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Provincial Farm-School, Whitfield's.

The following information will be useful to all those who have young people to send to the new Provincial Farm-School. This establishment will open at once. The Post-office address is: Whitfield's, Que.

1. All applications must be addressed to M. S. Lesage, Asst.-Commissioner of Agriculture, Quebec. Certificates must accompany them, testifying to the good conduct of the candidate, his capacity, and his desire to work as men usually do work on a farm.

2. The government will select 20 apprentices, one for each judicial district, who will receive board, the washing of their working clothes, and a salary, varying from $30 to $100, according to the value of their labor. The young men will be expected to have been previously at work on the land for at least two years, special mention of which should be made in the application.

3. Every apprentice who turns out idle, incapable, or unruly, will be immediately discharged in order to make room for others.

4. The course of instruction at the farm-school will be, above all things, practical, that is to say, the apprentices will be under the charge of skilful instructors, who will show them how to perform, after the best fashion, the work of the following departments: The field cultivation; the fruit and vegetable garden; the orchard; the plantations; the stables and cattle sheds; and the butter and cheese factories.

5. The evenings and intervals of leisure will be usually employed in the perusal of books and journals on farming, and by lectures given at odd times by the managers and sub-managers of departments.

6. The board of management, under Mr Whitfield himself, will consist of: 1st. A general superintendent, 2nd. a manager of cattle department, 3nd. a thorough dairyman, 4th. a farm manager, 5th. a gardener, nurseryman, and forester, 6th. an accountant. Each of these will have as many assistants as may be necessary for the proper conduct of the business.

7. Every evening, the work done on the farm will be entered in the books, its value noted, and the work of each apprentice for the next day pointed out.

8. The farm accounts and the work-book will be always open for inspection by the pupils.

9. The catholic pupils will be under the care of the Rev. Curé of St. Césaire, and the protestants under that of the Minister at Rougemont. Both these gentlemen have promised their best aid to the General Superintendent, who will watch over the morals and conduct of the pupils with all possible devotion.

10. The food will be abundant and of good quality, such as well to do farmer would give to his own family. But in this, as in all other departments, the strictest economy will be observed, just as on a well-conducted farm.

11. As soon as the apprentices shall have acquired sufficient knowledge of those branches of agriculture to which they intend to devote themselves, they will receive certificates and diplomas in accordance with their several merits. It is to be observed that time has not permitted all the intended changes in the establishment. Thus, the number of bedrooms is insufficient, the reading room wants finishing and furnishing, and a wing wants building, before the place can be called complete. In the meantime, it was thought better to postpone these additions for the present rather than defer opening the school for another year.

In reply to many applications which have been made to Mr Whitfield to receive pupils in addition to those sent by Government, we are requested to state that he will do his best to accommodate, at a reasonable rate, as many as can be profitably employed on the farm. For all other information apply to: Ed. A. Barnard, Director of Agriculture, Provincial Model-Farm, Whitfield's, Que.

The Silo practically treated.

By Mark Dawes, Jr., Ste-Anne de Bellevue.

Barn, description of.—In 1881, having occasion to alter our barn, we decided to raise the old one, and, in order to economize in lumber and material, to build a stone basement on which to place the old frame, &c., with a form of division calculated to facilitate feeding and save food.

Finding that in the new building we should have more room for stock, roots, and vegetables than we should require in the then state of the farm, and having read and heard a great about the system of *ensilage*, we determined, after a good deal of consideration, to give it a fair trial; satisfied that, if all the good predicted did not ensue, at least we should not run the risk of losing any great amount of money. Our barn was an old-fashioned post-barn, with a good cedar frame, built on the plan almost universally adopted in this neighbourhood.

Arrangement of the new barn.—We first raised the barn, and placed under it a stone basement, 10 feet high, all round; we then closed up the front of the lean-to shed, changed the drive-floor across the barn-floor into the middle bay, divided the basement under the body of the barn into five compartments, and the part under the old lean-to shed we left in one long apartment for cattle and horses.

The division on the left of the drive-floor was left unfloored, or rather the floor was raised four feet in the clear of the barn-floor, and our silo was placed in this compartment.

Planting, &c., of silo-crops.—In the spring of 1881, two acres of the field which was in turn for roots, and which had been ploughed in the previous autumn, were manured with 100 lbs of superphosphate per acre, a sufficient supply of dung not being obtainable. This was put on the top of drills 30 inches apart, and on the 20th of June we sowed 3 bushels of Western fodder-corn, the grains being about 4 inches apart in the rows.

Cultivation.—The corn was hand-hoed twice, and horse-hoed three times, during the first weeks of its growth:

Fist time two weeks after sowing;
Second time when one foot high;
Third time when three feet high.

The stalks varied from 3 feet to 12 feet in height, and from half an inch to one inch and a half in diameter.

Harvesting.—The Toronto Mower cut two rows at a time, and the corn was loaded, crosswise, on a double-waggon, taking 2 rows down the field and two rows up the field, two men loading and one man on the waggon.

Ensiling.—This year we did not cut the corn-stalks, as this being an experiment, it was not considered worth while to go to the expense of buying a costly chaff cutter until we had ascertained thoroughly, though on a small scale, the probable value of the ensilage when given to stock. Two men, then, unloaded the stalks; two men were employed, in the silo, packing and tramping, with an old mare to help, but the men looking carefully to the sides and corners. Small, loose bundles of stalks were spread flat, and well packed and tramped all over, layer by layer.

Covering in.—The ensilage, when all packed and tramped, was about 7 feet deep. Short planks and old doors, left from the alterations in the barn, were laid on the top, and on this cover were placed, to keep all tight and continuously pressed, 20 inches of boulders, varying in weight from those liftable by one man to those which required the united force of two.

Heating.—Three or four days from the finishing of the cover and its load of stones, a slight increase of temperature was perceptible at the door-way. This heating continued for about three weeks, at the end of which time the mass had sunk about 2 feet, leaving the ensilage 5 feet deep.

Smell.—There was a strong, *sweet* odour given off during the first two weeks after the completion of the packing, which gradually changed into a slightly acid smell. This was only noticeable, again, round the door-way, where the exclusion of the air was not perfect, the entrance being closed with short pieces of plank laid cross-wise inside the door.

Opened.—On the 7th of January, the silo was opened. Three feet round the door-way were spoiled—black and decayed, with bad odour—about 6 inches at the sides and 3 inches at the top were also damaged, but the rest was in good condition.

Consumption of the ensilage.—We first gave the cattle the stalks whole, just as they were taken from the silo; but this we soon found to be a very wasteful mode of feeding, as the animals would not eat the thick ends, though these were the sweetest parts of the corn, especially the soft, spongy core, which had a flavour like sweetened water, with hardly any perceptible acidity. Some of the cattle ate it readily, even greedily; while one or two of them refused it at first, but after two or three days, showed the same appetite for it that the others did.

Improvement in yield of milk.—In three or four days after receiving for the first time the ration of ensilage, the cows, though a long time calved, showed a marked increase in the amount of milk. This increase was to the extent of 20 o/o!

The ensilage was finished on the 27th of February, and the number of cattle which received it was 6; sheep 17—one bushel a head was given each day to the horned stock, with 2 quarts of meal, twice a day, a peck of cut mangels, and all the oat-straw they would eat; the hay which the horses threw out of their racks was given to the cattle at night. The sheep were treated in the proportion of 5 sheep to one cow (rather a small allowance—I should take 6½ or 7 sheep to equal one cow. A. R. J. F.).

Estimation of quantity of ensilage.—

Silo = 24 ft. x 12 ft. x 5 ft. deep = 1440 cub. feet.
Weight of 50 cub. feet = 1 ton.
$\therefore \frac{1440}{50} = 28\frac{4}{5}$ tons.

Cost of the ensilage.—All operations in husbandry are difficult to value, especially those requiring horse-labour. Still, we can arrive at an approximation to the cost, and I think it is wiser to overrate the value of the work rather than the reverse, though we must not carry that too far: let us see then, as nearly as we can estimate it, what our ensilage cost us per ton:

Ploughing 1¾ day of man and team	$3.50
Man sowing salt, ¼ day	0.25
Grubbing in spring, ½ day man and team	0.50
Drilling, ½ day man and team	1.00
Man sowing superphosphate, 1 day	1.00
Rolling—man and team, ¼ day	0.50
Sowing corn, man, 1 day	1.00
Cultivating, 3 times, man and horse 2 days	3.00
Manuring phosphates broadcast ¼ day	0.25
Hand-hoeing twice, 3 days	3.00
	$14.00
Harvesting.—Manuring, self and team, ½ day	$1.00
Hauling in to silo, 3 days, $3.00—team one day $1.00	4.00
Packing, 2 days, $2.00—horse 1 day $0.50	2.50
Covering, 2½ days	2.50
	$10.00
Manures.—200 lb. superphosphate	$4.00
200 lb. salt	0.50
	$4.50

Thus the whole cost of the ensilage from the first ploughing in the autumn of 1881 to the completion of the filling in the autumn of 1882, amounted to $28.50 or as nearly as possible one dollar per ton. (1)

On reviewing the first trial of ensilage, we came to the conclusion that the successes overbalanced the failures, and that it was well worth while to continue the practice for another season. The failures we considered to be: 1.—The corn ensiled without previous cutting up, and in consequence, as it was impossible to tramp the long stalks down tight enough, the air remained in the interstices and caused mildew after the first fermentation was over; 2.—The wall of the silo was left in a rough state instead of being cemented; 3.—The covering with old pieces of board, old doors, &c., did not sufficiently exclude the air from the top layer of ensilage. Accordingly, learning a lesson of considerable value from our blunders, we proceeded in the year 1882 to correct our former process in the following manner:

(1) A deduction from this for the cultivation the land received, and the unconsumed remains of the manure, may be made, but, on the other hand, the rent of the land, and other charges must be added. Mr Dawes of course does not pay rent, but the interest of the money expended in the purchase of the farm comes to the same thing, and that, coupled with interest on the capital laid out in buildings and in clearing off stones, &c., would amount to a fair sum per acre per annum. Could the whole be less than $4.00 per acre a year? A.R.J.F.

We began by thoroughly cementing the walls of the silo.

As before, two acres of the field in turn for root-crops were selected; after ploughing on the 9th and 10th of September, the grubber followed, and fall rye was sown, on a well harrowed surface, at the rate of 1½ bushels to the acre. (1)

The rye was top-dressed in the winter, from Dec. to April, with dung, at the rate of 30 single horse loads per acre.

In May, ploughed again; harrowed; drilled up, June 2nd, rolled the drills the same day; sowed, June 3rd, and covered the seed with hand-hoes, June 5th; the sowing was badly done.

The horse-hoe was passed through the crop on the 7th of July, and this, with two hand-hoeings, on the 11th and 25th of July, was all the cultivation the crop received.

Harvesting.—Two women with hooks cut two rows at a time.

Two men hauling in dump carts, the tail-board made about 1 foot higher than usual, and a stake in each of the fore corners of the body of the cart about 3 feet high, the better to hold the corn, which was placed butt-end against the tail-board; hauled to barn; removed tail-board; backed up to chaff-cutter, dumped, and drove away, leaving load at the mouth of the machine with the butt-ends close and handy for feeding in.

