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THE ILLUSTRATED
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ROTHAMSTED EXPERIMENTS.

(Continued)

Recalculations—Abstract of expts. on pigs— $\frac{2}{3}$ of fat must have come from carbohydrates.

We have, however, as already said, long ago recalculated many of our feeding experiments, making allowance as far as practicable for the probable amount of indigestible and necessarily effete matters of the foods. We have also, as referred to at pages 252-255, arranged tables founded on our direct analytical results on the test animals, showing the probable average percentage composition of the different descriptions of animal, each at eight gradationary points from the store to the very fat condition, and have applied the factors thus obtained, not only for the calculation of the composition of the increase in a number of cases of ordinary practice, and of direct experiment, but also for the recalculation of some of the results to which Table 70 relates. Accordingly, in the next table (71) are given the results obtained in experiment No. 1, which were inconclusive according to the original mode of calculation, and also those obtained in experiments 4 and 5, which, even as originally calculated, could leave no doubt of very considerable formation of fat from the carbohydrates.

All these recalculations are in the first place based on the assumption, since generally adopted by others, that 100 nitrogenous substance can at the most yield 51.4 of fat, instead of nearly 62, according to the original plan of calculation as adopted in the construction of Table 70. Then, each experiment is now calculated three ways: First, on the assumption that the whole of the fatty matter and nitrogenous substance of the food were digested; secondly, supposing that only 90 per cent, and thirdly, that only 80 per cent was digestible and available. Lastly, in the case of experiments 4 and 5, I have, after very carefully considering the weights and character of the animals and the duration of the fattening period, taken the initial and final composition, not as in Table 70 the same as in experiment 1, but the initial at a composition three-eighths in advance from the store to the fat condition, as in experiment 1, and the final composition at one-fourth in advance of fatness, compared with the fat pig of experiment 1. It is worthy of remark that this carefully reconsidered independent mode of estimate gives almost precisely the same percentage of nitrogenous substance, and precisely the same of fat, in the increase in experiment 4 as in the former estimate, namely, 5.4 instead of 5.3 per cent of nitrogenous substance, and in both cases 79 per cent of fat, the animals being all very fat. Again, the new mode of calculation gives for experiment 5, 6.4 per cent of nitrogenous substance, and 72.3 per cent of fat in the increase, instead of 6.5 and 71 per cent, as formerly adopted.

Let us first just refer to the results of experiment 1, in which parallel animals were analyzed, but in which, as has been pointed out, the food was much more highly nitrogenous than is appropriate in the fattening food of the pig. Those given in column 1, in which it is assumed that the whole, both of the nitrogenous substance and of the food, was digestible and available, show that when we now reckon only 51.4 instead of about 62

TABLE 71.—Sources of the fat of the animal body. Abstract of results of experiments made at Rothamsted with pigs. (Results reckoning 100 nitrogenous substance in food may yield 51.4 fat.)

	Experiment 1—Beans meal, lentil meal and bran, each 1 part; barley, meal, 3 parts.			Experiment 4—Maize meal ad libitum.			Experiment 5—Barley meal ad libitum.		
	All.	90p.ct.	80p.ct.	All.	90p.ct.	80p.ct.	All.	90p.ct.	80p.ct.
Proportion of nitrogenous substance and fat digested	3.8	3.8	3.8	7.3	7.3	7.3	6.3	6.3	6.3
Albuminoid ratio (1)									
For 100 increase in live weight.									
Nitrogenous substance:									
In food	100	90	80	57	51.3	45.6	64	57.6	51.2
In increase	7.8	7.8	7.8	5.4	5.4	5.4	6.4	6.4	6.4
Available for fat formation	91.2	82.2	72.2	51.6	45.9	40.2	57.6	51.2	44.8
Fat:									
In increase	63.1	63.1	63.1	79	79	79	72.3	72.3	72.3
In food	15.6	14	12.5	26.3	23.7	21	12.4	11.2	9.9
Newly formed	47.5	49.1	50.6	52.7	55.3	58	59.9	61.1	62.4
Derivable from nitrogenous substance	47.4	42.3	37.1	26.5	23.6	20.7	29.6	26.3	23
From carbohydrates .....	.1	6.8	13.5	26.2	31.7	37.3	30.3	34.8	39.4
For 100 total fat in increase.									
Fat:									
From fat in food	24.7	22.2	19.8	33.3	30	26.6	17.2	15.5	13.7
Derivable from nitrogenous substance	75.1	67	58.8	33.5	29.9	26.2	40.9	36.4	31.8
Derivable from carbohydrates .....	.2	10.8	21.4	33.2	40.1	47.2	41.9	48.1	54.5
For 100 newly-formed fat.									
Fat:									
Derivable from nitrogenous substance	99.8	86.1	73.3	50.3	42.7	35.7	49.4	43	36.9
Derivable from carbohydrates .....	.2	13.9	26.7	49.7	57.3	64.3	50.6	57	63.1

