain that the Down-farmers of Hampshire, Kent, and Surrey, have always aimed at perpetuating the masculine form and hardy characteristics of the old style of sheep.

The writer in the Field lays great stress on the value of the early maturity of these sheep, and with reason. But, may I ask, does he mean that this precocity was obtained from the Sussex crosses? Surely not; for Ellman's sheep were by no means precocious: the *two year-old* wethers when fat rarely weighed 64 lbs. (8 London stones). And the reason why the

(1) They did take to it and did well, but Mr. Tuck will sow thinner next year and cultivate the corn as he would do a root-crop.

A. R. J. F.

Sussex sheep fail in this invaluable quality is very clear: the universal practice of the breeders of that county was, and probably is, to keep a very large flock of ewes, and in order to keep this flock on their farms, they sold all their wether lambs off at the October fairs, and sent the ewe-lambs—then called tugs—out to be grazed by the farmers of the Weald. As the Weald grass is not by any means of a feeding quality, and as it was to the interests of the Weald men to take in as many tugs as they could manage to keep alive during the winter, the poor things were returned to their owners in the spring in a pitiable condition.

And it must not be imagined that it was only the poorer class of farmers that exiled their ewe-tugs in this barbarous fashion: by no means. I was present at a contest in Firle Park, near Lewes, Sussex, in 1852, when six of the principal breeders of Sussex Downs each entered, for a sweepstakes, five selected ewe-tugs that had been "out at keep on the same farm" during the preceding winter. The tugs were shown and judged afterwards, and were just about a skin and a frame work of bones. Among the six competitors were Arthur Denman, William Rigden, my farm-tutor, and, if I remember rightly, Hugh Gerringe, now of Kingston-by-the-sea: the two latter well known as exhibitors of Southdowns at the exhibitions of the Royal Agricultural and the Smithfield Club. I ask any unbiassed man if rams, the produce of ewes thus treated during their first winter, were likely to impart *early maturity* to their progeny?

No doubt all the ram-breeders, like Rigden and Gerringe, kept a certain number of ewes at home on good food for the purpose of breeding their exhibition sheep, but the great majority—at least $\frac{9}{10}$ —of their ewe-tugs were treated as above described.

As for the Cotswold cross, we all know the value of that in forming the breed now called Oxfords under the management of good old Mr. Druce of Eyusham; but, though it may be possible, and even probable, that, here and there, an inferior flock of Hampshire-down ewes may have been served by a Cotswold ram because he was at a handy distance, yet I am sure that this was never anything like a general practice. If it had been, certainly this cross would not have been the cause of the early maturity of the Hampshire-downs, for the Cotswolds are no more precocious than the Sussex-downs. It may be worth remarking that the cross of the Hampshire-downs and Cotswolds—*pur sang*—generally win the first prize for cross-bred sheep at the Smithfield Club exhibition. (1)

From what has been said, I think it is fair to draw the conclusion that the cause of the early maturity of the Hampshire-downs is an innate peculiarity of the original parent-stock.

THE HAMPSHIRE DOWN SHEEP.

The high favour in which Hampshire down sheep are held is shown year after year by the large attendance of purchasers at the Hampshire fairs. The auction sales of the county and the high-prices of breeding stock tell the same story. The sheep are distinguished by size, by heavy flesh and wool, by their early maturity, and their black faces and strong features. Early in the present century the prevailing sheep of Hampshire were large, upstanding, horned sheep; with white faces and Roman noses. The breed was closely allied to the horned sheep of Wiltshire and the native Berkshire. These three were all sturdy breeds, with strong horns and tremendous Roman noses (the latter of which features they have bequeathed, in a modified form, to the modern Hampshires), and were found to be quite competent to take care of themselves under the old

system of feeding in common. The last flocks of the primitive race disappeared with the inclosure of the commons. Early in the century Southdown flocks replaced them; or the flocks were merged in the Southdowns by the successive use of Southdown rams, a process which commenced as long since as the last century.

In effecting this cross the Hampshire breeders selected the largest, coarsest, and blackest-faced rams of the breed which Mr. Ellman was then engaged in improving. The use of the Southdown for the improvement of the native breeds became general throughout the whole of the South Western chalk districts, including the counties of Hants, Wilts, Berks, and Dorset, and these crosses with the pure Sussex were continued till the horns of the old breeds had entirely disappeared, and the colour of the faces had changed from white to brown or black or in some cases to black speckled with white. A change also took place in their shape, in the broader backs, rounder barrels, shorter legs, with perhaps some improvement in the quality of the mutton. The sheep of fifty years ago contrasted strongly with those which have since been derived from a more recent and still deeper dip into the Southdown blood. Still certain merits have throughout been justly claimed for the old sort. They undoubtedly possessed hardness, size, and a disposition to make early growth, all of which were excellent qualities on which to found a new breed.

The prices commanded by Hampshire sheep for many years past form a practical test of their excellence. We learn from an unpublished narrative—written some years since by an able hand, and now kindly placed at our disposal to assist the historical part of the brief notice—that at Overton Fair, held July 1, the best lambs ranged, fifty years ago, from 30s. to 40s. per head, and that 50s. was not an uncommon price for ewes. The best breeders made 3 guineas a head of their draft ewes. So long as twenty-five years ago Mr. John Pain, then of Houghton, sold 100 wether lambs (8 months 2 weeks old) to an Essex grazier at 47s. 6d. each, and the culls at 40s. This was after 100 ram lambs had been saved from the flock; Mr. Pain being one of the most noted ram breeders of his time in Hants. It was not the custom then for breeders to bring the wether lambs to market so forward in condition as they do now; yet, to mention another instance of the high prices of former days, Mr. Mortimore, of Andover, twenty to thirty years ago, sold his 400 to 500 half-bred Hampshire Downs and Cotswold lambs at from 40s. to 48s., and did so many years successively.

Owing to the improved price of mutton, as well as increased demand for the breed for crossing purpose, these prices have been considerably exceeded during years past. Mr. John Barton, of Hackwood Farm, has sold 100 wether lambs in June, at 60s., in one case, and 62s. in another; after saving eighty ram lambs from a flock of 450 ewes. Mr. G. Judd, of Barton Stacy, has sold 200 wether lambs in October, at 84s. each; and Mr. De Mornay, of Col d'Arbres, has fattened off as mutton the whole of his wether lambs, at ages ranging from seven to nine months, averaging for sheep entirely fed in the field, 14 stone, one animal at ten months having scaled 241lb., yielding 18½ stone dead weight. (1) These great prices and weights indicate a change which has taken place in the management of sheep in Hants, where many breeders are now in the habit of fattening their lambs instead of selling them as stores.

The old method of managing a farm in the extensive chalk districts consisted in breeding stock sheep, for sale as lambs, and full mouthed ewes, with a view to growing corn. The flock was regarded as of primary importance, since it provided in the cheapest manner the manure by which the naturally poor chalk soils were made fertile. And so important was

(1) As they have done again at the last show

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(1) 8 pounds to the stone.

this object held to be by landlords, that a clause was inserted in most leases, requiring that a specified number of sheep should be kept by the tenant; and that these should all be folded during the term of his occupation. The arable land was largely manured by the system of close folding at night; the sheep having, during the day, grazed on the downs. It was the breaking up of a large portion of the downs in Hants, Wilts, Berks, and Dorset, and the destruction of these natural feeding grounds—with the consequent more extended use of forage crops—that induced the farmers of the three counties to alter their breed of sheep and their practice. They have really formed a new breed, remarkable above all other varieties of Down for its early maturity.