Cutting.—One horse on the horse-power (A. W. Gray's); Maxwell's chaff-cutter.

One man to feed in; one to supply feeder; one to clear away from cutter.

Packing.—One man in silo spreading and tramping. A pair of fillies, rising 3 years old, tramping.

The corn was at first about 5 feet deep, but sank to 4 feet.

Clover.—Cut the clover in the morning and raked it together at once; hauled in dump carts with stake in each corner, the rear stake fastened to tail-board; removed tail-board and dumped.

Two men in field to pitch; two men hauling; one man in barn to pitch; one in silo spreading and tramping, with the two fillies to help him.

Cover.—Covered with short planks laid across the top, two lengths across, overlapping 3 or 4 inches in the middle, on which were placed a layer of field-boulders 18 inches deep.

Opened on the 15th of November—in excellent order, except just round the door-way again. The corn was slightly acid, but none was spoiled, neither was there any mould.

Clover.—We now see that to make good work the clover should be cut as well as the corn; for it was slightly mouldy in spots, where two or more large forkfuls met each other and were not equally divided and spread, thus retaining the air, and becoming mildewed. Though dark in colour, the clover was sweet to the smell and taste, and the cattle, though preferring the corn, eat it with avidity.

The whole of the ensilage was consumed by the 20th of May, and was given to the following stock:

Cattle	5
Sheep	12
Horses	6

All the animals eat it readily; but, at first, the horses seemed to prefer good hay; when a month or two had passed, however, and they wearied of dry food, they rejected the hay, and would wait impatiently for their feed of ensilage

Cost of crop 1882.—

Ploughing, autumn	$6.00
Grubbing	1.50
Harrowing and cross-do	1.50
Sowing rye	25
Total of autumn cultivation	$9.25

(1) Not half enough—for green-meat 4 bushels are not too much.
A. R. J. F.

Spring work:	
Ploughing	$6.00
Harrowing	75
Drilling up	2.25
Rolling	75
Sowing	50
Hoeing in uncovered seed	2.00
	$12.25
Cultivation:	
Horse-hoeing twice	$1.50
Hand-hoeing, man 19 days; woman 15 days	26.50
	$28.00
Harvesting, August 28th to September 6th:	
Women cutting corn, 8 days	$4.00
Hauling	9.00
Horses	4.50
	$17.50
Packing:	
Men, 9 days	$9.00
Horse on chaff-cutter	2.50
Fillies tramping	4.50
Man feeding chaff-cutter	4.00
Self	4.50
	$24.50
60 loads of dung at 25 cts.	15.00
	$39.50

MARK DAWES, Junior, St Anne's.

A total of $106.50, or $53.25 per acre. But it is not fair to charge more than half the dung to the ensilage, and a large deduction should be made for the improved condition of the land; still, as before, interest should be reckoned. I saw Mr Dawes stock on the 2nd of June, and they were all in first-rate order. The calves were in good growing condition, and fat enough for anything. The 19 days of a man and 15 days of a woman, at hand-hoeing, demand explanation.

A. R. J. F.

I saw Mr Abbott's newly imported Guernseys last week. The cow is low in flesh, but no wonder, when the quantity and quality of the milk she gives is considered. Her heifer calf, born in January, is a lovely creature, and the bull is—well, I can find no other epithet for him but *magnificent*. This, no one who will take the trouble to visit the herd will be inclined to deny. His temper seems to be as good as his looks, and his looks are butter all over. The byre-woman assured me that in the middle of October last, the best cow was giving 12 lb. of butter a week; and that, 5 months after calving. I would suggest that too much skim-milk tends to enlarge the joints of the young stock: a little less skim-milk, with some boiled linseed (crushed) and pease meal, would make better calves. A. R. J. F.

First steps in Farming.—Young man's Department.

THE LAMBING OF EWES, AND THE TREATMENT OF LAMBS.

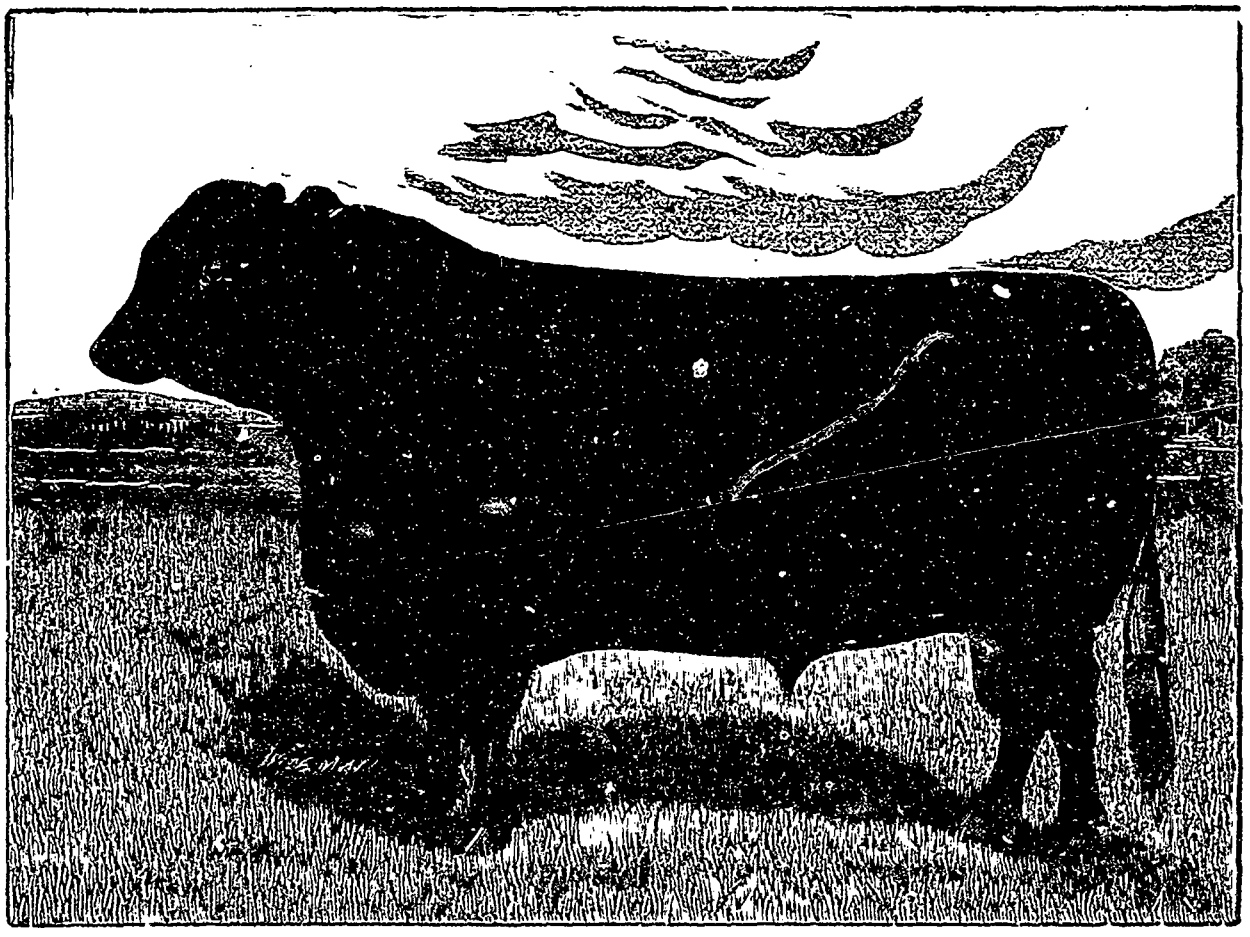
The time, I hope, is coming, when we shall see *flocks* of sheep, under the care of shepherds, properly looked after, and fed throughout the summer on crops grown expressly for them. In no other way can I image to myself the restoration of the worn out lands of this country. Sheep, even kept on a small scale, are profitable to the owner, or so many hundreds would not be let out on shares. But kept, as they should

be, on the land from May to December, they will not only give the usual profit of lamb and wool, but the produce of the farm will be at least doubled.

The ram, I need hardly say, should be in first-rate condition when put to the ewes. Rape is what we generally use in England to bring the ewes into season, and I doubt any other plant having so great an effect; but if you have it not, three weeks good feeding before coition will do much good. Two things you want: plenty of twins, and rapid lambing, that is, that the whole flock should drop their lambs as nearly together as possible—it keeps the shepherd less time deprived of his night's rest, besides giving all the young ones an equal chance, and an equal look, which when drawn up for

The number of ewes put to a ram depends upon circumstances.

One that I hired of Jonas Webb, of Babraham, served 110 ewes, which produced 185 lambs! He was a 2 year old, and the ewes were young, healthy, and in prime condition. But, as a general rule, a lamb-ram, will serve 30 to 40 ewes, and a shearling 80. The Hampshire breeders prefer lamb-rams, but their ewes lamb down so early, and are so well treated all along, that in September the lambs are as vigorous as the shearlings of other breeds. The ram should be *ruddled* on the breast, that the time of each ewe may be marked in the shepherd's book. A separate pen should be provided for the ram, where, in company with a ewe to keep him quiet, he



JUDGE.

inspection, will give them more additional value than an inexperienced man would believe.

You may think yourselves very fortunate if you find a good shepherd. I had one, and only one, but he was a wonder: he knew each ewe in the flock, personally; when they were due to lamb; what their pedigree was; could assist them in lambing, when necessary, but never troubled them when they could lamb alone; never wasted the food set apart for them; could nurse a sick ewe, bring up a *cosset* lamb, or induce a ewe to take an extra nursling when she was full of milk; there was no blaring of lambs and dams in search of each other in his lambing shed; his care was unintermitting, and he saved me, during the four years he was in my service, much more than the value of his wages.

may be fed twice a day with cake, corn, and any green stuff that may be handy; for his attendance on the ewes, if he is allowed to be always with them, will be so incessant, that he will not give himself time to eat.

The ewes will, probably, be all rammed by the end of ten days. Some will *return*, as it is called, and are served again. At the end of the third week, we used to withdraw the ram, as it is not considered desirable, when a man takes a pride in his flock, to have ewes keep on dropping lambs for a month or two after the main flock has finished.

Fat ewes always produce small lambs and suffer from inflammation in lambing, so don't keep your ewes too well. Ewes in poor condition, on the other hand, can't nourish their lambs properly, die in lambing from weakness, lose

their wool, and can't nurse their lambs: don't starve your inlambed ewes. Moderate keep, clover-hay, pea-straw, a little cake (linseed or cotton-seed) just a few days before and after lambing, will see you well through this anxious time. Half a pound of linseed cake, or 4 ounces of crushed linseed, per head, will save many a ewe, and the cost for, say, 10 days before, and 10 days after lambing, is trifling, compared with the immense advantages to be derived from the outlay.

Above all things keep your ewes quiet. The sudden irruption of a strange dog into the pen may work irreparable damage. Ewes will stand almost any amount of cold, but the wet fleece must be guard against. Open sheds will do very well; in fact, I prefer them very much to close places; but means should be provided to keep the sheep under the shelter, as, from obstinacy or some other cause, they will not come in out of the rain when they can get a chance to avoid it.