(1) In the calculation of these ratios the nitrogen is, as in Table 70, multiplied by 6.3 to represent total nitrogenous substance, and for column 1 of each experiment no deduction is made. For all three columns of each experiment the crude fat is multiplied by 2.4 to bring it into its equivalent of starch. For column 1 the amount of nitrogenous substance, not fat, is taken without deduction; but for columns 2 and 3, as in the case of the nitrogenous substance and the fat, only 90 or 80 per cent respectively of the total is assumed to be digested.

parts of fat to be derivable from 100 nitrogenous substance, even this experiment indicates that the fat in the food and that derivable from the nitrogenous substance consumed, were scarcely sufficient to cover the whole of the fat of the increase. Obviously, too, if it be assumed, according to the more recent estimate, that only about 42 parts of fat can be derived from 100 of albuminoid substance, there would then, even in this experiment with such abnormally high nitrogenous food, be a considerable formation of fat from carbohydrates.

Turning to the results in the second column, which are calculated on the assumption that only 90 per cent of the nitrogenous substance and fatty matter of the food would be digested, it is seen that, for 100 increase in live weight, 6.8 parts, for 100 total fat in the increase 10.8 parts, or for 100 newly-formed fat 13.9 parts, must have been derived from carbohydrates.

Lastly, in regard to experiment 1, reckoning only 80 per cent of the nitrogenous substance and fat of the food to have been digested and available, the result would be that 13.5 out of 63.1 parts of fat in 100 of increase, must have had some other source than fat and nitrogenous substance of food; or reckoned for 100 total fat in the increase, 21.4 parts, or for 100 newly-formed fat, 26.7 parts, must have been derived from carbohydrates.

In regard to the alternative assumptions that only 90 or only 80 per cent of the nitrogenous and fatty matters of the food were digested, it may be

stated that in Wolff's tables, published in Mentzel und v. Lengerke's land-wirtschaftlicher Kalender for 1890, he reckons 88 per cent of the nitrogenous substance of beans, 89.9 per cent of that of lentils, 77.9 per cent of that of bran, 79.2 per cent of that of maize, and 77 per cent of that of barley, to be, on the average, digested; and of the fatty matter of these foods he reckons 87.5 per cent of that of beans, 84.6 per cent of that of lentils, 70.6 per cent of that of bran, 85.1 per cent of that of maize, but the whole, or 100 per cent of that of barley, to be digestible. So far, therefore, as experiment 1 is concerned, according to Wolff's factors, the truth would lie somewhere between the results supposing 90 and those supposing 80 per cent digested.

Even in this experiment then (No. 1), there is clear evidence of the formation of fat from the carbohydrates, when deduction is made for indigestible nitrogenous and fatty matters consumed, and when it is reckoned that only 51.4 parts of fat may be produced from 100 albuminoid substance. Obviously, if only 42 parts of fat as assumed by some, can be formed from 100 albumin, the evidence is clearer still.

Turning now to experiment 4, in which the food was maize meal alone, given ad libitum, and the relation of nonnitrogenous to 1 of nitrogenous substance was much higher than in experiment 1, and much more appropriate for the rapid fattening of the pig, the results are much more decisive. They were, indeed, quite conclusive as ori-

gnally calculated, without the emendations now adopted.

The results, even as given in the first of the three columns, in the calculation of which it is assumed that the whole of the nitrogenous substance and fat of the food were digested and available, show that for 100 increase in live weight 26.2 parts of fat, for 100 total fat in increase 33.2, and for 100 newly-formed fat 49.7 parts must have been derived from carbohydrates.