We have already spoken of the blending of the large and muscular white faced horned Hampshires with the Southdowns. The alliance changed Hampshire faces and ears from white to brown, and banished their horns. The latter still recur sometimes in the form of "snig horns," and the white reappears, in spots upon the face, ears, and legs. The Wiltshire type was larger and less handsome than the Hampshires, while those who breed the Wiltshire were less careful as to colour; and did not object to speckled faces, provided there was size and other good qualities. It is clear that these older types could not have been common-place sheep, since an eminent breeder of the modern sort states that when he was a boy his father sold 100 ewes of this old fashion for 300 guineas. But the time had arrived for increased corn farming and a lessened breadth of down, for high farming and direct fertilising of the land by artificial means instead of the old system of close folding; and this called for a quicker return; a different class of sheep was required to make it. The "coming sheep" appeared above the horizon—if we may be so poetic—about the year 1815. About that time Mr. Humphrey, of Oak Ash, took the lead in that large introduction of Southdown blood which produced the improved Hampshire Down. Mr. Humphrey has been called the Jonas Webb of the Hampshires; and he actually used the largest and best fleshed rams of that great Cambridgeshire breeder's flock. The Hampshire sheep, therefore, offer one more example of successful crossing. The earlier breeders ceased after a while from employing the Sussex; and used their own cross bred rams on their cross-bred ewes. Previous to Mr. Humphrey's improvements, the chalk district exhibited a great variety of sheep of various types; but all were largely dipped in Sussex blood. The Wiltshire breeders took a somewhat different course. They founded the west country down breed by crossing Sussex ewes with Hampshire rams, instead of using the original horned ewe with the Sussex ram. Mr. John Rawlence, of Bulbridge, was the principal breeder of this class of sheep; commencing about 1863, and winning a large number of prizes at the great shows; as did Mr. Morrison, of Fonthill, whose sheep were chiefly descended from the Bulbridge flock. In 1872 the latter gentleman received the silver cup at the Smithfield Show for shearling wethers, estimated to weigh 280 lb., these took the prize as the best pen of short woolled sheep in the yard. At the present time the west country Down breed has, so far as the name is concerned, disappeared from the catalogue of the Smithfield Club show; and the several types—now much more uniform than they were—are classed together as the Hampshire and Wiltshire Down breed.

In an elaborate account of the merging of types in this great breeding district of the south west, it would be necessary to write the history of a great many different flocks. That cannot be done here but we must not omit to mention one innovation by Mr. John Twynam. No intelligent Hampshire breeder—knowing how many superior breeds have been formed on crosses, some of them probably quite unsuspected—need repudiate the statement that about sixty years ago Mr. John

Twynam crossed his Hampshire ewes with the improved Cotswold. and thus produced a well-known cross, having the size, appearance, wool and disposition to fatten of the male, and the hardiness, folding capabilities, and excellent mutton of the female. It is true that the two breeds did not amalgamate well, and the defects of either parent reappeared in subsequent breeding, and uniformity was not obtained for several generations. Still, Mr. Twynam's rams were used by others. That successful breeder, Mr. Rawlence, approved of the cross; and, although the experiment was discontinued, there is no doubt that many of the cross-bred rams were widely used by sheep breeders, both in Hants and Wilts. If it be true, as we cannot doubt, that the big fleeces of the (1) existing breed—three to the tod—and their large carcasses are partly due to Mr. Twynam's importation of Cotswold, and therefore of Leicester blood, it seems inconsistent in Hampshire breeders to exclaim, in the words of Lady Macbeth, whenever a spot of white is seen on their sheep, "Out damned spot!"

Few breeds of sheep have more mixed blood than the modern Hampshire Down in their veins, or possess a larger share of divers good qualities derived from different breeds. But we have now to notice the deepest dip of that oft dipped breed, which could never have gained its existing uniformity but for the operations of Mr. William Humphrey. Writing to Mr. W. C. Spooner in 1859, Mr. Humphrey states, about twenty-five years since, in forming my flock, I purchased the best Hampshire or West Country Down ewes I could meet with." He obtained them from the eminent breeders of that time (about 1834) at 40s., when ordinary ewes were making 33s. to 34s. He used rams of the same kind till the Oxford show of the R. A. S. E. in 1839; when he observed the beautiful form of the improved Cotswold which they had derived by admixture with the Leicesters, and he resolved to improve his big Hampshires in a similar manner by crossing them with the exquisite Southdowns. He first used one of Mr. Jonas Webb's shearlings by his favourite ram Babraham; and afterwards the sheep which took the first prize at Liverpool. The result of Mr. Humphrey's work as an improver is described by Mr. E. P. Squarey in his article in Coleman's "Cattle Sheep, and Pigs of Great Britain," on what he has designated the "Hampshire or West Country Down Sheep," and in another place the "Improved Hampshire Down," an "almost perfect animal" produced by Mr. Humphrey as the result of "various crosses watched and applied with marvellous ability, and at a great cost of time and money."

We have already referred to the *raison d'être* of the new breed, *i. e.*, how it sprung from the destruction of the downs, and the need for a sort of sheep adapted to early fattening, either on forage crops in summer on the farm where they were bred, or elsewhere. Under the older system, sixty to one hundred breeding ewes were kept per one hundred acres, or one sheep to a £1 rent. The whole of the wether lambs were sold at the fairs, which are held from July to October, as well as the worst of the ewe lambs; and one-third to one-fourth of the full mouthed ewes were drafted from the general flock. The best ewe lambs were kept back annually to supply the place of the ewes that were culled and sold. Under this system, which, when well carried out, worked admirably, the bad and faulty ewes were every year disposed of, their places being supplied by younger animals selected for their good points. The best breeders chose their rams from a neighbouring flock, better, if possible, than their own: and they occasionally purchased ewes of a superior quality, so that by selection and proper crossing a continued improvement was always taking place. For the sake of bringing the lambs and sale ewes to the fairs in good condition the rams were put to the flock early; and

(1) Tod=28 lbs..9 lbs., 5 oz of washed wood per fleece!

the lambs fell chiefly in January and February. In most respects the management thus far is the same now; only as the downs are generally broken up, the flocks now depend chiefly on the turnip crop in winter, with a liberal allowance of hay. The flocks are kept in spring and summer in water-meadows for early food, and on a succession of forage crops with, in recent times, a liberal allowance of cake for the lambs in those farms where the plan of selling them fat is pursued. They are constantly kept within hurdles. Mr. Squarey gives statistics showing that, in the case of some flocks in the neighbourhood of Salisbury numbering 10,000, the yield of lambs was 91 per cent.; mortality of ewes 5 per cent., of tegs 3 per cent. per annum. The yield of lambs is now certainly larger, owing probably to higher feeding at the time of coupling.

Mr Squarey thinks that the improvement of the breed together with the improved farming of the south-western district, to which this article has been devoted, have increased the production of wool and mutton by at least 50 per cent., as compared with the end of the last century.

H. E.

Shorthorns as milch-cows. — The periodical, "Herds and Flocks," has the following in its issue of the 1st inst. "In addition to what we said last year in regard to the milking qualities of shorthorns, it is of interest to note that the first and second prizes at the London Dairy-show of 1888 were taken by pure-bred shorthorns." This is, I am obliged to state, an error. The pure-bred, that is pedigreed shorthorns exhibited were about as bad milkers as one often sees, gaining only a second prize. The cows that took the first and second prizes were *dairy shorthorns*, i. e. very high grade cattle, though not admissible to the herd-book.