You will soon learn to distinguish from her neighbours the ewe which is about to lamb: the parts under the tail grow red, and enlarge; she seems uneasy; walks about restlessly; and tries to get away from her sisters; in fact, she gets into, what we should call in a human being, a state of fidgetiness, deeply interested in the lambs of other ewes, which she tries often to seduce from their dams. The water-bag then protrudes from the vagina, then the two fore-feet, if the presentation be natural, and the mouth of the lamb will be seen lying upon them. The ewe changes her position, from time to time, rises to her feet and again lies down, straining forcibly to rid herself of her burden. Now is the time, when, if the ewe becomes weak, the careful shepherd assists her. Drawing out the legs as far as possible, and freeing the top of the head from the vagina with his finger, he pulls gently, in a downward direction, carefully timing his pulls with the straining of the ewe: he should *never* pull between the pains, as assistance at improper times, I am sure from long observation, puzzles the ewe, and makes her neglect her own duty. When happily extracted and placed in front of the dam, she will soon, unless very sick, recognize the lamb, *nousling* it, purring over it like a cat, and making such a fuss over the newborn wonder, as none but mothers can fairly appreciate. In the case of twins, the second should be got away as soon as possible, and it rarely gives much trouble, though sometimes the ewe is so much taken up with her first, that she neglects the pains that usher in the second. I have seen the second of twins born, as it seemed, almost unobserved by the mother.

In the case of a wrong presentation, the shepherd's hand, smeared with grease (goose grease remains moist longest), must be introduced, and the lamb extracted as quickly as possible. I believe among the Leicesters wrong presentations are not uncommon, but I have no experience in that breed; in Down flocks I never saw a worse thing than the doubling back of one fore-leg, a presentation which is early detected, and easily remedied.

Sometimes, particularly if the labour has been severe, the ewe seems careless of her lamb, and will not let it suck. The udder should be examined, and if found inflamed, should be bathed with a weak solution of saltpetre, or simply with hot water; but if there is neither inflammation nor hardness, the ewe must be tied up tight by the head, and the hind quarters held, until the lamb has sucked its fill; the difficulty will be soon overcome, and the couple be on good terms for the future. If a ewe loses her own lamb, one of twins should be assigned to her. Strip the dead lamb of its skin, and place it, while warm if possible, on the stranger, and with care, patience, and tying up as before, the ewe will soon take to it; but one lambing season will teach you how to proceed in such cases much better than I can tell you.

If you have superfluous lambs, they can be brought up on warm cow's milk. A bottle with an Indian rubber tube, such as children use, to suck from, will answer every purpose. But *cossets*, as they are called, are always a bore, blaring about, and running after every one they see, into the house, and, in some cases, getting into the garden, and doing all kinds of mischief. They should go to the butcher as soon as they are fit.

As to the castration of the male lambs, there is a great difference of opinion. The Sussex men cut theirs at a fortnight or three week old. The Hampshire men, on the other hand, who prefer a strong, masculine animal, postpone the operation till the lambs are four months old. The tail, however, in both cases, is docked as soon as the young one has strength to bear it. At whatever age castration is performed, fine, mild weather should be chosen for it. I regret to say that it is too much the custom of those who send early lamb to the Montreal market not to castrate the males. It may seem unnecessary to emasculate them at the age they are killed, but there is a certain reddish look about the meat, called by London butchers "foxiness," which is unmistakeable, and injures the flavour amazingly. Lambs for this purpose should be castrated at 10 days old.

Our English flock-masters dock their lambs' tails much shorter than is generally done here; and I think with reason. The short dock certainly gives squareness to the hind quarters, and as the real reason for docking is to keep the sheep clear from filth and from the fly, which lays eggs which turn to maggots, the shorter the tail, in moderation, the better. The third joint is about the place.

Don't be afraid of the jets of blood after docking. They will soon stop, as general rule, and if not, a string tied round the tail will speedily arrest the flow.

If you do leave your lambs uncastrated till they are a few months old, you will have a chance of tasting that most delicious dish, delicately called in Hampshire "Lambs' Fry." Clean and split the testicles, but don't wash them; dry them thoroughly with a cloth, dip them first in egg, and then in fine, dry bread-crumbs mixed with dried and well chopped parsley, summer savory, chervil, lemon thyme, and the merest scrape of nutmeg, and fry them "of a beautiful brown," as Mrs Rundell says, in plenty of lard. The lard should in this, as in all other cases of frying, be quite boiling, and at least two inches deep in the pan.

Of course the lambs with their dams will, if you really mean sheep-keeping as it ought to be done, be put on the best grass your farm affords, as soon as possible after the sheep goes. This must carry them till the sown crops, rape, vetches, &c., are ready to take them. Of these sown crops I have spoken so lately, that I need not go over the ground again. But there is one thing I should like to impress upon you very strongly, and that is: a check to the improvement of the young lamb is more difficult to remedy, than a check to any of the other young animals on the farm. A lamb never recovers from a check, whereas a calf can, by care and attention, be pretty well restored, and so can a colt.

Lambs are troubled with few diseases as long as they are on the milk. A change from a barren pasture to a luxuriant bite of grass will sometimes produce diarrhœa. A dose of Epsom salt, say, half an ounce, with a little ginger to soothe the bowels, will commonly settle the question. Costiveness, on the other hand, rarely affects lambs running with their dams, and a slight aperitive will cure that complaint. Care should be taken, especially in a wooded country, to keep all the parts near the tail in a perfect state of cleanliness; the fly will play mischief with the flock, if this is not looked to. In our best managed flocks, just before weaning time, the wool growing between the thighs, *outside*, is shorn off, and

the lambs are dipped in one of the compositions set forth for that purpose, of which I shall have more to say presently. This treatment generally renders them pretty safe for the summer, but in spite of it all, a want of frequent inspection will too often allow the poor things to be attacked by maggots, and deaths, which might be avoided, occur.

Weaning.—Lambs are usually weaned at from three to four months old. It seems a simple thing enough to separate a lamb from its dam, and at first sight, it would appear there could not be any doubt about the way to do it. But there are, as usual, two ways, one of which is right. For example: suppose the ewes and lambs are in a field, and you take the lambs away from their mothers into a fresh piece; a pretty row there will be! The lambs, utterly unacquainted with their new home, will go mooning about all over the place, baa-ing, and reducing their flesh, in search for their dams and their familiar corners. It will be some days before they settle. Whereas, if, after remaining for a week or so in the same field, the ewes are removed out of sight and hearing, the lambs, thoroughly accustomed to their habitat, will soon quiet down, and feed away as if nothing had happened to disturb them. By this time, too, many of the ewes, from loss or scantiness of milk, have weaned their lambs, who have been taught to depend upon grass &c. for their food, and the sight of these, feeding away merrily, tends to soothe and tranquillize the minds of the others. Interesting little things! How I wish I had a couple of hundred to look after, now!

If you lamb down early, you must wean early, or else there will not be time for the ewes to recover their condition before their hard time comes again. Fancy, that in Scotland, even in my time, the ewes were milked after the lambs were weaned! That is over, at all events, but care should be taken to look after any ewe that, from lambing late or any other cause, may have a flush of milk upon her after weaning time. She should, in this case, be dried off as carefully as a cow, and milked at intervals of 12 hours, then 24 hours, 36 hours &c.; and I need not say that the less succulent her food is the sooner the desired end will be secured. The danger is that the teats will be plugged up with cheesy matter. After a fortnight's separation, the lambs may, if desired, be returned to the ewe-flock; all parental and filial instinct will be extinct by that time.

We do not grow *saintfoin* in this country. It would do well on any of the calcareous soils (no where else, though,) and there is nothing as good for weaning lambs. I never saw them scour on it, and I have seen large numbers suffering from diarrhœa (on red clover), completely cured by a few days sojourn on this valuable plant.

Our best flock-masters dip their sheep twice a year—at least they dip the lambs at shearing time, and the whole flock in the autumn. Bigg's composition was the most popular sheep-dip, when I was a breeder. I used it regularly for years and may be trusted when I say that no sheep of mine was ever troubled with scab or tick as long as I had a flock. It is poisonous, though, and therefore care must be taken that no animal drinks it. The sheep is dipped in a tub containing a solution of the stuff in water, and, when thoroughly soaked, the patient is placed on a strainer, so constructed that the liquid squeezed from the wool runs back again into the tub. As a precaution, every sheep bought for any purpose should be dipped before it joins the flock already on the farm.

But there is a cheaper form of sheep-dip that will, I doubt not, answer all purposes. For every twenty sheep, take two lbs of tobacco stems and a gallon of water, boiling them gently for at least an hour; to this add 2 lbs of soft soap, 2 ounces of flour of sulphur, and a wine glass of spirits of tar. Dilute this plentifully (experience must be your guide), and treat the sheep as above described.

I forgot to mention that, in England, when the fly is troublesome to the heads of the sheep, we put a sort of cap, tied under the ears before and behind, over the skull. Sheep will butt at each, and if a place is skinned, the fly attacks it at once and drives the poor brute crazy. Note—never put a cap on a sore head, the fly is sure to get under it, and you can't see the damage till too late to remedy it.

Fortunately for us, that dire disease the foot-rot has never been seen here; though some newly imported sheep (Shropshire Downs) were sold at Chicago, which, a few days after, were found to be affected. A pretty row the purchaser made in the agricultural press about it! The seller, about as honest a man as they make them, was called all sorts of names, as if he could have told by intuition that the disease was incubating. I don't see why short-wools should be more afflicted with this pest than long-wools, but with all my love for them, they certainly are, and very troublesome it is to cure it. It takes between the claws of the hoof, and gradually eats its way, under the horn, upwards. I wonder that where sheep are kept, in winter and early spring, on damp straw, that the disease does not show itself, even here. For me, I should prefer sheep lying on boards, with intervals of $\frac{3}{4}$ of an inch between, to letting them tread down a mass of damp straw into a puddle. The boards would be swept down twice a day, the manure collected, and there could not be a better vehicle to carry bone-dust or superphosphate with it to the turnip crop. Of course, there must be a space of two or three feet between the boards and the ground. If you think the sheep won't like so hard a bed, watch them in the summer, and you will find that they will, if they can, always select the road for their place of repose. Should you fear a loss of the valuable urine, nothing easier than to throw a few bushels of spent tan-bark, or rubbish of any sort to absorb it.

But to cure the foot-rot! Well, I have done it with my own hands, and, though it takes time and troubled, I don't think that any one ought to despair of succeeding, if he will follow out, precisely, my instructions. You are sure to have it here, sooner or later, so you may as well learn how to cure it before it arrives.

With a steady hand, and a very sharp knife, pare away all the loose horn, avoiding as much as possible making the hoof bleed. Then dress, with a feather, the parts affected with *butter of antimony* (Mr Stephens says this is cruel, but the disease is worse than the cure), taking care that it reaches every bit of the spongy part. The flesh will smoke under the treatment, but, if unpityingly carried out, the patient will recover, and that is surely, in the long run, more humane than allowing the poor beast to die in agonies of pain, as he indisputably will if the disease is permitted to take its course.