Reckoning, as in the second column, that 90 per cent of the nitrogenous substance and fatty matter consumed were digestible and available, the calculations show that for 100 increase in live weight 31.7 parts of fat, of 100 total fat in increase 40.1 parts, and of 100 newly-formed fat 57.3 parts would be derived from carbohydrates. Or, reckoning as in the third column, that only 80 per cent of the nitrogenous substance and fat of the food were digested and available, the results show that for 100 increase 47.2 parts, and of 100 newly-formed fat 64.3 parts, or nearly two-thirds of the total produced fat, would have its source in the carbohydrates.

It may be observed that, in the case of this experiment with maize, the results given in the third column would very nearly accord with those which would be obtained if Wolff's average percentages of digestible constituents had been adopted.

Let us now refer to the results of experiment 5, in which the food was barley meal alone, given ad libitum, and the albuminoid ratio was nearly that recognized as most suitable for the rapid fattening of the pig.

The first of the three columns, calculated on the assumption that the whole of the nitrogenous substance and fat consumed were digested, shows that under such conditions there would be for 100 increase in live weight 30.3 parts of fat, for 100 total fat in increase 41.9 parts, and for 100 newly-formed fat 50.6 parts, or about half, must have been derived from other constituents than the fatty matter and nitrogenous substance of the food.

The results in the second column, calculated on the assumption that 90 per cent of the fatty matter and nitrogenous substance were digested, show that in 100 increase in live weight 34.8 parts of fat, in 100 of total fat in increase 48.1 parts, and of 100 newly-formed fat 57 parts must have been derived from carbohydrates.

Lastly, the results in the third column, reckoning only 80 per cent of the nitrogenous substance and fat to be digested show that on this supposition of 100 increase in live weight 30.4 parts of fat, of 100 total fat in increase 54.5 parts, or of 100 newly-formed fat 63.1, or again nearly two-thirds, MUST HAVE BEEN DERIVED FROM CARBOHYDRATES.

So much for the evidence of results relating to pigs in their bearing on the question of the sources of their fat, when fed on their appropriate fattening food. IT IS CUMULATIVE AND DECISIVE THAT AT ANY RATE A LARGE PROPORTION OF THE STORED-UP FAT MUST HAVE ITS SOURCE IN OTHER CONSTITUENTS THAN THE FAT AND NITROGENOUS SUBSTANCE OF THE FOOD; IN OTHER, WORDS, IN THE CARBOHYDRATES.

HUMUS IN THE SOIL.

(Continued)

Sources of humus on the farm—Dung—Analysis of dung—Nitrates—Green manuring—Mucks.

Having, in previous articles, considered in detail the nature of humus (vegetable organic matter) and how it affects the fertility of the soil, improving it both in composition and texture, we may now enquire as to the more common sources from which the farmer can draw for a supply of this material.

As a supplier of humus, good barnyard manure stands easily first. From this statement it must not be inferred that the chief value of such manures lies in the amount of organic matter it contains. By no means. We must distinctly understand that the value of any particular sample is directly dependent upon the actual percentage of Nitrogen, Phosphoric acid, and Potash it possesses. While recognising this fact, however, the further benefit that barnyard manure imparts to the soil from the organic matter it supplies should not be lost sight of.

From analyses made in the laboratories of the Central Experimental Farm, we learn that manure contains from 14 p. c. to 15 p. c. of organic matter, according to the conditions under which the manure has been preserved, the extent to which it has been rotted etc. This organic matter is of such a nature that favorable climatic condition alone are required to bring about its easy decay in the soil. It is this property of being subject to ready decomposition in and incorporation with the soil, that has assigned the high value to the organic matter of manure before alluded to. Now, this further decay is the direct result of the life of microscopic plants—germs, which find in the excrement of animals a food peculiarly adapted to their growth. We are only beginning to understand the important rôle that these micro-organisms play in the soil, but sufficient experimental work has been done to justify the assertion that it is through their agency that the inert nitrogen of the soil is converted into "nitrates," a form or compound of nitrogen available to plants. Decomposable humus, therefore, performs a very useful function in furnishing food for the development of these newly-discovered friends of the farmer.