Rearing calves.—A breeder of cattle gives, in the New-

York Tribune, his mode of treating calves as follows: "Several years' experience has given me a successful system of procedure in calf raising. They are taken from the cows at two days of age, and never before, because it is natural for them to draw the first milk to cleanse the system of congenital waste matter. If taken from the cow as soon as dropped they do not get the benefit of this wise provision of Nature, for it requires a day or more to teach them

to drink. They are given about 2½ quarts freshly drawn milk twice a day for ten days, and then for a week fresh milk once a day and skim milk once. After that the ration twice a day is 2 quarts sweet skim-milk and 1 quart of a strong decoction of clover hay added, given warm a month; and then the ration is gradually cooled; meantime they have a few oats once a day and hay constantly. They can be gradually weaned from the milk at three months of age if they have fresh grass, but will do the better the longer the milk feeding is continued. Wheat bran should never be given, for it tends to produce scours. If they have access to pure drinking water only and what hay and salt they will eat besides their grass feed, they never will be troubled with unnatural looseness of the bowels. When first turned out it should be in a small enclosure, with much shade, for they are liable to run too much and to get sun-struck. Those who avail themselves of this opportunity to halter-break the juvenile bovines will accomplish a good purpose."

In my opinion, it is a great mistake to allow the mother to suckle her calf at all, unless in the case of a heifer's first calf, in which case the constant dragging at the teats for three months, or so, may possibly increase their, the teats', size. But, as a rule, I would never allow the calf to remain with its dam for five seconds after it is dropped. Take it away at once, holding it by both hind- and fore-legs; cover it up with plenty of the softest straw in a



DELAWARE.

warm place out of hearing of the cow, if possible, and a few hours afterwards, teach it to drink out of a small pail. Why wait two days, when a calf can be taught to drink in ten minutes? I have bred many a dozen calves, and I never had the least difficulty about it. This mode of treatment will save all the blaring and fidgeting about of the cow, and both dam and offspring will thrive the better for it. The first as well as the subsequent meals of the calf should of course be drawn from the dam's udder, as the writer in the Tribune very properly observes, as the *colostrum* or *beistyn*, as the Scotch call it, is a natural purgative.

Hay-tea and skim-milk are poorish food for calves: a little crushed linseed, well boiled in water, added to the milk will supply both fat and nitrogen. I should not care to give oats to calves as long as they are on milk. The husks might produce the same peristaltic action of the bowel that is produced by bran. Oatmeal is a different thing, and can do no harm. Even the best decorticated cotton-seed is dangerous. The best of all calf-food is pease meal and linseed meal mixed with clover chaff.

Linseed crushers.

—A cheap form of roller mill to crush linseed in very much wanted in this country, to be worked by hand or by power. For the general run of farmers keeping from six to twenty cows, a machine might be got up at a very reasonable price to crush—not grind but merely crack—say, 25 lbs. of linseed a day: a quarter of an hour ought to do it. The

two rollers must be of equal diameters, and the principal aim should be that the feed be distributed along the whole length of the rollers with perfect regularity. A mill of this kind could be made for from \$15 to \$20, and, considering the quantity of linseed grown in the province, I think the managers of the next provincial exhibition would do well to offer a prize for such a mill. In places like Sorel and

its neighbourhood, it would, I think, answer the purpose of any one possessing a horse-power to attach a crushing mill to it, and crush linseed for himself and his neighbours.

To feed linseed uncrushed to cattle is to waste three-fourths, at least, of it. Boil a few grains in lots of water for three or four hours, and then try to bite or chew them, and then you will see the reason for crushing them. In experiments made with the uncrushed grains some forty years ago in England,

it was found that 800 grains out of a thousand passed through the hoasts unaffected by digestion.

Nitrogenous fertilisers.—One of the agricultural papers of the Dominion has in a late issue an article on nitrogenous fertilisers, on which I should like to make a few observations.

1. "One of the most fruitful causes of loss of combined nitrogen is the old system of summer-fallow. By its means a larger portion of combined nitrogen is sent into the air, a larger portion decomposed, and a larger portion is washed into the subsoil than would be the case if the field were covered by a growing crop." Perfectly correct, no doubt, but how does it come to pass that after a summer-fallow larger crops of grain are grown than when that process of cultivation is omitted? "Because," says the writer, "a portion of the nitrogen which is left is transformed into such a condition that it can be taken up more readily by the crop grown on it" (*on what?*), "and it is owing to this fact that summer following has gained such a hold." In other words, if I may be

allowed to say so, the loss incurred by the volatilisation, the decomposition and the washing down into the subsoil of the nitrogen, is far more than compensated by the transformation of the store of inert nitrogen that previously lay useless in the soil.

2. "But as almost identically the same beneficial results, and none of the injurious, are obtained with a green crop of



WORDEN.

clover there is no reason why the summer-fallow should be continued." No! Did the writer never hear that the too frequent repetition of the clover-crop rendered the land absolutely incapable of producing that plant? I fear he must have read his Lawes to very little purpose if he has not seen this pointed out in the accounts of the Rothamsted experiments.

3. "The killing of weeds was held to be a prominent point in favour of the summer-fallow; but, weeds should never become troublesome on a well managed farm." On light soils, weeds can be kept under by a resolute system of growing hood-crops of corn or roots; but on heavy clays, the experience of centuries shows that summer-fallowing is the only means by which land can be kept clean.

4. "Land-plaster used on the manure heaps would preserve the nitrogen from escaping in the form of ammonia." I fear that any one who tries the experiment of retaining the ammonia of dung-heaps by scattering plaster over them will be disappointed in the results. Dry sulphate of lime—land-plaster,—ground into never so fine a powder, will have little or no effect upon manure in its ordinary state. The effects of commercial sulphuric acid, which is a liquid, are very different.

5. "Nitrogen, as stated above, is a stimulating fertiliser, but its stimulating effect is more noticeable by an increased growth of hay, straw, &c., than in an increased yield of grain." And get Lawes & Gilbert found, and all the great agricultural writers agree in this point with them, that "the wheat crop requires in its growth an abundant supply of nitrogen by manure, and we assert that in practical agriculture, nitrogenous manures are peculiarly adapted to the growth of wheat." See Journal of the R. A. Soc. vol. 12, page 32. In the Rothamsted experiments, conducted to confute Liebig's mineral theory, Lawes was not trying to grow the greatest possible yield of wheat straw but of the grain of wheat, and he proved irrefutably that nitrogen is the mother of wheat.

Vines and trellises.—I was looking, the other day, at small vineyard belonging to Mr. MacDougall, of Lachine, and was surprised to how very foul and uncultivated it was. The alleys between the long rows of vines were clean enough, but the spaces where the vines were planted, and the transverse lines, were full of weeds, rough, and entirely untilled. A little time devoted to the inspection of the yard made the reason of these faults perfectly clear. The vines were growing attached to trellises extending from one end of the rows to the other, so that, although the grubber, or cultivator, could be used lengthways, the cross-alleys would not admit its passage. The crop, as might be expected, was very poor. Hand-hoeing would have done something to remedy the defects of cultivation, but hand-labour is expensive, and by no means so efficacious as horse-work.

But if the vines are planted eight feet apart each way, a good stout post set for each vine, and the vine kept within reasonable limits, as in the accompanying engravings, the land can be kept under cultivation throughout the season with cultivator, harrow, and roller, the only hand hoeing require being just the small square about the roots of the vine. Other systems of training may give more fruit to the acre, but this seems to me an eminently practical plan for the farmer who cares more for economy of labour than for land.