The *rot* is a disease with which I am not well acquainted. As a boy, some fifty years ago, I heard a good deal of it in South Wales, and I picked up one evening, five or six hares, which had died from its effects. But from 1834 till I left England in 1858, nothing had been heard of it. Now its ravages are dreadful, whole parishes have lost every sheep—my brother writes me word that on his property, in Glo'stershire, they have had neither hares, rabbits, nor sheep, for the last five years! The loss of sheep in England is to be reckoned by millions, and there seems to be no cure for the complaint.

Another omission—when ewes and lambs are feeding off rapes, tares, &c., the hurdles should have gaps to allow the lambs to pass through on to the fresh piece ahead of their dams. White pease are generally given to the lambs in troughs outside the fold; they make lean meat, and are a very strengthening food.

ARTHUR R. JENNER FUST.

The Grazier and Breeder.

NOTES ON GUERNSEYS.

I have lately received several copies of the *Country Gentleman*, containing interesting articles on the subject of Guernsey cattle. Some of the senders are unknown to me, but I think the best return I can make to the kindness of all, is to give through your columns the information I have myself acquired on the subject during a residence of 12 years on the Island. If I have not the knowledge of a native Guernseyman, I am, perhaps, on the other hand, free from his prejudices or his personal interests. I have kept generally 8 to 12 cows of the best strains I could procure, but I have never either bred or bought merely for the purpose of selling again. I have thus some little practical experience to offer, which may be useful to those who take an interest in the breed.

It is impossible to trace the origin of the different breeds in the three islands of Jersey, Guernsey and Alderney. No doubt they are a mixture of the races found on the adjoining continent of France, in somewhat different proportions, and with specialized qualities developed by breeding in-and-in. About the middle of last century we find the Jersey cattle described as a black and white breed. These are the prevailing colors now in Brittany, to which province Jersey is the nearest of the three islands. Alderney, which lies nearest to Normandy, where the color tends to red and white, appears to have then had a breed resembling the Jersey of the present day—the black and white shaded with red. This race was the first which gained celebrity for its quality of milk, for though Alderney is the smallest island of the three, all Channel Islands stock were, till quite recently, known in England as Alderneys; and to this day the name is often used in England to signify Jerseys, as distinguished from Guernseys. Again, in Guernsey it is very probable that the larger frames and redder colors were aided by a dash of Devonshire, from which it is about 80 miles distant, where the native breed is pure red and of excellent milking quality. But the fancy for form and color, for purposes of exportation, has gradually bred the Jerseys into the silver-grey and the beautiful shapes of the present day; while in the other islands little regard has been paid to anything but utility. But though direct importation between Jersey and Guernsey has long been prohibited, a certain amount of admixture has taken place through Alderney, between which and the other two islands free traffic has till recently prevailed, a practice also in the still smaller island of Sark, lying midway between Jersey and Guernsey. But both these smaller islands are under the jurisdiction of Guernsey, and for some years past any importation of Jersey or French breeding stock into them has been prohibited, while traffic between them and Guernsey is on both sides allowed. Thus an Alderney or Sark cow may possibly be of pure Guernsey blood, but in the absence of positive proof, it cannot be considered with certainty. For this reason the General Herd Book of the Island of Guernsey excludes (or now places in a different register) animals which were born in Alderney or Sark, or whose parents were born in either island. It is not deemed possible to carry the distinction farther back. The Register of the Agricultural and Horticultural Society admits from the three islands indiscriminately to its Guernsey list.

Dealing then with the Guernsey as we find it at the present day, I will endeavor to give a fair estimate or standard of its essential characteristics. Leaving to a future letter any remarks on its external appearance, I will limit myself in this to its qualities as a milk-producer. These are, I venture to think, too apt to be judged, particularly in America, by sensational records of so many quarts of milk, or so many pounds of butter per week. But as the animal must be fed during the whole year, the production during only a selected part of it is misleading. It will often be found that a cow which gives a very large record for a few weeks or months, goes long dry, so that her profit in that year is not great. I have myself no cows of extraordinary record, but I have for the last eight years kept an account of the production of my own small herd, and it may be useful to give it in order to illustrate what an average fairly selected herd will do. It will be seen that it indicates a rate of from 550 to 800 gallons of milk from each cow during her best years, and including all ages, an average of 600 to 650 gallons per head during each year. In the first table I include all, however young or old, which were in my possession and in milk during each entire year, omitting, therefore, cows sold or purchased during the year, or heifers which calved for the first time in the course of the year. The gallons are imperial, a necessary warning in speaking of Guernsey measurements, where the local gallon is one-twentieth less than the imperial, and the pound about one-twelfth larger than the imperial.

Year.	*No. of cows during full year.*	*Gallons per head.*
1875	5	547
1876	7	648
1877	6	658
1878	7	649
1879	6	662
1880	5	613
1881	7	666
1882	7	579
Average, eight years.....		627

The next table will show the amount given by the best among these during a succession of years. The numbers are of the General Herd Book Register, but Marguerite could not be entered, having been born in Alderney.

Age, years.	*Violet* (19).	*Violet 2d* (20).	*Snowdrop* (26).	*Marguerite.*
3.....	480	664	594	386
4.....	513	760	594	728
5.....	678	785	679	693
6.....	735	710	652	996
7.....	562	840	593	578
8.....	626	780	670	599
9	540	1054	667	984
10.....	596	802	Died.	Died.
11.....	466			
Average..	566	796	634	709

It will be noticed that two of those quoted here died, a misfortune, however, which I think has befallen me in only one other instance. One died from the so-called "milk fever," or "drop after calving," the sole case I have had out of over a hundred calvings. It may generally be averted by moderate feeding before calving, and a dose of three-quarters of a pound of sulphate of magnesia immediately the calf is born. The general feeding of my cows is pasture in summer, with hay and 3 pounds of cotton cake at night; in winter they have mangel wurzel, about 30 to 50 pounds; carrots, half that quantity when they can be had, and hay, partly chaffed, with 5 pounds of cotton cake.

If these figures of milk production are compared with other breeds, they show that the Guernsey is an excellent cow for quantity as well as quality. Undoubtedly she is passed in quantity by the Holstein breed. But either Short-Horns or Ayrshires average only from 500 to 600 gallons per

annum for well selected stock, not specially forced for milk-production with brewers' grains. The most recent figures I find are a herd of 25 herd-book Short-Horns belonging to W. C. Hobbs, which are stated in the Agricultural Gazette of March 6, 1883, to have given an average of 580 gallons during 1882. For the purpose of comparison with Jerseys, reference may be made to a most valuable record of a herd of 20 Jerseys belonging to Lord Braybrooke, stated in the same paper under date of Jan. 25, 1883, to have given an average of 478 gallons per head, or of 504 gallons, after allowing a due proportion for three which died during the latter part of the year. The largest yield of any one cow in the herd during the year was 902 gallons, but it gave only 364 pounds of butter. The largest quantity of butter was 407 pounds, obtained from 573 gallons of milk. In 1881 the milk average was 516, and in 1880 544 gallons. The butter produced was, in 1882, 283 pounds per head, or at the rate of 7.12 quarts, or 18.6 pounds of milk to one pound of butter. But the cows were very highly fed, getting bean meal, malt dust, brewers' grains and oats, in addition to roots in winter, and even while at pasture in summer.

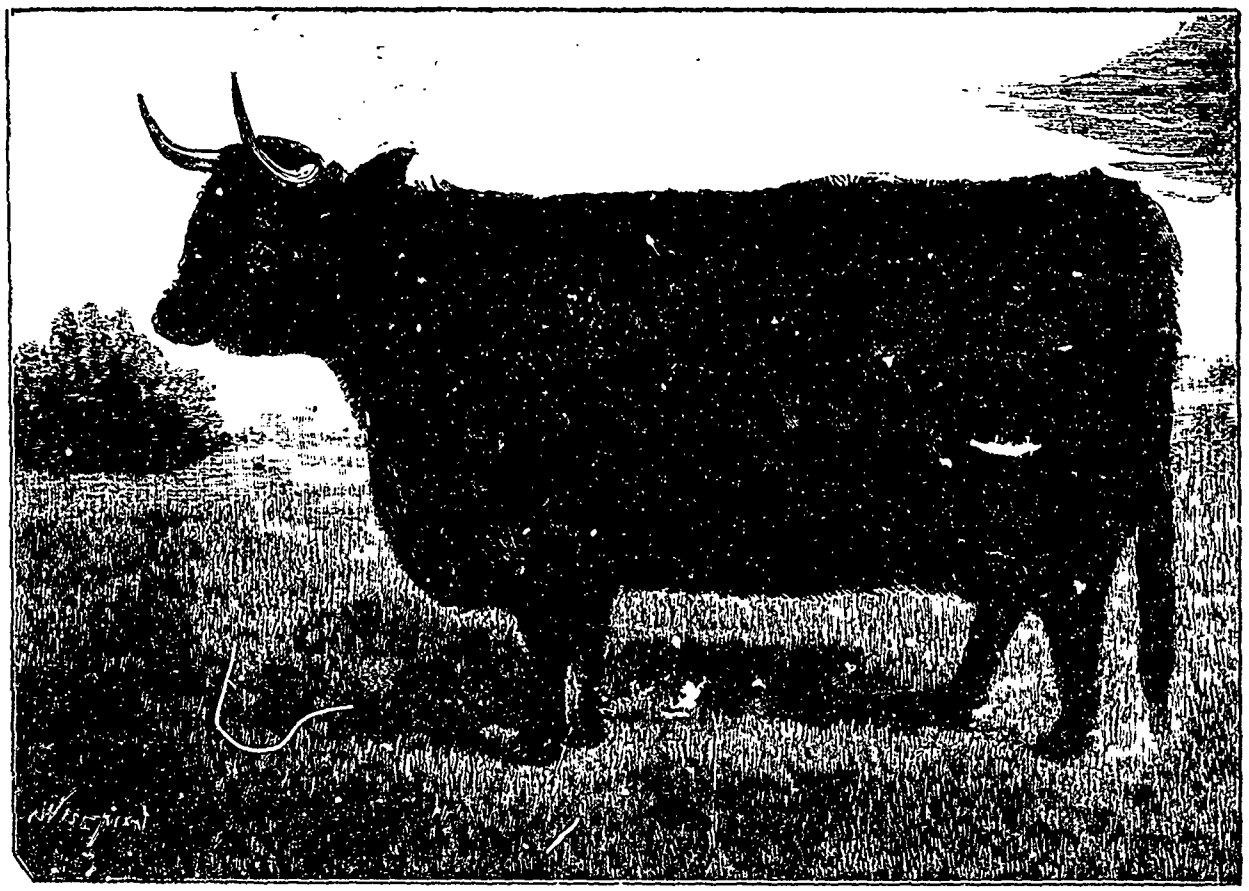
I am unable to state the proportion of butter given by my own cows, because I sell most of the milk, and only make butter of the surplus. It is, therefore, made chiefly at times when the milk supply is most copious, and when in consequence is least rich in butter, and it thus varies from 17 to 22 pounds of milk to one pound of butter. The latter figure is the equivalent in imperial measure of the general estimate in Guernsey of the yield of an average cow, expressed in the local measures as "a pound of butter to 5 pots of milk." This is in cases where no extra feeding at all is given, beyond grass, roots, and hay. In having quoted my own results, I trust it will not be supposed that I desire to convey that my own herd is of exceptional character. I have done it only because I know of no one else who has tested the produce of Guernsey cows in the Island, as I have done, and because I consider, and have long recommended, such testing throughout a succession of years, as the only means by which an owner can tell which of his cows are best, and which do not pay. If the result is to show that cows of this breed can be so selected as to compare well with those of any other breed, so much the better for the public information. But I believe there are many herds in the Island which would show as good results as mine if the owners would take the trouble to reduce them to figures.