Green manuring, or turning under with the plough a growing crop is also an effective method of supplying humus. The manifold benefits of this system of land improvement, especially when one of the legumes is grown for the purpose, need not here be entered upon. In the present connection, it will be sufficient to point out the immense amount of vegetable organic matter contained in such a crop. It was found as the results of experiments at the Experimental Farm that an ordinary crop of clover contains in its leaves, stems, and roots, between 5000 lbs and 6000 lbs of organic matter per acre. Thus, it has been demonstrated that this crop is capable of storing up in its tissues a very large quantity of material derived chiefly from the atmosphere, a material that in its decomposition enriches and improves both heavy and light soils.

Finally, swamp or black muck, must be mentioned as a source of humus. In many parts of the Dominion, vast deposits of it occur; indeed many farmers can obtain for the expense of dig-

ging and hauling when dried by exposure to air, good samples contain from 60 p. c. to 80 p. c. of organic matter and from 1 p. c. to 25 p. c. of nitrogen, the latter being the chief element of fertility in mucks. Unlike the organic matter of barnyard manure and of green crops, that present in crude mucks is not readily decomposed in the soil. To ensure immediate results, the natural acidity must be corrected and fermentation started before its application to the soil. This is effected by first piling the muck and allowing it thus to be weathered for several months. A compost composed of alternate layers of the air-dried muck and stable manure should then be made, the heap being kept moist and occasionally turned. The air-dried muck may also be used to good advantage as an absorbent for liquid manure about the farm buildings. This latter method is particularly to be recommended since thereby a large amount of plant food is saved that otherwise would be lost. The resulting manure is rich and forcing.

F. T. SHUTT.

SCIENCE IN ITS RELATION TO AGRICULTURE.

The soil—County analysts—Artificial manures—Mistakes in using them—Feeding stock—Remedies of ignorance.

In the course of his speech at the South-Eastern Agricultural College the Duke of Devonshire remarked, "However good a practical farmer a man may be, he can hardly fail to be a better one by becoming acquainted with the discoveries of science in relation to agriculture"; and yet how few farmers will allow themselves to be convinced that his Grace's statement is in reality the truth. To so many men the mere word "scientific" in relation to agriculture is synonymous with "expensive," and therefore to be avoided at all hazards. If such is the case, farmers are to be commended for a proper sense of thrift; but I venture to assert that the consensus of opinion of those best qualified to judge does not uphold the theory that science and expense must necessarily go hand in hand, but rather that if science is rightly and properly applied to the practice of agriculture the result will be larger crops of better quality, the produce of which will ensure an infinitely higher return, whether it be employed for the raising of stock, meat, or milk.

Without going into any scientific details, I think it is possible to make it clear to the most pronounced sceptic that at the present time it can hardly fail to be of benefit to the farmer to pay a little attention to science.

Firstly, let us take the soil; it is the duty of every farmer to find out the composition of the soil on his holding, both as regards its physical and chemical properties. Then comes the question, "How am I to do this? I have no chemical laboratory." My answer is, Send a fair sample to the county analyst, or, if a member, to the R.A.S.E., and the charge for an analysis and report will be amply repaid by the information gained, giving, as it does, an insight into the extent of the capabilities of the soil in respect of the plant food it contains, and, further, enabling the farmer to develop those capabilities by means of applying suitable special manures.

Secondly, it behoves the farmer to endeavor to acquire a knowledge of the composition of artificial manures, and also the extent to which various crops are lacking in the different elements of plant food. Having acquired this knowledge, he will be enabled to apply the proper artificial manure to the crop it will be of benefit to; and surely this is far better than indulging in the obnoxious practice of looking through advertisements to find out which manure is cheapest, at the same time utterly disregarding the fact that it may not contain a single useful ingredient. Only last summer whilst going over a farm in Hampshire, I happened to ask the tenant if he had used any artificial manures on his cereals. He replied: "I have, and never intend to do so again." On further questioning him, I found that he had spent a large sum in purchasing quantities of nitrate of soda, superphosphate of lime, and kainit, all of which he had mixed together in a heap! He had then applied the mixture as a top-dressing to his wheat and oats, and was dreadfully hurt and surprised that he had rather worse crops than usual. The above, I fear, is only one case out of hundreds in which a hard-working and well-meaning man throws away large sums in purchasing manures the properties of which he has not the slightest knowledge, nor does he think it worth his while to do otherwise than his father and grandfather have done before him.