No two grape growers agree as to the best mode of pruning. Here is one, practised, it would seem most successfully, at the Wisconsin agricultural station, which is simple enough:

1. Keep the vine limited to the post, do not let it spread far enough to be in the way of cultivation;
2. prune in the fall;
3. aim at growing at least four to each canes post;
4. cut out the oldest cane close to the ground each season, letting one new strong cane succeed it;
5. the three or more canes left

must bear the fruit-wood. Leave at pruning time three or four spurs of new-wood to each of the three canes, and cut these spurs back to two or three buds; 6. guard the vine from getting top-heavy by keeping the fruit-wood down low on the plant.

All the summer pruning done at the station is to go with a pair of hedge-shears and clip the great leafy clusters of the vines on all sides into a rather compact form: about three such clippings are required. Of course the young wood must be tied up from time to time as required.

The engravings illustrating the above are taken from the Fifth Annual Report of the Agricultural Experiment Station of the University of Wisconsin.

Pigs. The prices paid for fat pigs at the packing shops in England vary in the inverse ratio to their weight. At the large bacon-factory at Calce, Wiltshire, the following are the rates per score in the month of November:

Pigs from 140 lbs. to 180 lbs... 8/6 a score = 10 cents a pound.
 " " 200 " " 220 " ... 7/6 " = 8½ " "

A telling difference in price to a man who fats, as I used to do forty years ago, from 100 to 120 pigs a year. We must send more sheep and better pork to England.

OUR ENGRAVINGS.

The Delaware grape as grown at the Wisconsin Agricultural Experiment Station.

The Worden grape from the Fifth Annual Report of the above station.

Lorillard Tomatoes in a forcing house. It will be observed that these plants are grown on my plan of only one stem, as shown more naturally in the photographed tomato garden at Sorel in the October-number of the Journal for 1886, p. 153.

The pot-plants are not staked, but are tied to a wire extending to the roof from the pot. The pots are 10-inch, containing, each, a gallon of clear loam. Last winter, Mr. John Gardner, of New-Jersey, grew, 300 plants of tomatoes in this way and "gathered 7,500 lbs. of fruit, being an average of 25 lbs. per plant—all of fine marketable size, firm and handsome in appearance, while the flavour was equal to the best outside-grown tomato." If the latter part of Mr. Gardner's statement is correct, the New-Jersey winter sun must be very powerful indeed. No heat without sun will give colour and flavour.

Stephen's Book on the Farm—A new edition, the fourth, of this invaluable book has just been published. Much new matter has been added, and the revision of the old completed by the well known writer on agricultural subjects, Mr. James Macdonald. Though not written for this climate, the book is so thoughtfully composed and so clear in all its parts, that it should be introduced as a text-book in every agricultural college.

Summer-fallows.—It is all very well for men who have never occupied any other but light loams to say that summer-fallowing is an exploded system, but some of our English farmers still adhere to the practice. In 1887, out of a total of 12,375,549 acres of arable land in England, there were 456,412 in bare fallow. Essex had 40,885 out of 605,861 arable acres in fallow. The land in Essex, particularly in that part called "The Hundreds," is of a peculiarly tenacious character, and although all under-drained has to be ploughed in yard wide ridges with innumerable water-furrows. In Scotland, except in what is called the *carse-land*—Carse of Stirling, Carse of Gowrie—, there is nothing heavier than

a fair clay-loam, on which all sorts of roots and green-crops can be grown, therefore summer fallows are not necessary in that country. On the carse-land this bare fallow invariably commences the rotation. What says Stephens?

"On the fine very strong land of the Carse of Gowrie, a 7 course rotation has been followed for many years. It puts $\frac{1}{2}$ of the farm into fallow, $\frac{1}{4}$ under grain, and $\frac{1}{4}$ in grass. It is this:

First year, Fallow, dunged and limed.

Second year, Wheat;

Third year, Barley;

Fourth year, Clover;

Fifth year, Oats;

Sixth year, Beans and pease;

And then the rotation begins again with the bare fallow. I mention this because a Scotch lecturer was pleased, not long ago, to sneer at the English farmers for retaining such an old-fashioned practice. The English only summer-fallow land where roots cannot be grown.

Agricultural colleges.—I quite agree with the writer of the following article on agricultural colleges. As far as my experience goes in the agricultural schools, I should say that it is utter waste of time to try to teach boys on the farm that should be models of cultivation, the use of the tools used in agriculture. They should learn this elsewhere.

EXPERIENCE AT AN AGRICULTURAL COLLEGE

EDS. COUNTRY GENTLEMAN—Permit me to give a most hearty endorsement to every word of the article from "A Teacher of Agriculture" in your issue of Nov. 15th. I have been through an agricultural college myself and know how it works.

A boy who goes there to study agriculture at all goes to study the scientific principles which underlie the business, and not to receive manual training in order to become an expert farm hand; he has usually had quite enough of that at home! In a great many cases they have had entirely too much of this idea that to become a farmer, is little more than to become a skilled farm hand, and come to the school with a positive nausea for the whole business.

As a matter of fact, the greater part of the boys who were in college with me, and who have since become farmers, so far as I can learn, entered that institution with the intention of following some other pursuit. Circumstances have forced them into farming, their fathers usually were farmers and as they drop off or grow old, the boys are compelled to take charge. What the people want is a school made just as cheap as possible where they can have good advantages in getting a thorough general education.

A great many boys entering college do not know, cannot know, just what their life's occupation will be, and for such to commence a strictly technical course would be a folly; they want a well-rounded, not a one-sided education. The State experiment station should be associated with this institution, so that the professor of agriculture can take the boys out frequently and show them any experiments being tried there, and also show up and explain the general management of the farm.

This, together with lectures, say twice a week, and a general encouragement of the boys to participate in the brain work being done at the station, will go far towards making our agricultural colleges popular and useful institutions. You must lead the boys to a love of agriculture; they cannot be driven into it. Thousands of fathers yearn for such a place to send their boys, but few exist!

A reform is needed, and it will come, for a system branded so conspicuously as the present "failure" cannot long exist.

As a course of study the Latin-Science was a favorite in my college. It is a well-rounded course, teaching the natural laws which underlie agriculture, and then if a student develops a taste for that business he can take, as optionals in the 3d and 4th years, things relating strictly to that science; thereby completing all that can be profitably acquired at any college in agricultural science. Practical agriculture in the schools, further than I have described, is a failure, and always will be. Four years careful rearing of the COUNTRY GENTLEMAN, with actual farm management, has taught me more about practical agriculture than I could have learned at that school in a century.

Monroe County, Tenn.

P. F. KEFAUVER.

Almost a famine.—Since I wrote the paragraph on the unhappy condition of the habitants in the concessions at Métis away from the Gulf, I have seen a notice in the papers to the following effect:

By invitation of Cardinal Taschereau the Premier and members of the Local Cabinet had a long interview with His Eminence at the palace yesterday to consult as to the best means to relieve the distress in the rural districts, resulting from the bad crops and destructive frosts of the past summer. It seems that His Eminence has been receiving for some time past the most alarming reports from the clergy of the archdiocese on this head, representing the distress as almost general and expressing great apprehensions on account of the want of seed grain for next spring. The outcome of the interview is not exactly known, but it is very probable that the Government will avail themselves of the coming session to provide for the necessary relief measures.

This only confirms my statement, and shows that my informant did not overrate the calamity. The French-Canadians seem to be the chief sufferers, as the Scotch settlement is nearer the Gulf, and the large body of water passing their farms naturally guards them from early frost.