In a second letter I will endeavor to explain some matters which may be of use to the American purchaser, especially if he purchases in order to form a herd, and not for mere speculation.

J. BOYD KINNEAR.

Guernsey, April 15.

(*From the Country Gentleman.*)



KYLOE HEIFER.

OUR ENGRAVINGS.

Judge.—Winner of Grand Gold Medal, Paris Exposition, 1878. Every one knows, by reputation at least, this magnificent Polled Angus bull. He is still at the Provincial Model-Farm, and looks likely to continue the procreation of his race for half a dozen years. He was calved in 1875.

Kyloe Heifer.—The hair of this fine West Highbander is eight inches long all over the body! She is a perfect specimen of the hardy race of the mountainous parts of the West of Scotland. Mr Giblett, the butcher in Bond Street, London, used to have the best specimens that came to Smithfield, and no finer carcases of beef were to be seen at the West, End of town.

Jersey cow old style.—This is the "cow with the crumpled horn," said to have been still to be seen in some parts of the island as late as 1843. From an engraving published by Col. Le Couteur.

Jersey cow, improved style.—Portrait of Beauty, 4 years old, the property of Col. Le Couteur, Bellevue, Jersey. First prize 1843. She was awarded 27 points out of a possible 30 points, as a two year old. In those days, nothing was said about escutcheons, black tongues, or black switches; But I don't think they build cows much better than this one. I will give the points, 1843, in the next number.

Clean Fields and Heavy Crops.

Suggestions about Cultivation.

There are two drawbacks in the methods largely adopted by the farmers of this country in the cultivation of their crops during the first half of the season. These methods involve a needless expenditure of labor, and permit an extensive growth of weeds. The surface of the soil is not broken or stirred often enough. A frequent pulverization would accomplish two very important uses, namely, the destruction of young weeds, and an increased growth of the crops. We have shown on former occasions the importance of destroying weeds just as they are commencing growth, and even before they have reached the surface of the ground, when the minute and tender sprouts are broken by a touch of the pulverizing implement. The experiment was tried a few years ago of passing the steel rake weekly over a given measured surface in the garden, and allowing alongside an equal area to become covered with a growth of weeds from six inches to a foot high before killing them A record was made by the watch of the time consumed by each method. During the two months of growth it was necessary to pass the steel rake eight times over the surface; but this was done so easily and rapidly that only one-half of the time and labor were consumed that were required to clear out once the tall weeds from the growing crop. The crop made one-half more growth by the first method, and the seeds of the weeds in the surface soil were thoroughly destroyed by the eight operations. A successful farmer, on whose rich fields about fifty bushels of corn per acre were obtained by ordinary management, assured us that by passing the cultivator once a week between the rows until the corn was as high as the horse's back, he had increased the crop to between sixty and seventy bushels per acre.

A radical improvement would be made on many farms by the adoption of the practice of keeping the surface crust of the soil constantly broken, and by never allowing young weeds to see daylight. By thus clearing the farm of foul seeds, in a few years the costly labor of hand-weeding would be nearly superseded. To accomplish this result it is necessary to secure the best modern tools for cultivating the crops. The work should be commenced before the young weeds have reached the surface: Potatoes, for instance, are some weeks in the soil before coming up, and during this period the ground should be kept harrowed, the operation being repeated as often as the young weeds in the soil have sprouted, the harrowing breaking the sprouts and killing the weeds just as they are starting to grow. In this way the foul stuff may be materially reduced. The harrowing may be continued after the potatoes have reached the surface, and have grown some inches, without injury to them. Corn may be harrowed once before it comes up, and with a fine, slant-tooth harrow the operation may be continued every five days till the plants are nearly a foot high. This will obviate the labor of hand-hoeing. After this, the one-horse cultivator may pass several times, running shallow so as not to tear the roots, setting the reversible teeth first to throw the earth away from the row of corn, and next time against the row, a very shallow ridge being sufficient to cover the young weeds as they are just appearing, for there will be no large ones if the previous work has been promptly attended to. We have adopted this course—of first harrowing and then cultivating from and towards the row, and left the field as clean as a floor without any hand-hoeing. The repeated stirring of the soil and keeping the crust broken, gave a handsome crop of corn—decidedly larger than when the whole treatment consisted of one or two dressings with the cultivator, and a laborious "hilling" with the hoe.

In large fields, the one-horse cultivator will of course give way to the two-horse walking or riding cultivator. In either case, such implements should be used as may be controlled perfectly and guided so as to run within an inch or two of the row of plants; and the importance of straight and even rows is therefore obvious.

Thorough summer-fallowing is sometimes a matter of great economy in eradicating weeds and working out foul seeds. It may be well to forego the value of one crop, when by so doing the ground may be changed from a hard and weedy soil to a clean and mellow one, the work being done by the broad sweep of the harrow and cultivator, instead of the laborious process of hand-hoeing and hand-weeding. The advantage of the thorough mellowing of the soil is not to be overlooked On this point an instructive example was given by our correspondent Waldo F. Brown in a former volume of the COUNTRY GENTLEMAN. He stated that a young farmer in his neighborhood had become nearly discouraged in wheat growing, but concluded to try the experiment of putting in two acres with a thorough preparation of the soil, and if this crop failed, he would give up sowing wheat. He plowed early, harrowed, dragged and rolled, until the soil was like a garden, and as a consequence obtained *fifty-eight bushels* of excellent wheat from the two acres. Larger fields were treated in the same way in successive years, and no crop was less than twenty-five bushels per acre.

Many farmers fail with summer fallows by not making thorough work of it. The field should be kept constantly clean and mellow, and not a weed be seen above ground. Plowing and using the modern harrows and cultivators, will do the work cheaply, even if repeated as often as once a week.

Clean fields, and heavy and satisfactory crops are incomparably better than the results of a hard soil and hard lumps, struggling with an overgrowth of weeds, and obtaining reduced products at heavy cost. It may be well to cultivate and plant fewer acres and do the work in the best manner.

Hogs and Muck on a Sandy Farm.

I was interested in Mr. Curtis' article on feeding pigs for their manure, page 320. The treatment there indicated seems an excellent one, but may be too novel for many to adopt. The heading of the article reminded me of a case that is to the point. A young farmer in Salisbury, Herkimer Co., has a small farm of 25 acres of very light sandy soil, worthless in the condition it was when he took possession of it. There was a muck bed upon it covering a few acres. Large quantities of this he threw into heaps to dry. He then secured a lot of hogs and several litters of pigs, which he fed with corn meal, and used the dried muck freely in the pens. This saved

all the voidings. He went farther; got the consent of the neighbors and the villagers near by to use muck in their pens for the manure. In this way he secured enough manure to fertilize nearly one-third of his land the first year. On this he raised corn, potatoes and oats, and had a satisfactory yield. Some of this land he seeded down. Increasing his stock, the next year he made more manure, and extended the enrichment to two-thirds of the farm. I was particularly struck with a heavy growth of buckwheat on a knoll that had been absolutely barren—a field of mere sand.

His practice was to apply the manure after the land was plowed, harrow it in, and sow his grain. By using muck in the stables, he secured all the liquid as well as the solid voidings, and the mechanical improvement of the land by the muck was of almost equal importance, making a brown mellow soil of it, completely changing its character. The effect of the manure (a good coat was given) continued during the second year, when the land was plowed very shallow, so as not to bury the surface soil—the muck of which, now humus, seemed to hold its fertility well, save what was removed by the crop; it also promoted moisture. When this treatment is extended over all the land, there will be no difficulty in keeping up the condition of the farm. Green manuring can now be made an aid in enriching the land. In addition, a good proportion of the crops fed on the farm will help sustain its fertility. Hogs are good manure-makers, as this case has shown. The owner said "I care not for any profit on the hogs; I expect none. What I want is the manure." He was not then aware of the benefit of the muck, but he learned it afterward. *Fort Plain, N. Y.* FROM THE COUNTRY GENTLEMAN.

GROUND LIMESTONE.

Professor S W. Johnson.

GROUND limestone has been much talked of lately as a fertilizer What is it and what is it good for applied to land?

The purest limestones are principally or entirely carbonate of lime or, as chemists now more commonly term it, calcium carbonate. This substance is agriculturally important because no crop can develop in the absence of a calcium, (lime) compound and because calcium carbonate is to vegetation a most common and appropriate source of this substance. One hundred pounds of pure carbonate of lime contain 56 pounds of lime and 44 pounds of carbonic acid. A good yield of 30 to 45 bushels of the ordinary grain crops, straw included, annually withdraws from the land about 10 pounds of lime. One-and-a half long ton of hay takes away 30 pounds and two long tons of Red Clover, 85 pounds. Our other crops mostly stand between these extremes, and with the exception of nitrogen and potash, no other ingredients are commonly demanded of the soil in greater quantity. It is therefore evident enough that were lime as scarce and as costly to provide as are nitrogen and potash, any means of supplying the former would rank in importance with the materials which yield the latter substance.

Fertile soils always contain a supply of lime in some shape or other, but poor soils are often deficient in this element of productiveness, and soils once fertile may in the course of time be so far exhausted of lime as to require some applications that will restore it.

Lime may exist in soils in the states of carbonate, silicate, humate, and phosphate. The last-named compound is generally very small in amount. The silicates which contain lime are quite numerous; most common minerals of the granitic and slaty rocks are compounds of this sort. As these break down under the processes of weathering their lime becomes, carbonate, or in presence of humus (decayed vegetable matter) humate. Carbonate of lime is not altogether insoluble. One pound of it dissolves in about 50,000 pounds of pure water. In water containing carbonic acid it dissolves much more abundantly up to one part in 1,500. When vegetable or animal matters undergo decay in the soil their nitrogen becomes nitric acid which unites with the lime and the resulting calcium nitrate dissolves with great ease. In most good soils sulphate of lime is constantly dissolving in the rain water, 500 parts of which can take up one part of sulphate. Thus it happens that between the crops which are harvested off the land, and the water which drains through and runs away into the streams a slow but constant removal of lime from the soil is going on.

This waste of lime from the soil may be appreciated and roughly measured by the quality of the spring and well waters. In Lewis County and Jefferson County, N. Y., the Black River flows in a valley that lies nearly along the line of junction of the granitic rocks and soils on the east and north, and of limestone ledges and land to the west and south. The granite region is mostly one of Pine and Spruce timber, with a sandy, light soil and pure, soft water. The limestone country was formerly covered with a heavy growth of hard-wood, has a deep, rich, loamy or clayey soil, and water so hard that it quickly "furs" a tea-kettle and cannot well be used for washing with soap, on account of the carbonate and sulphate of lime which it holds in solution.