Lastly, let us take the feeding of stock, whether it be for the production of work from our horses, milk from our cows, or meat from our sheep and cattle. Here, again, I am positive large sums are annually wasted by farmers in purchasing feeding-stuffs, the ingredients of which are wholly useless for the purposes for which they are employed, the reason being that the users have not the knowledge as to the kind of feeding-stuff best suited to the different classes of stock.

Of course, I am well aware that the argument may be raised as to how all this knowledge it to be obtained. Even this, I venture to think, can be answered satisfactorily.

Firstly, if the farmer is lucky to have his dealings with a friend who has a knowledge of agricultural science, let the farmer consult him in these matters and ask his advice as the efficacy or otherwise of artificial manures, feeding-stuffs, &c.

Secondly, in his spare moments the farmer might with advantage read any of the hundreds of publications dealing with the question of scientific agriculture, such as the series of Morton's Handbooks of the Farm; also let him read the results of the experiments which have been and are being carried on in different parts of the country, especially those at Rothamsted and Woburn.

Lastly, there are the technical education classes of the county councils, at which lectures are given on subjects likely to be of benefit to the farmer, and at these doubtless valuable knowledge may be gained, though I am afraid many of the lecturers appointed have gained this scientific knowledge without a sufficient amount of practical experience, and have consequently failed when questioned on matters of practice, the result has been that many farmers refuse to believe that science can be applied to practice, and is not simply a mass of expensive "new-fangled notions."

In conclusion, I do not mean to say that science is going to restore agricul-

ture to its pristine prosperity, prosperity of the estate would work to one another's hands. It is said there are large tracts of land in England that cannot find a tenant that will pay a rent. This is a most unhappy state of affairs; yet it seems odd, when there are immense sums of money lying idle in our banks, or, worse still, sent abroad, and frequently lost in speculations in foreign countries. Surely a limited liability company might be tried to take up these lands and produce food for our teeming population. I need say no more. Some farmer's association might consider the question and report. There may be difficulties in the way unknown to me, but, on the face of it, the Limited Liability Act seems formed to remove embarrassments between landlord and tenant.

CHARLES WADDIE.
"Agr. Gazette."

THE MONTREAL EXPOSITION.

Reporters—The Secretary—Trappist Fathers—Cheese.

There is quite the same state of things at Montreal as at Syracuse as regards the patronage of the townspeople. However, the circumstances are different. Montreal has much to contend with, principally two nationalities. The French, who are in the majority, do not seem to attend. Some of the press are so shortsighted as to take issue against it. Incompetent reporters make poor work trying to report a fair that only comes once a year; they are all right on a murder trial or street improvement, but an agricultural fair is entirely out of their line. They get along all right writing up a special notice of some stove exhibit when the stove man tells them what to say. They don't know what to say about the fair from an agricultural standpoint; so they call it a failure. Montrealers gave a grand show, fully up to the average of our best American agricultural exhibitions, and considering that only a few weeks before the fair fire destroyed their main buildings, they are to be congratulated on their pluck and push in carrying out their intentions to have an exhibition at all this year.

I have been attending fairs as an exhibitor or judge for the last 20 years, and I must say I know of no fair management in this country or Canada or England where the managing secretary has had more to contend with, and has succeeded as well as has Mr. S. C. Stevenson of the Montreal Exposition Co. I mention this as showing how far from a failure the exposition really was.

The principal feature of the cattle show was of course the Ayrshires. Some eight of ten herds came into the ring, mostly animals of very high quality. In the aged cow class (some twenty or more) I had the pleasure of awarding five money, four V. H. C. and three H. C. prizes. Most of the young classes were exceptionally good. I doubt if all Scotland could make a better showing than this class last year. I know there are no better dairy cows among the Ayrshires of Scotland. The other classes of farm livestock were fully up to the average. The fruit exhibit was particularly good, and, as to quality, was hardly exceeded at Syracuse. Such a show of vegetables and honey I never saw in the States.