Saunders on Lawes—Professor Saunders, in an address lately published, after mentioning that "some forty-five years ago Sir John Lawes began his experiments at Rothamsted, England, and, being a wealthy man, was enabled to employ chemists to give him the information he needed to carry on the work successfully," goes on to make the following statement: "By the expenditure of large sums of money he has accumulated information of such value that it is estimated the crops of Great Britain have been increased three-fold since Sir John Lawes commenced his good work, and a good portion of this increase is fairly attributable to the experience he has gained by experimental work." I should be the last man to doubt the efficacy for good of Sir John Lawes' experimental work, but I should really like to know what Professor Saunders means by his statement that the crops of Great Britain have been increased *three-fold* since the year 1843! Take wheat for instance: the present ten years average of the wheat crop in England is 29 bushels an acre. Does Professor Saunders mean to say that forty-five years ago the average was only 9 $\frac{1}{3}$ bushels? *Et sic de cæteris. See next paragraph.* (1)

Artificial manures and food analysis.—The English Agricultural Gazette says:—"We have found out, rather late, unfortunately, that a too implicit belief in artificial manuring has led to much waste of money. Let us remember

(1) I wrote to Mr Saunders on this subject in December, but I have received no answer to my letter.

the lesson and not make the same mistake with regard to the feeding of our live stock. After all, practical experience must be our main guide. The analysis of a food is far from a complete statement of the properties of that food. Just as each animal we possess has an individuality of its own, so each article of food has some special and peculiar property not revealed by chemical analysis—a physiological property, we presume."

I beg to call the attention of my readers to the passage. "The analysis of a food is far from a complete statement of the properties of that food." Those who pin their faith entirely on the *food-recipes* of Mr. E. W. Stewart in the Country Gentleman will sooner or later get, I fear, "sadly left."

The average crop of potatoes, &c., in Nova-Scotia.—The special report of the Nova-Scotia root-crop for the past season I have just received, and am surprised to find how very inferior the return for labour, seed, and interest on capital is when compared with some parts of this province:

Carrots—average of years '87, '83.....	284 bushels.
Potatoes " " " ".....	105 "
Mangels " " " ".....	392 "
Turnips " " " ".....	350 "

Less than three gross tons of potatoes to the acre is so poor a yield that one is induced to think that either the Nova-Scotians do not understand the cultivation of that crop, or else that the land and climate are not adapted to its growth.

General purpose cows.—Even in Denmark, the great, little, butter-producing country we find the general purpose cow in request, as it is in England, and, as will be seen by the subjoined extract, in all European countries. Shall I never get a chance to import a herd of our English general purpose cow?

"In a model barn I found fifty cows, principally Angler (red Danish) and Jutland, the latter are black and white, rather more beefy and not as good milkers as the Friesians. The Danish Angler has been developed perceptibly in size during the last fifteen years, *the leaning in all European countries: being toward general purpose cows.*"

Xmas 1888.—What a Xmas! Copious rains; stoves let out; more like May than December! I fear the sudden thaws and frosts so frequently succeeding one another will play the very mischief with the young clovers. Well, the price of fuel cannot stay at its present exorbitant price, that is one comfort, and the poor will be benefited at any rate.

Philosophy of Nature.—Number 2, vol. 1 of this periodical has been sent me for review, with a note: "All publications which give this Journal a fair notice, either favourable or unfavourable, will be sent the Journal one year as a compensation." This sentence will be sufficient to show the scholar-ship of the editor, Mr. P. H. Philbrook; as to his *philosophy*, take the following, from a review of Mr. Philbrook's work, entitled "What and Where is God?": "This book demonstrates and explains the electrical agent by which the Creator carries out the expression of his will." Thank you, I do not want any more. The whole is what Carlyle used to call "a heap of clotted nonsense," and it would require a very liberal *compensation* to induce me to read another number.

Ensilage.—A very interesting account of the examination of two stacks of ensilage will be found below. Mr. Stratton, whose opinion is highly favourable to the *stack* system, is the

well known shorthorn breeder. Silage at 30s a ton would make, at present prices, a ton of hay equal to four tons of silage.

Ensilage.—On Tuesday a large number of agriculturists and others assembled on the model farm at Gaer Fach, Newport, for the annual stock sale of Mr. C. D. Philipps, of Newport and Gloucester. In the morning Mr. Phillipps cut two stacks of ensilage near Gaer Fach, and had a good assembly of farmers around him as he explained the preparation of the silage. One of the stacks was made in the ordinary way by piling grass in very wet condition just after the mowing machine had passed over it, but artificial pressure was used to bear it down. The second stack was also made of wet grass, but only ordinary pressure was used, viz., men walking over the grass to squeeze it down. No. 1 stack, where the artificial pressure was made use of, came out with about a foot depth of waste; but the second stack, which had no extra pressure turned out much better. The second, therefore, as Mr. Richard Stratton afterwards explained, was much better than the first, and, in his opinion, artificial pressure was useless. Farmers, he explained, might stack as much as they liked—the bigger the stack the better it would turn out—but abstain from artificial pressure. He (Mr. Stratton) was now feeding his milking cows on ensilage, and, in answer to the question as to whether there was any disagreeable taste in the milk, said that there was not. He also said that the butter did not taste bad, and he was prepared to sell silage at 30s per ton.

ARTHUR R. JENNER FUST.

Tushingham House, Waterville, P. Q., Nov. 20th 1888.

ARTHUR R. JENNER FUST, ESQ.,

Dear Sir,—I take the liberty of writing to you with regard to a subject which I have never seen discussed in your paper, i. e., what amount of linseed oil can be fed to say a three-year-old animal in a day. I see an article about linseed in the Journal of this month, and I agree with you that the manufacturers of cake must make an enormous profit. I have given up buying oil cake as I could not get it good, I only buy it for the oil that it contains and in these days there is precious little left in it for the farmers, and I was thinking of giving the oil with corn or barley meal as an equivalent to the cake. I know some of our largest breeders feed oil separately with good results.

I see you say linseed can be bought in Sorel market at 75 cents per 60 lbs., is it not the cheapest feed to-day? could I write to any party in Sorel who would send me up 5 or 10 tons at that price or even at a little advance on those figures?

There is another thing which has never come directly under my notice, that is feeding West India molasses. Is it fed as an appetiser or to produce fat, and would it be economical to use it on show cattle? I should imagine it would make good coats, as it does when fed to horses. Is it decided to hold an exhibition in Montreal or a fat stock show next year. It is time Montreal did something in that line. I shall be glad to hear from you when you can find time with regard to the oil and molasses. Believe me, Yours very truly,

J. WALTER M. VERNON.

P. S.—Do you ever hear of any one wanting my Hereford balls or heifers? If you do kindly remember me.

J. W. M. V. (1)

HAMPSHIRE-DOWNS.—As to the value of this breed as lamb raisers, we clip the following from the London Field of Oct. 27th:

(1) Crowded out last month.

At Winchester Fair, on Tuesday last, Mr. J. Harris sold by auction 101 wether lambs from Mr. George Judd's flock for £397 10s., or an average of 79s. 9d.; also 101 from Mr. Q. King's for £374 11s., or an average of 74s. 2d., and 100 from Mr. P. R. Hunt for £333 5s., or an average of 66s. 6d. It is doubtful if any other breed of sheep could exceed these results. It was from Mr. Judd's flock that in 1882, at the same fair (Oct. 23), 100 lambs were sold for £424 4s. average 85s. 6d.; and a second 100 for £398 16s., or just under \$4 each.

This record has never been equalled, though Mr. Joshua East in 1884, approached it very nearly, making £398 for his first 100, and £329 for his second. None of the above lots of lambs exceeded 10 months old.