When such removal of lime reaches a certain point, the fertility of the land is impaired, and then restoration of the lime is essential to renew the productiveness. On such a soil finely ground limestone acts like magic, and a ton or two of it "renovates" the land for 10 or 20 years, provided, of course, that other deficiencies have not occurred or have been remedied by the usual manurings and amendments. If the limestone is one of the impurer sorts, containing magnesia, sulphates, phosphates, etc., its application may make good a wider range of deficiencies and be more beneficial than were it simply carbonate of lime. On the other hand, ground limestone on soils already containing an abundance of lime would be of no use whatever—like carrying coals to Newcastle.

It may, however, happen that soil underlaid at a few feet depth by limestone, is superficially wanting in calcium compounds. I have known instances where an application mostly consisting of carbonate of lime, has worked admirably on such land. In Great Britain where "liming has long been practiced, it is well understood that the lime "sinks" and this evidently takes place in part by solution.

Ground limestone is not altogether the same in its effects on the land and crop as slaked lime. The latter is a powerful chemical agent and may be useful where carbonate of lime is already abundant, by its influence on the texture of the earth or by its solvent action on the stores of plant food that are present but unavailable in many soils. Slaked lime, after long exposure to air, takes up carbonic-acid gas and then is a carbonate quite similar chemically to ground limestone, but vastly more perfect in pulverization.

When ground limestone is applied where the need of it has been urgent it is at once highly appreciated, and farmers who enjoy its benefit are likely to conclude that it must be generally efficacious. Others find it totally without action on their land or crops. From this opposition of experience arises a controversy which is carried on with more zeal than discretion, and can only be set at rest by an understanding of the reasons of its benefit or failure.

(1) No one dreams of denying the value of muck as an absorbent. A well known farmer in Sussex, Eng., kept a constant stock of 500 fatting pigs, fed on purchased food, as a means of manuring his almost barren down-land A. R. J. F.

The attempts to make a commerce in ground limestone are sometimes lamentably absurd. Recently a party has proposed to introduce into Connecticut a "fertilizer," composed essentially of ground limestone which is quarried in Northern New York. No doubt it would do good on many a Connecticut farm, but carbonate of lime can be quarried in Connecticut itself, and can be brought from points in New York State much nearer than Lake Ontario. The persistent attempts that have been made to sell the shell marl of Central New York and other localities under various extraordinary names, as "The Bird Guano and Fertilizer," "Albemarle Fertilizer," "Lacustrine Fertilizer," and of course at an extraordinary price ($30 per ton), have not met with much success, for the simple reason that pulverized carbonate of lime is a very common substance and is therefore worth, commercially, but a very few dollars per ton.

For many years leached ashes have been extensively transported from Northern New York and Canada, to Long Island and Southern New England. In 1881 more than 250,000 bushels, or 4,500 tons, of this fertilizer were sold in Connecticut. Leached ashes contain two thirds per cent of magnesia, and about one per cent each of potash and phosphoric acid, with 35 per cent of moisture and worthless matters. They cost about $10 per ton, and their efficacy, which is often conspicuous and often imperceptible, chiefly lies in the 60 per cent of carbonate of lime which is their characteristic ingredient, and which they contain in a state of extreme subdivision and therefore prepared for immediate action.

Ordinarily, ground limestone cannot be nearly so quick a fertilizer as leached ashes, because its pulverization is comparatively very rough and imperfect. In fact, it is probable that for use as a fertilizer it is generally cheaper to burn the limestone than to grind it, especially when much transportation has to be undertaken, and for three reasons, viz.: 1. because 60 pounds of burned lime are equal to 100 of limestone; 2. because when slaked it is pulverized to a degree that no mill can possibly imitate or approach, and, 3, because a small dose of slaked lime—say 1,000 pounds or 20 bushels—equals for immediate effect five times or more that amount of ground limestone, besides benefiting some kinds of soil in a way not manifested by the latter. (1)

In conclusion, ground limestone may be in many cases an excellent fertilizer, but it cannot be indiscriminately recommended, and ordinarily cannot be sold for more than a few dollars per ton or be subject to any considerable transportation except at a loss to the consumer.

From Rural New-Yorker.

(1) The whole value of the article lies in this paragraph. A.R.J.F

De Omnibus Rebus.

I have always held that the analysis of soils was, as far as our present knowledge is concerned, time and expense thrown away. Professor Johnson, of the Connecticut Experiment Station, confirms me in my opinion.

"*Analysis of soils.*—Two samples of soils were sent to the station for analysis—one taken from different parts of a twenty-five-acre meadow, the other from a four-acre lot—to ascertain what fertilizers would be best for it. The first mentioned consists of black, moist earth, a foot deep, with some blue clay below and a gravel bed. Grass does not grow well on it, and the cause of the failure was desired. An analysis showed the presence of all the elements of plant-food, in sufficient quantity, and in as large a percentage as in some of the best wheat soils of Illinois. Unfortunately the analysis gave little information respecting the state of availability of the substances found, and gave no clue to the course of treatment for improving it. Prof. Johnson said, after making an analysis of the soil of the four-acre lot: "I cannot find in these figures any satisfactory explanation of its poverty. Everything required by crops is there. Some very productive western soils are no richer in potash. We have no satisfactory means of learning the availability of the substances present." In addition to the physical qualities and texture of the soil, which often have a controling influence, simple drainage and deep tillage may have a most important effect, and a flooded land, with a heavy manuring, may be of little value. Prof. Johnson remarks that a calculation will show what a chemist cannot possibly do. A hundred pounds of best guano has made all the difference between a poor and a good crop, although with but fifteen pounds of essential ingredients, and constituting, when dissolved and absorbed a foot deep, less than a hundred-thousandth part. But chemical analysis will not certainly show a ten thousandth part, and analysis may not distinguish between two soils, one of which has had a dressing of 1,000 pounds of the best Peruvian guano to the acre, and the other nothing. A similar course of reasoning was adopted by the writer of these remarks in an article published thirty-seven years ago in the Transaction of the New-York State Agricultural Society, where it was stated that a hundred pounds of gypsum to the acre had doubled the clover crop, constituting when dissolved only a fourteen-thousandth part of the soil, and that ten pounds had produced a very visible effect, although but a hundred and forty-thousandth part." *

* At that time, extravagant claims were made by some writers for what soil-analysis would accomplish, and the State Agricultural Society awarded to this essay a prize of $100, although not offered by the writer for any prize. See N. Y. Ag. Trans. for 1845.

I have made lots of superphosphate on my farms in England. To avoid the chance of injury to the clothes or person of the workmen, I found it desirable to place the carboys of acid on a raised platform, and empty them by means of a leaden syphon. A wooden tub of proper size does to mix in.

Home-made superphosphate.—A simple mode is described in the report for making superphosphate on the farm, when the materials are at hand and the sulphuric acid is easily procured. But the practice is not recommended for common use. The difficulty in avoiding injury from the acid by persons not thoroughly accustomed to handling it, and the defective character of the material manufactured, would usually constitute sufficient objections. An instance is described where everything appeared to be unusually favourable. A ton of bone-char was bought at iron works for eight dollars, and over half a ton of sulphuric acid was obtained at a cent and a half per pound. A bed like a mortar bed received 500 pounds of the bone-char and 15 gallons of water, and 300 pounds of acid were added from the carboy. The eyes of the operator were kept averted to avoid the spattering of the acid. The materials were worked over with a hoe, the escape of steam and carbonic acid producing much frothing. The ton and a half of superphosphate obtained cost $30, which was much less than the market cost of the fertilizer.

The report quotes the remark of Pro. Hilgard, of San Francisco, on the practice formerly recommended to use gypsum in reducing bones with ashes, that the gypsum destroys the solvent effect of the ashes on the bone tissue, yielding carbonate of lime and sulphate of potash, which have no effect on the bone."

Analysis, at the Connecticut station, showed that ensiled corn fodder suffered no change in the albuminoids, but there was a loss in sugar and other carbhydrates.

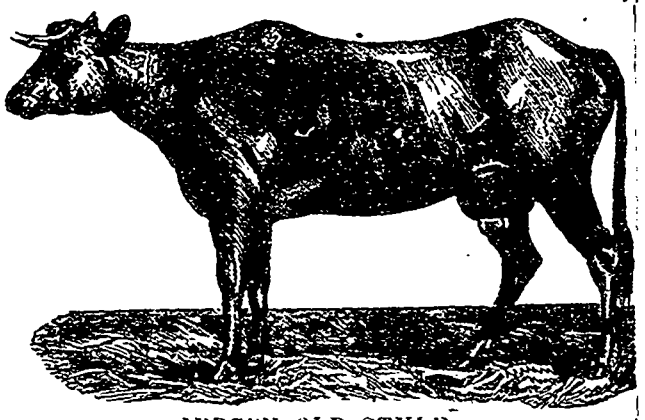
The following extract from one of the American agricul-

tural papers strikes me as being more ridiculous than anything I have ever seen in those Journals:

"*How weeds may be serviceable.*—The best thing that can happen to a field almost worn out, in default of some action on the part of the farmer, is to raise one good crop of Canada thistles. Thistles, and all other plants with long tap-roots, will grow regardless of the impoverished condition of the soil, as they obtain the necessary plant food far below the surface, and the plants or roots, decaying at or near the surface, prove beneficial. The roots of thistles bring to the surface the elements of fertility obtained many feet below. I do not wish to be understood as advocating the use of any weed for the purpose of restoring fertility. But I do argue that when Canada thistles take possession of a field that is being impoverished by injudicious cropping, they will do much to sustain the soil, not only because they obtain plant food at a greater depth than do other plants, unless it may be clover, but also because where thistles take possession of a field, the farmer usually attempts to destroy them, and this always means more thorough cultivation, resulting in better crop, even though of itself it may hasten the process of impoverishing the soil."

Ploughing in green crops may be good, but making mutton out of them is better.

The dispute about deep or shallow ploughing still goes on



JERSEY OLD STYLE.

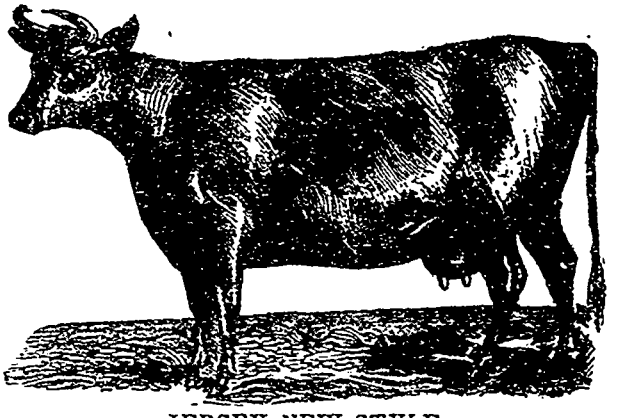
The rule seems to me simple enough: plough deep for manured crops, shallower for grain crops. No one dreams of shallow work in a garden, never mind what the soil is.