WHAT IS AGRICULTURAL EDUCATION

MANUAL TRAINING A WASTE OF TIME.

(Editor Country Gentleman.)

The more I see of agricultural schools, and the more I study the subject of agricultural teaching, the more I am convinced that the teaching of *practical* farm work at a college or school of agriculture is, and of necessity must be, a farce and a humbug. A farmer's son goes to an agricultural college to pursue a course of study in the principles of scientific agriculture, and to obtain an education which will fit him more intelligently to manage and plan farm operations. In nine cases out of ten he already knows as much about the manual operations of farm work as any of his instructors, and the chances are that he knows much more in this line than the professor of agriculture. And yet, in most of these institutions, he must labour on the farm a certain number of hours daily in order to learn how to hoe, mow, dig and plough, because the controlling powers are possessed with the idea that farming is a handicraft, and must be studied like carpentry or blacksmithing. Instead of using all the limited time usually devoted to an agricultural course in becoming expert in the sciences which have a bearing on his profession, he is compelled to spend half his time in learning things he has already learned better at home, and in which he will probably never excel—if he equals—any practised farm hand he may employ. College catalogues are full of nonsense about dignifying labour, &c., just as if colleges were intended as training schools in manual labour, and not as schools for developing brain power in agriculture. Methinks the labour of the brain is just as well worth dignifying as that of the hands. In mechanical pursuits, boss and journeymen must of necessity be men possessed of manual skill, since this is the Alpha and Omega of mechanics. But the manual dexterity of the farm is easily acquired by the most ignorant labourer with the necessary muscle, and no college professor can teach him better. A familiarity with these farm operations of course is desirable, and any intelligent boy can learn it all in a few lessons in observing the operations of the workmen on the college farm, which should be so managed as always to present to the student a model of what good, practical, money-making farming is.

In another light this much-praised manual labour idea is wrong; hard manual labour in the afternoon is a poor preparation for study at night. A man who has worked faithfully in the afternoon is tired, and his brain will sympathize with his body, and he will be in no condition to study intelligently the subjects for the class room next day.

Student labour can never be made economical or effective, because of its short duration and because of the fact that the boys themselves see that it is a mere farce, and go through it in a perfunctory manner, thus losing precious time, which should bear better fruit in mental culture.

The sooner our agricultural schools realize that compulsory manual labour on the part of a student is not only a travesty of work, but is an absolute waste of valuable time, the sooner they will enter on a higher plane of usefulness, and succeed in sending out real farmers instead of half-trained smatterers in science and practice. In any case, long, independent experience only can ripen the farmer, just as it does the doctor and the lawyer, and no school in any of these professions can do more than prepare a man for studies which his whole life will be too short to complete entirely.

A Teacher of Agriculture.

ENSILAGE CORN THINLY PLANTED.

(Editor Country Gentleman.)

I was much pleased with J. G.'s article. In a recent visit to a gentleman who was filling his silo, I remarked that there were no ears on the cornstalks. He said he used the southern white corn for seed, and the ears, where developed by accidental thin planting, were so large that they were troublesome in passing through the cutter. He planted so thickly that no ears formed. I have had the same apprehension with reference to the ears from southern seed. Formerly I planted very thickly and used southern seed. For the past two years I practised thin planting to make ears, but used the common seed of our neighbourhood for fear of trouble, as suggested by my friend. I got a good growth of stalks, but not so large as that grown from southern seed; but I felt fully compensated with the burthen of ears, and if the southern seed should prove objectionable by reason of the size of the ears, I would never return to the practice of thick planting. Hereafter I shall use the B. & W. seed. From my two years' experience of growing corn for ensilage with thin planting, I can cordially endorse all J. G. says in its favour; the farmer who practises thick seeding is losing a large part of his crop. Last winter I fed my Jersey bulls and two-year-old heifers on nothing but this class of ensilage and a little malt sprouts, and they wintered in excellent condition. The malt sprouts had, doubtless, something to do with my success, as Prof. Stewart says they are excellent to balance corn ensilage in the ration. I find my cattle eat the ensilage more readily, and clear out the manger more thoroughly, than when fed ensilage grown solely for the stalks. The ears chopped up by the cutter preserve as perfectly as the stalks, and the grain is perfectly digested by the cows, careful examination of the droppings showing no kernels of grain undigested. I would like to ask J. G. whose machine he uses that will drop a grain every six inches, with reasonable accuracy.

G. W. FARLEE.

Trenton, N. J.

THE INDIAN GAME.

(Editor Country Gentleman.)

In your issue of November 8th, I note with pleasure a brief account of the Indian Game, furnished by Mr. Stephen Beale. As I was the first, or one of the first, American breeders to import this variety, and as my experience and observation of the breed do not wholly coincide with that given by Mr. Beale, I think it may be of interest to your readers for me to give an account of the fowl as I know it.

I was first attracted to the Indian Game by the flattering notices given of it in a number of English publications, where its claim for eminence as a table fowl was endorsed by such men as Mr. W. B. Tegetmeier; F. R. Z., author of one of the standard works on poultry; Mr. Comyns, editor of "Poultry," and others scarcely less well known in poultry circles. Last December, I accordingly imported a trio from Mr. J. G. Mozenthal, the founder, and at that time honorary secretary

of the Indian Game Club, having previously imported two settings of eggs which failed to hatch. The birds were 22 days on their journey, but arrived in perfect condition, apparently none the worse for an ocean voyage. From this trio I have raised this season six cockerels and one pullet, having had the misfortune to lose the cock early in the season.

I think Mr. Beale's statement of the weight—"cock about seven pounds, hen five"—much too low. The cock I imported weighed *nine* pounds the day I took him from his coop, and the hens will weigh about seven pounds each, I think, though I have not weighed them. I have, however, weighed three of the six cockerels—the youngest one weighing $5\frac{1}{2}$, the next $6\frac{1}{2}$ and the oldest $7\frac{1}{2}$ pounds. As the oldest cockerel is only about seven months old, and the youngest less than six, I think I feel justified in estimating that these male birds, when fully developed, will reach the weight of their sire—9 pounds. The oldest one has not fully obtained his hackle and saddle feathers, while the youngest is still in chicken plumage. I find, by reference to the standard adopted by the Indian Game Club, that my position on weight is corroborated, for that gives the weight as follows: "Weight in cock, 8 to 10 pounds, or more for adults; weight in hen, $5\frac{1}{2}$ to 7 pounds, or more for adults."

I am inclined to think, from my limited experience as well as the testimony of others who have bred the Indian Game longer than I have, that Mr. Beale gives the variety soant justice as layers. I have found my hens to be very good layers, and to lay an extraordinarily large egg. If weight rather than number of eggs is considered, the Indian Game hen will take rank among the best layers of the larger breeds. I know of but one other importer of this variety, and he gives the same testimony. He says: "As layers, I have found the hens A No. 1; not only do they 'shell out' well during the winter, but also through the heat of summer..... I think these birds will prove to be the best winter layers of the Game family." I cannot understand how Mr. Beale should state that the eggs are "rather small," for I have never kept a variety that laid a larger egg, and I have kept Brahmas, Cochins, Plymouth Rocks, Dorkings, Leghorns, Hamburgs, &c., having sometimes as many as nine or ten different varieties at once. It seems as if this were a mistake—a *lapsus pennæ*—or else my experience has been strangely exceptional.

Size and Weight—Large: weight in cock 8 to 10 lbs, or more for adults; weight in hen $5\frac{1}{2}$ to 7 lbs or more for adults.