No lamb be to eaten at the Queen's table this year! A poor look out, if the example is followed, for those farmers whose chief resource is breeding and fatting "lamb and dam" for the butcher. I thought all this foolish interference with trade had vanished, long ago.

A hot sun following such rain as we had from the 20th to the 24th of May must bake the surface of all the heavy lands in the province, and starve the young grain which is now above ground. Most cases of "scalding" spring from this cause, and not from a hot sun during the time of ripening. I cannot too strongly recommend the use of a set of lightish harrows drawn once or twice over the land when *caked*. Never mind pulling up a few plants, the others will up. Those who sow two bushels of oats to the acre will wish they had doubled the quantity of seed this year, or I am very much mistaken.

Mr Moreland, in the *Country Gentleman*, complains of the high price of calves this spring. He says that "very often a calf of a week old has sold for $3 00!" In England, dairymen are selling their calves, grade shorthorns but ordinary cattle enough, for from $20 to $25 a piece, at the same age. St. Lawrence County stock must be rather below par, if calves do not fetch higher prices than those mentioned by Mr Moreland with beef as dear as it is now.

I hope there will be no bother about the colour of Guernsey cattle on this side of the Atlantic. I saw Royal Commander, one of the best stock getters of the Shorthorn breed sent back to England as a punishment for getting white calves, the demand, in the States, being in favour of red ones. The passion for black switches, silver-gray hide, and black tongues, will, if they don't look out, play the mischief with the herds of Jersey breeders. Up to the present time there has not been much talk about colour and markings amongst the few Guernsey breeders here. Mr Kinnear, of the island, says, and a better authority there can't be: The fact is that red, white and black, in any proportion and mixture, are equally correct colours in Guernsey cattle, and have always been admitted as equally deserving of prizes at the island shows; and it necessarily follows, that to reject any animal because of its shade of colour, or its black nose, is to sacrifice goodness to arbitrary opinion. No particular colour can be taken to indicate milking qualities. Equally good animals are found of all colours, except *roan*, which, if I saw, I should suspect an infusion of shorthorn blood.



JERSEY NEW STYLE.

Mr Kinnear speaks very strongly about the escutcheon, as a guide: The Guenon test is utterly misleading in regard to Guernseys, whatever may be its value in connection with other breeds. The best indication of quantity of milk is to be found in a large and well shaped udder and well-developed milk veins, though these will not tell us how long the cow may go dry. The best indication of richness is the colour of the skin, though I have know some cows very satisfactory in this respect which, nevertheless gave perfectly white butter.

I must confess that I never saw a cow with an orange-coloured skin give white butter. As to the milk vein, though a large one undoubtedly denotes a powerful vascular system, I do not see their connection with the quantity of milk. And in this, I am backed by that great practical authority, Mr Henry Stephens. Unfortunately, I have lost my reference to the passage in question, but I hope to recover it in a few days. Found it, at last! "There is a fallacy also in regard to the milking properties of a cow, as indicated by what is called a large *milk-vein* below the belly. This vein is the sub-cutaneous vein, and has nothing to do with the udder; it belongs to the respiratory system, and is the means of keeping up an equilibrium in the blood between the fore

and hind quarters. This vein, when large, certainly indicates a strongly developed vascular system, which is favourable to secretion generally, and no doubt that of the milk among the rest." So my memory was not very false to me, after all.

ARTHUR R. JENNER FUST.

Economical production of meat.

A LECTURE on this subject has been delivered by Professor Tanner, of South Kensington, Mr. John Hill, of Felhampton, in the chair. The PRESIDENT explained that Professor Tanner had to leave by the mail train, and there was not a minute to spare. Professor Tanner was well known to all of them by name, and to most of them personally. He had been a real good friend to that Society so long as he had known anything at all about it. He had helped them before by giving them some very able and interesting lectures, and he had also helped that Society indirectly by helping him with some experiments on root crops, the details of which he had laid before the Society the year before last.

Professor TANNER said: The economical production of meat must be regarded as a manufacture. The agency we employ is the living machine—the live stock of our farms. Now you can readily understand, whatever may be the product aimed at, if we have to employ a machine, it is quite possible to have either a good or a bad machine, and such we find to be just the case with animal life—it is possible to have a good machine for accomplishing the work or the converse. An old-fashioned machine, placed by the side of one of more recent date and more improved construction, will do very different work, the one from the other. You can do more rapid work, and you can also do your work more perfectly. If the machinery be imperfect, much of the grain will pass through the machine and be carried on in the straw, not being completely and satisfactorily severed from the straw. Thus, you see, you have a waste of the material which is at your disposal. But however good the threshing machine may be, it is simply impossible to obtain a good sample of wheat from it unless it be first of all passed into the machine, and so we find that there is a certain similarity of result; so that when we have to work by the aid of animal life, the living machine, we want a machine which shall be capable of doing good work, avoiding waste, and so making the best use, and showing the best results, for the food which may be used. The first aim of every farmer is to produce the largest quantity of vegetable food, consistent with the quality being of a proper character, and in the next place he seeks to utilise that food by the aid of animal life. We find that the old breeds of cattle, the unimproved breeds, differed very materially from those of more recent date. The differences to be observed in the local breeds, which were existing in different parts of this country forty or fifty years ago, were largely traceable to the local influences of soil and of climate. Since then we have adopted improved and more valuable breeds, and they have succeeded just in proportion as they have been introduced into districts that suit their peculiarities of character. The old system of allowing cattle to remain until they were 4, 5, or 6 years old, before they were completed for the butcher, gradually gave place to a much more rapid habit of growth, a growth which was more prompt and speedy throughout its entire range, and the result was that the animal was finished and ready for the butcher at a much earlier date. Now that was not accomplished by simply giving the animal more food. It was accomplished by careful observation on the part of breeders, and more careful management on their part, entirely modifying the character of the animals they were dealing with. The tendency of late years has, therefore, been in the direction of so altering the character of the animals we breed that they become quiet and docile, quite disposed to take their food without restlessness, and also able to make good use of the food which is supplied to them.

DIGESTION.—The diminution in the size of the lungs increases the formation of fat. Fat corresponds very closely with the fuel which would be burnt in a fire, and if we have a large fireplace and a small one side by side, the one will burn a much larger quantity of coal or wood than the other. If you put into a room a small fireplace, you must not expect that the warmth from it would be equal to that from a fireplace of double the size—it is only reasonable that we should expect a difference in the quantity of heat which is produced. Now this bears upon the case in this way—that if you breed cattle so that they have small, feeble, or imperfect lungs, you must not expose such cattle to rough, cold weather with the same impunity that you might if they had larger lungs and were fully capable of maintaining the warmth of the body. If you give them small lungs they become unable to maintain that warmth under conditions of considerable difficulty, and having reduced the power of the lungs, if you do expose it to inclement weather, it is said at once of the animal that it is too delicate, and why? Because you have reduced the lungs so greatly that the animal cannot keep up its warmth. Our Shorthorn cattle are notoriously more delicate than your Herefords. The latter have been bred and brought up under conditions which allowed them greater freedom, which permitted them to take more exercise, and so they are more hardy.

Let us look at some of the indications which we find of the differences between those animals that are good producers of meat and those that are bad. One of the most ordinary tests of meat-producing power is that delicacy of touch with which you are all familiar. Now what is the difference between these two classes of animals? In the one case, where the flesh is easily raised, there has been formed beneath the skin fatty tissue, which is prepared for being filled with fat. As you know, the fat existing in the animal body does not exist there in a solid form. It is held within certain fatty cells, and it is only when the temperature falls that this fatty tissue takes a solid form. Hence it is that before you can accumulate fat upon the body, you must have the fat cells in which it can be stored up. In the case of those animals which have loose skins and a good touch, you have these fatty cells already prepared, and the fact of their being so prepared is an indication of the animal to produce fat, which will be followed out more perfectly afterwards. This is a matter of character which it is quite possible to produce by breeding but it is also largely dependent upon the supply of food that may be given. For instance, however well-bred an animal may be, if it has to grapple with a deficiency of the food supply, this fatty tissue is soon taken up and the animal becomes hide-bound by reason of the deficiency of fat-producing food, so that if you give to an animal an abundance of fat-producing food, and it is a restive, active specimen of its breed, there is very little advantage, for it is all breathed off in the lungs, but if you give an animal a tendency to produce fat, and you follow that up by the use of suitable food so that the fat cells shall be formed first and then that they shall be filled—in that way you best prepare an animal for the production of fat.

Now, one other point of difference which we especially observe in the Hereford cattle is the quality of the meat produced, because after all it is not simply a question of fat—that is only a part of the meat; the production of the lean meat is a matter of immense moment. But when we come to speak of the production of the lean meat, the flesh, the growth of the muscle, we have then to deal with an entirely different set of circumstances from those that arise when we are dealing with the accumulation of fat. If you want mus-

cular growth, if you want flesh in its most perfect form, you find it in those animals which take plenty of exercise, and if you take any animal and restrict its exercise you alter its muscular growth; and it is because the Hereford cattle are permitted to take rather a liberal amount of exercise that the flesh which they produce is of better quality. If you want simply to produce fat, you would limit the motion of the animal and would allow it to walk as little as is consistent with health, and thus it would accumulate fat, but it would be at the cost of perfect development of the flesh, and therefore where the system of management is too restrictive, where the production of fat is persistently made the one great object, there you get this result—badly-formed flesh, flesh having a fatty degeneracy, weak muscular growth, and a bad quality of meat. The great end is to obtain that happy medium that gives you the rich flesh, accompanied by a fair proportion of fat, but not to fatten to such an extent that the muscular growth shall attain to a fatty degeneration.

QUALITY OF FOOD.—Let us look, then, to the important question of food. As I have said before, a good threshing-machine, however good it may be, cannot bring out a good sample of wheat unless it is originally present in the stack, so that, although you may have a fine quality of stock, the produce which is obtained from it depends greatly upon the character of the food which is used. You want very carefully to consider this point—as to how far the food which you are growing upon your farms is in itself of the best feeding character, and the ripeness of this food is a matter of very striking importance also. It is quite possible for crops to be grown upon the land which shall contain materials which when perfectly matured would be useful for the production of flesh, nitrogenous matter as it is termed, but so long as it is imperfectly matured it is not only incapable of producing flesh, but it encourages and often creates disease in the animals. If, therefore, the food used be imperfectly ripened, instead of doing good we find it doing much harm. Take, for instance, what you will find plenty of examples of: sheep are placed upon a crop, well, it may be of swedes or turnips. The probabilities are that they are eating food that has not been sufficiently ripened. We know the ordinary protection is to give them some dry food, and it certainly helps them, but still it was worth while remembering that the state of the sheep might arise from the food being imperfectly ripened. Take the case of swedes in particular. You have often noticed, no doubt, that up to a certain time a flock feeding upon swedes may be severely scoured, and suddenly, after, say a strong frost, it has ceased. Now, this brings us back to inquire what are the conditions which favour the ripening of food. There are two such conditions. A continuance of warmth—an early crop giving it plenty of time to become matured through a long season; but another agency which very often has to do the work is frost. While the warmth of the season does its work slowly and steadily, a strong frost will do its work suddenly, and perhaps the frost of a single night will so alter the character of a crop of swedes that the sheep do not suffer, the irritation and the scour ceases, and the crop becomes so altered as to be capable of being used for its proper purposes. By the storing of mangels changes take place that enable that class of food to be used with greater safety, and the result is that we know, practically, when the different varieties of food are ready for use. No one would think of using mangels in the autumn, and why? Because they have not ripened. They are preserved in clumps or in stacks, and the moderate warmth of these stacks generally ripens the mangels, so that, as articles of food, they become more perfect. And this extends to all kinds of food. Take hay.