General Appearance of both Sexes.—Powerful and broad, very active, sprightly and vigorous, flesh to be firm in handling; plumage short and cannot be too level and close; carriage upright, commanding and courageous, the back sloping downwards towards the tail.

Color of Cock.—Breast, under body and thighs, a green glossy black; neck hackle, green glossy black with brown crimson shafts to the feathers, back saddle and saddle hackle, a mixture of rich, green, glossy black and brown crimson, the former predominating greatly; wing, bay chestnut with metallic green, glossy black wing bar; tail, green glossy black.

Color of Hen.—Ground colour, chestnut brown, with beautiful lacing of medium size, lacing of metallic green glossy black. This should look as if it were embossed or raised.

Shank, in both sexes, yellow or orange, the deeper the colour the better. Face, deaf-ears, wattles and comb, a rich red.

Concerning the value of the Indian Game as a cross for the production of table poultry, Mr. Beale has spoken in accord with other eminent poultry breeders when he pronounced it invaluable. For this purpose it has no equal. With the smallest possible amount of offal, and a very large amount of meat, most advantageously disposed upon the parts of greatest value, it furnishes a most valuable cross to the producer of

table poultry for market. Other English breeders, however, have gone farther than Mr. Beale in extolling its merits, when pure bred, for the table, ranking it equal to the best, even though the Dorking be so called.

In regard to the disposition of these fowls, I can only say that, so far as my experience has gone, I have found the Indian Game chickens no more quarrelsome than an equal number of Cochins. The hens are admirable sitters, faithful, and very gentle to handle.

I believe that this fowl will, upon further trial, be found a valuable addition to the poultry of this country. (1)

(1) A capital cross with Dorking hens for the table. A. R. J. F. Providence, R. I. H. S. BARCOCK.

THE FARMER'S COW.

AN OLD SHORT-HORN BREEDER'S IDEAS.

(Editor Country Gentleman.)

I was much interested in an article in your paper some weeks ago, from my old friend, Hon. Lewis F. Allen, detailing an experience he was having in butter-making with a herd of grade Guernsey cows—because of the valuable details it contained of his excellent management, and because also of the fact that the communication was from an old friend with whom I had been a co-laborer in the cattle growing industry for nearly half a century.

It is surprising that Mr. Allen's health and mental vigour should be so well preserved to such an advanced age. But my object in sending you this note is to direct attention to the opinion Mr. Allen expresses in reference to the value of the Guernsey cow for a butter dairy. The editor of the Short-Horn Herd Book states that having bred Short Horns for forty years, and having a lot of grade cows of this blood on hand, he concluded to cross them with Guernsey bulls, and that his herd is now composed entirely of cows of this cross, being chiefly, as I conclude, of the Channel Island blood. The reason given for this experiment is that Short Horn breeders having given their attention to the development of excellence in beef production, the breed had in some measure lost its superiority in the dairy.

This is unquestionably true of breeders in some parts of the West, but I did not suppose it was true of the majority of New-York and New England breeders, and cannot understand why Mr. Allen's own practice should have changed to the exclusively bullock breeding type. Mr. Allen has always been the advocate of the Bates blood, and he will not need to be told how persistently that wonderful man always insisted that a breed of cattle that would not pay in the dairy as well as at the shambles could never be kept at a profit, and that his best bred Short-Horns were always kept in the dairy. He knows, too, that there are many herds in our day in this country, as well as in England, of the highest excellence in this most valuable property. He knows what grand milking Short-Horns were imported by John Hare Powell, of Pennsylvania, Ambrose Stevens and others of New York, and the Ohio Company, in the Scioto Valley, &c.

But, not to question the wisdom of Mr. Allen's experience, confined, as I understand it to be, to the business of butter-making, the reader will observe that nothing occurs in this account indicating that the Channel Island blood would be of value to the farmers of the country—that is, to men engaged in mixed husbandry, or cattle growing for the markets. There is a good deal written in these days to prove that it is impracticable to breed cattle for general use—for the production of both beef and milk. It is said that for the dairy we must have a race of cattle bred exclusively for that purpose;

that a light, thin carcass, bred all to milk, will pay best, &c. Very well, suppose we grant this, does it follow that this is the end of the argument? Who is to rear this dairy cow? We all know that but a very small proportion of the cows found in our dairies are bred by the dairymen. In all the large dairies in the cities, as well in this country as in Great Britain, the cows are purchased from the farmers. Mr. Allen, it is true, with a large farm is trying the experiment of breeding his own dairy live stock; but this is an exception to the general practice. It seems therefore plain that dairy cattle, like cattle for other purposes, must be of a sort that the average farmer can afford to rear, and this must be a sort adapted to general uses.

It is idle to argue that it is impossible to breed cattle that will pay at the pail as well as at the shambles. For more than a hundred years, indeed ever since intelligent attention has been bestowed upon the live stock industry in Great Britain as well as in this country, in all localities where the soil is adapted to mixed husbandry, these two properties have been steadily kept in view by intelligent farmers in selecting and rearing their cattle, because it has been found that a breed possessing but one of the properties could not be reared with a profit.

Delaware, O.

T. C. JONES.

PIG-FEEDING.

We give below the more prominent points in professor J. W. Sanborn's bulletin on experiments in pig-feeding made at the Missouri Agricultural College, Columbus, Missouri, of which Professor Sanborn is the moving spirit. His experiments we believe to be entitled to considerable authority and to be exact and reliable. In some of his conclusions our own limited experience is confirmed, in others we have had no experience, but fully rely on their correctness. We well remember how we were laughed at once in an agricultural meeting for asserting that there was a feeding value in corn-cobs, but such we had found to be the case, and a little ridicule did not change that fact. We ask our readers to carefully consider Professor Sanborn's deductions. There's money in them.

It seems that milk—skim-milk—is the most efficient food fed in proportion of organic matter given.

Everything in my experience favors middlings against corn-meal up to fattening: The use of corn-meal for fattening and middlings for young pigs accounts for the above difference in weight of hogs.

I have found middlings in trial on hogs of like weight, side by side, to be better than corn-meal. But in this table it will be seen that the hogs average to weigh 59.4 pounds; more than in the shipstuff-fed lots.

The other four trials with fine ground cob-meal gave a pound of grain for 4.42 pounds of cob-and-corn-meal, showing as good results or better than with clear meal. Close observation of fine ground cob-meal convinces me that it has a very high value and that coarse cob-meal has little value.

The clear cob-meal got by grinding cobs and mixing from eleven to twenty-two pounds of cotton-seed meal, bran or meal with it has shown beyond question a decided nutritive value. Good growth was got, as is noted, on a small amount of food, of which over four-fifths was clear cob-meal.

Fifteen years of work with and for farmers at institute meetings and by correspondence have shown me that the belief is almost universal that the advanced shote, say weighing 150 pounds and upwards to 200 pounds, will make growth cheaper than shotes weighing 150 pounds and downward. This false view is tenaciously held, despite evidence to the contrary.

This trial was made largely to illustrate the folly of our unpardonable and indefensible practice of keeping hogs fifteen to eighteen months to obtain the growth that may well be made in seven to eight months. The growth made in the first pe-

riod would give a shote weighing in seven months 240 pounds, including his birth-weight. This would be got from the feeding, on a basis of two per cent for maintenance, of only 349 pounds more food than necessary to maintain existence. Now if a shote is kept fourteen months, or twice seven months, the maintenance food at two per cent daily would be 504 pounds for the extra seven months uselessly fed, or, in other words, maintenance rations are greater than the food of growth; and those of us—which is about all of us—who feed fourteen months actually throw away more food in unnecessary maintenance than the actual food of growth by 44.4 per cent—144.4 the amount actually needed. Regarding this food as middlings at \$14 a ton, we have a value of \$3.52 thus lost in maintenance, or, for the 3,876,325 hogs of our state, \$13,644,640.

The tables of this bulletin, and especially this one, show the miserable economy of restricted diet. It is only on such diet that we are in need of wintering our shotes for the market: (1) Maintenance-ration is a variable amount, determined by age of animals and surrounding conditions, and ranges above and below two per cent of live weight daily; but under favorable conditions may be materially under two per cent of live weight daily for a 120 pound shote. (2) The food of growth is less than maintenance food, and varies from 1.43 pounds to over two pounds. This fact requires that the days maintenance-food is given should be as short as good feeding will allow. If we double the time needed to grow a shote we use about three-fourths of the food given for maintenance, while on the other hand but little over one-half of the food goes for maintenance. With middlings at \$15 a ton, the best meal feed, by the tables, seven months lost time in marketing costs in maintenance 39.3 per cent of the sale value of the shote. (3) The more food given up to a little over a pound growth per day, the more economical the growth, while excessive growth may not be so economical as the growth just stated. (4) The growth per day increases with age up to at least 150 to 200 pounds. (5) The cheapest growth is made on young animals, gradually increasing with size, until the maturing period sets in, when increase of course is rapid. (6) Skim-milk and meals are the most effective rations fed. Middlings is the best single food; cob-meal, fine ground, is an efficient food and equal to clear corn-meal. (7) For fifty-six pounds of food fourteen pounds of growth was got up to 200 pounds of live weight for average of all the trials. This growth, at four cents a pound, gives fifty-six cents for the weight of food in a bushel of corn; middlings gave 15.3 pounds, or 27.4 pounds for 100 pounds, which, at four cents, gives \$1.09 for the 100 pounds of middlings.

ABOUT MIXED FARMING.

In the *Weekly Witness* of December 19th there appeared a letter "against mixed farming." "A plea for each farmer to take up one branch of the business." It was called forth by a remark of mine in an article on the "Crops of Ontario," to the following effect:—"A sharp lesson has been given to those who have made dairying their exclusive business. In future they will be likely to regard mixed husbandry in a more favorable light." The writer of the letter in question, Mr. Thomas B. Scott, of Vanneck, Ont., says a number of kind and appreciative things at the outset concerning the "Lindenbank papers," for which I am duly grateful, and which I accept as honest praise, not empty flattery. I do not expect an intelligent, reflective man such as Mr. Scott evidently is, always to agree with me, and am rather pleased than otherwise to have a difference of opinion frankly stated.

In the present case I do not think there is much real difference of opinion between us, but the subject is one of suffi-

cient interest and importance to justify a little explanation and amplification. My remark had reference to those who have made dairying "their exclusive business," so that when drought killed the pasturage and dried up the summer streams, the milk supply utterly failed, and having no other string to their bows, very serious inconvenience and loss were the results. I was not writing against specialties in agriculture. A farmer, like a doctor, whose understanding and practising all branches of his business, may devote special attention to some one branch of which he is particularly fond, or in which he is unusually skilful.

I think there is a tendency in certain districts of Canada to go too exclusively into dairying. They are spoken of as "dairy districts," not only because dairy farming is carried on in them, but because of an idea that they are better suited to that branch of agriculture than other parts of the country. It is not very long ago that even well-informed dairymen had the idea that the limits of successful cheese making were very narrow, and the people of a few localities imagined they would enjoy a perpetual monopoly of supplying the world with cheese. It used to be thought that good cheese could not be made in Canada or the Western States, and therefore New York was looked to by the residents in those localities for this article. Now, Canada and the Western States rival and even beat New York in raising this product. It is not easy to set limits to the area from which good cheese and butter can be made.

Too much dairying will have the same effect in course of time that too much wheat growing has had in the past. Farmers are apt to go pell mell into that which, for the time being, is found to be a paying branch of their business. Thus, the early colonists in Canada, in the State of New York, in Pennsylvania, Virginia, Maryland, etc., found tracts of land, which for many years, by simply ploughing and sowing, yielded abundant crops of wheat and tobacco. In less than two generations many of these lands became utterly sterile, and there are areas in the South that after a hundred years of fallowing will not raise a remunerative crop of any cereal plant. Many Illinois farmers pursued the same course in regard to Indian corn, until now it no longer pays to raise that grain. A few years ago, there was a mania for fine wool, and hosts of farmers took the "Merino fever." Some fancy strains became famous, fictitious values were put upon them, until a single ram was sold for the price of a good farm. This sheep fever led to over-production of wool, and consequent low prices. Reaction followed, good sheep were slaughtered by the thousand, and the business of wool raising became as unduly depressed as it had formerly been improperly elevated. The hop mania of a few years ago is another sample in point. Flax-growing, too, in some sections has been similarly over-done. So, too, there is danger lest dairying in certain districts may become too exclusive. (1)

Ordinary farming cannot be made to pay and maintain the fertility of the soil except by a proper system of crop rotation. Rotation of crops implies mixed husbandry. As Mr. Scott observes, "dairying is not a very exclusive business, unless the cows are bought in the spring and sold in the fall" of which there are not wanting instances. Another method in which dairying is made too exclusive is when more cows are kept than the farm will support, so that feed has to be bought. Milk is, I believe, as exhaustive as grain, and if all the energies of the farm are turned to milk production, and the milk be sold to the cheese factory or creamery (2) precisely the same result of soil impoverishment will come as in the case of too

(1) Fifty years ago, the fine pasture of Cheshire refused to yield cheese, and had it not been for dressings of 10 cwt. of bone to the acre, they would have become barren.
A. R. J. F.

(2) The exportation of butter from the farm cannot do much harm.
A. R. J. F.

exclusive wheat growing. It is only a question of time.

My idea of a farm is that it should sustain itself and the living beings that occupy it, with very little aid from outside and that by judicious cultivation, it should be carried to the highest point of productiveness, and kept there. I fully recognize the difference in soils, and their adaptability to special crops, rendering it wise to give special, but not exclusive, attention to particular products. A well-managed farm should sell grain, clover seed, meat, wool, cheese and butter, but not hay or straw, until it becomes so fertile that too much straw is produced in the grain crops. Then, perhaps, it will do to sell a little hay, - when it brings a high price. Of course, there are exceptional cases in which rotation of crops and mixed agriculture are impracticable. There are districts where the plough cannot be used at all. But a large proportion of country is, in all respects, adapted to a great variety of crops, and to the support, at the same time, of abundant live stock. Experience has proved that wherever mixed farming is practicable, it is the most profitable in the end.

Mr. Scott refers to the success of the distinguished breeder of cattle, sheep and pigs, also to the business of horse-raising, as evidence that it is wise to take some one line of agricultural pursuit to the exclusion of all others. The noted breeders referred to did not follow their respective lines exclusively. They were general farmers, with a special eye to the particular breed of cattle, sheep or pigs which they were seeking to develop. Horse raising is a business by itself, and those who follow it exclusively, do not pretend to farm at all, as a general rule. I am at a loss to understand how "mixed husbandry" should be, as Mr. Scott says it is, "the cause of most of the drudgery on the farm." Of course, a man may have "too many irons in the fire. He may also have too much work of a particular kind to do. It is an old proverb that we should not put all our eggs into one basket. Two or more strings to one's bow are objectionable in love affairs, but I think them an advantage in agriculture.

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