You all know how imprudent it would be to make use of newly-made hay, and the same with new oats, too. The idea which is very general is that the ripening of these crops takes place in the field. It is not so. You would no more think of giving new oats to your stock than you would think of making use of new wheat for your own use. You want maturity to be secured by the further ripening of the food. Then there is another point (I am obliged only to touch upon a few) and that is the use of mixed foods. From experiments which have been made in the use of food, it is pretty clear that a good quantity of cake and grain mixed, or given concurrently, produces a larger quantity of meat than if you used the cake first and the corn afterwards. I find that the general experience throughout the country is in favour of mixed foods. Then, again, another important point is that you cannot use any food without an enormous loss being associated with it. If I had a quantity of flesh-forming matter in any vegetable form, which I wanted to convert into meat, I do no obtain in meat the whole of that flesh-forming matter which was acted upon. In some cases you only get one-thirtieth portion of it, and even under the most favourable circumstances you rarely obtain more than one third. There is, therefore, an enormous loss in turning vegetable food into the form of meat. You have, in the first place, to keep up the health of the body of the animal, and the warmth of it. Even if an animal made no progress—if it remains at the same weight from week's end to week's end—that animal would still require food, although you may get no beneficial result from it. Hence it is in the highest degree unprofitable to keep animal alive without doing something else, without their making progress. Just as it would be ridiculous for a manufacturer to keep the steam up in his boiler and his engine just on the move, but not giving it any work to do, so it is equally imprudent to keep animals living without making progress. Let the object for which you are keeping be first of all determined. If that object is to produce meat, work perseveringly to promote that object, otherwise you are keeping the steam-engine, but not permitting it to do any work. This would represent an enormous loss of food, and our most economical producers of meat are those who keep their animals steadily progressing from the time of their birth to the time they have done their work. There is no doubt that this is the true economy of meat production—to obtain, by careful breeding, animals which posses a tendency to produce rich meat and of a fat-taking character—animals that are well suited to the district in which you are going to use them, that are not too delicate, and do not carry your modification of the animals to too great an extent. Having thus secured a right and proper class of stock with which to do the work, take care that the food given is well grown and thoroughly nutritious, that it be permitted to become fully matured and ripened, and that it is economised by being freely supplied so that the work shall be carried on continuously, and without any interruption whatever. By the adoption of such a system as this, I believe that you will find that meat of the highest quality can be produced at the lowest cost.

DISCUSSION.—The PRESIDENT said. Professor Tanner has put the whole subject before us in a scientific way, and at the same time in a sound and a practical way as well. I think, however, one great object the Professor has in view is to encourage discussion upon the subject and as there are a number of gentlemen present who are well experienced in feeding animals, and some especially so, I hope before the evening closes we shall hear their opinions and their experiences. Although not one of the oldest feeders amongst you,

(1) In England, where the sun is not so powerful as it is here, the oats, beans, and pease, are seldom till they have been 3 months in stacks. A. R. J. F.

if I give you my own principle and my own experiences it may induce others to follow my lead and give us their experiences. I have found that the great point in producing meat in as economical a way as possible is beginning with the animals as soon as they will eat. For instance, my practice is with cattle never to allow the calves to lose their calf-flesh, as when this is gone it is the most difficult thing to restore it, and requires a far larger expenditure to put the animal into a growing and feeding condition than if a small outlay in extra food had been made at first. So also with lambs. They should be pushed on from birth. It is astonishing how soon they will begin to eat cake and corn, and it is the greatest economy to let them have it. Our great object is to get quick returns, and the only way to do this is by having our stock matured as early as possible. Nearly all beef is now killed at 2 years old, and sheep at 1 year old, and if this is done to make the best of them they have no time to lose from their birth onwards. I sell my sheep—that is, the wethers—as soon as they are shorn the first year. They are fed on a mixed diet of cake and corn from the time they were weaned, beginning with a quarter of a pound per head, and increasing it up to 1½ lb. This is of course in addition to the roots and hay, when I can spare it, during the winter. This, I am glad to hear, is the opinion of Professor Tanner, who says that it goes further than either corn or cake given by itself. I usually start as soon as the lambs are weaned, and if I started before, as soon as the lambs could eat, it would, I believe, be all the better, but there is then one difficulty—that you would then have to feed the ewes as well, unless the practice is carried out to have lamb hurdles for the lambs to run through to eat the cake inside the enclosure where the ewes cannot follow, and I believe that would pay any man to carry out. My practice with the calves—for of course in this breeding district I do not dairy at all—is to let them run out with their mothers. During hot days I always get the calves in about 11 o'clock, and they stay in the yard until they the cool of evening. I give them cake (an average of about 1 lb. each), which results in but a small expenditure, and is, I find, the most economical way of getting the animal forward into condition. As soon as the nights get cold this system is changed, and they come in at nights instead of in the day. Of course the quantity of cake is increased as the animals grow older, and when necessary they have artificial food or grass. This helps the land, and is really the cheapest way of manuring it. Now comes the question of what food to use. I have found that a mixture is better than one sort by itself. My usual mixture is half undecorticated cotton cake and linseed cake mixed, of the best quality, for all kinds of stock; but even store sheep not intended for the butcher get the undecorticated cake by itself, and sometimes the cattle also when on grass. I am very fond of good dry peas mixed with the cake for sheep and also a little barley, but not if it is out of condition. I consider that a regular system of feeding and regular hours is necessary, and a quiet attentive feeder is absolutely necessary, with the constant eye of the master to detect the first symptom of anything wrong. Mr. Hill also referred to the great importance of good dry yards and shedding to put their cattle in, for they could not expect animals to make flesh fast if they were half their time up to their knees in water or shivering in a cold wind. He was very badly off himself in that respect, and when he saw the accommodation which was being provided on a neighbouring estate it made him very down-hearted. Landlords had no idea what their tenants were losing who were not properly provided for in that respect. The arrangements of the yards were, he said, often bad, and necessitated unnecessary labour, and, consequently, expense in feeding. He had two German agriculturists at his house the other day. One could not speak English at all, and the other could only speak it a little. They came over to examine a number of farms, and he had the honour of having his selected as one of them to be examined. Those gentlemen had never seen Herefords before, and they were very much pleased with the whole of the arrangements on the farm. But he was very much struck with one thing they told him in regard to the way in which they carried out the feeding of stock. They have a much more systematic way, and go more thoroughly into the scientific part of the business than we do. They are taught a regular scale of the value of feeding stuffs, and the consituents wanted to put on fat or muscle and to increase bone, and they make their mixture according to scale, giving so much artificial food, so much hay or clover, and so on. They go by rule and book, and know the why and wherefore—what the English farmer does by experience and practice without troubling himself to find out the reason. He thought himself that a combination of those systems was the best.

The PRESIDENT asked Mr. Corfield if he would tell the meeting how he fed his bullocks.

Mr. CORFIELD: It is a very good thing is regular feeding, but we cannot get the men to do it now. There is this education—they are getting too knowing.

Professor TANNER: As to the use of malt, its great value, according to the general opinion, is not so much in its being feeding as in its helping other food to be more perfectly digested. Hence they found two classes of stock for which malt is especially valuable, first of all young stock where the digestive powers are weak, and the other class is where stock is being over-fed—finished for exhibition, where the system has been overcharged by reason of a very abundant supply of food, and the animal was not able to make the best use of that food given. In such a case the malt gets the animal into a more progressive condition. The reference which had been made to the covered yards was a testimony to the fact that protection was equal to a certain amount of food. If you expose an animal to severe weather, the heat of the body is kept up at the cost of the food used. He was glad to hear how Mr. Hill treated his young growing stock, for their policy was not to make them too delicate—they must retain a certain amount of hardihood of character, and must not be made too tender.

ALBERT REX ALPHEA, No. 8710, A. J. C. C., will serve a limited number of registered Jerseys. All animals to be at owners' risk, but due care will be taken. No charge for keep of animals. Service Fee $25 each animal.

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Opposite Montreal.

Cut this out it will only appear once.
June.

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Written guarantee given to furnish paying situations.
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IMPROVED
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A NEW DISCOVERY.

☞For several years we have furnished the Dairymen of America with an excellent artificial color for butter; so meritorious that it met with great success everywhere receiving the highest and only prizes at both International Dairy Fairs.

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It Will Not Color the Buttermilk. It Will Not Turn Rancid. It is the Strongest, Brightest and Cheapest Color Made.

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☞BEWARE of all imitations, and of all other oil colors, for they are liable to become rancid and spoil the butter.

☞If you cannot get the "improved" write us to know where and how to get it without extra expense. (46)

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sept. 1882.

FOR SALE; PURE BRED SHEEP.—SHROPshire Downs, Hampshire Downs, and Lincoln (long wool).

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Importer and breeder, North Hatley, P. Q.

march to aug.

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References: Hon. A. W. Ogilvie, Senator; Joseph Hickson, Esq., Gen. Man. G. T. R; M. H. Gault, Esq. M. P.; Thos White, Esq., Traffic Man, G T. R., J. J. Curran, Esq., M. P; James McShane, Jr., Esq., M. P. P.; D. McEachran, F. R. C. V. S.

march to aug.

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jan. to feb.

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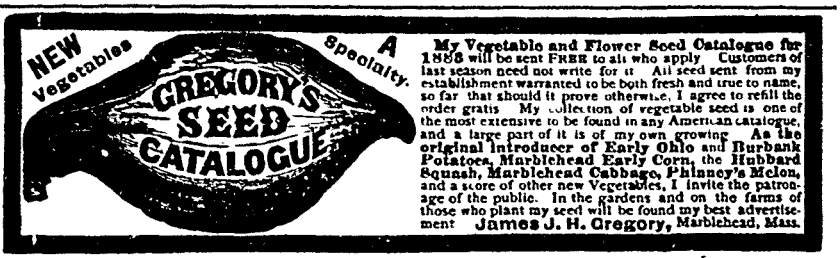

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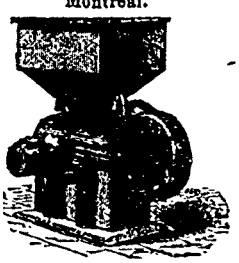

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For the land.
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Pure, or mixed with ground plaster.

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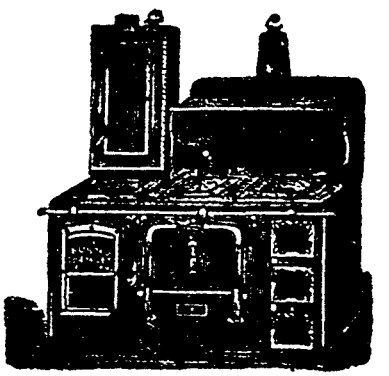

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