I must add a word for our friends the Trappist Fathers, of whom I wrote quite at length, in reporting this fair in '04. They are an order of silent monks, farming a large tract of land

near Montreal. Their exhibits are always above the average. Their cattle are mostly grades or "French Canadians," of which breed there was a large entry this year—something near a hundred. The most interesting thing about the Trappist Fathers, next to themselves, was their display of cheese. I have always been writing about Canadian cheese and its superiority over our own vile skim-milk stuff. The Trappist Fathers are the first to make and exhibit in this country, at Montreal, this year, some of the fancy cheeses made in France (from which country this order of monks originally came). I look upon this initial step in Canada as one of the most eventful in the history of cheese-making in that country. I have for years been trying to introduce the manufacture of better cheese into this country, holding up the Canadians, the English and the French, and every other country, to our own people, as examples of what might be done here, if our dairymen would turn their attention in that direction.

I repeat what I have often said, that there is a sure and remunerative future in this country for honest cheese. I may say to the Montreal press that if there had been no other exhibit at the Montreal exposition than that of the Trappist Fathers, the fair would have been anything but a failure. I congratulate the Montreal exhibition on being the first to have these new cheeses on exhibition, and the Trappist Fathers on their skill and foresight, good judgment and progress. The society should make them a special award, as no doubt they did. If their work becomes a success, they will deserve a monument.

"Country Gentleman."

PRESERVATION OF FARM YARD MANURE.

Pits—Drainage—Mixing.

The first thing I would advise for the preservation of farm yard manure is the making of a manure pit, say from three to four feet deep, with a gentle slope up the sides so as to cause no trouble in backing up either sleigh or waggon when removing the manure to the field. Cement laid on the bottom and sides of the pit will prevent the liquid manure from being absorbed by the earth. Some may say: oh! cement is too expensive; well, let them take clay, which can generally be got for the carting, pound it, and mixing it well together; they will find that it makes a very good substitute for cement.

The next thing I would advise is the proper drainage of horse, cow and pig stables, "into the manure" pit, it can be done very cheaply, either by wooden boxes or common drain pipes. It pays to have the stables properly drained, if only for the health of the animals. I think that the farmers of this province at the present day, have to greater loss than the loss of their liquid manure, for I am convinced that there is more plant food in the urine that comes from the horses and cows than there is in their solid droppings.

The next thing to be looked after is the careful mixing of horse, cow and pig manure once a day. How few farm yards can we go into without seeing at once that no attention is paid to the management of the manure pile; in one pile we see a lot of horse manure bordering on spontaneous combustion, and in another pile, cow or pig manure so cold that fermentation has never set in, whereas if it had

been properly mixed, fermentation would have gently set in all over the pile which renders the manure fit to act on the soil and become food for plant life.

We see other farmers going to a lot of trouble and expense in getting the best of artificial manures, but who pay no attention or care to the best of all manures, their own farm yard manure who, if you were to mention such a thing as the management of a manure pile, would laugh at you. An occasional layer of earth will help to enrich the manure by preventing some of the gases escaping which go to make up plant food. A little trouble in looking after our farm yard manure will more than repay us a hundredfold by the increased produce of our farms, besides putting money into our pockets, but like every thing else it wants attention.

Alex. B. STALKER,
Farmer for Dawes & Co.,
Willows Farm,
Lachine.

FRUIT IN U. K.

Scotch and English acreage.

I wrote from Scotland about the fruit-growing industry in that country, which is steadily increasing. But England is a monster fruit-growing country when compared with Scotland and Ireland. These countries put together have not 6006 acres under small fruit. Kent alone has over 22,000 acres. The total acreage in the United Kingdom is 74,920. There are 68,122 of these in England. One part of Lancashire goes in largely for this sort of thing, and there is a splendid outlet for all that can be grown in Liverpool, Manchester, and other large centers of population. I should say that in fact there is here a big stretch of the country which 9 or 10 years ago was farm land. It is now market gardens and fruit fields, the holdings ranging from 2 to 20 acres or more. I had an interesting conversation with one of the growers. He said they tried all kinds of fruit that would grow to profit. I could see this for myself, because there were in almost every holding orchard trees, small fruit, vegetables and flowers. The men are market-gardeners, fruit growers, and florists, just as these occupations are profitable. This secures them against a total loss in any one year, for it is unlikely that all kinds of fruit will fail at the same time. My friend said raspberries were not much cultivated, that they did not seem to pay, but that strawberries were grown. Land is rented at \$15 to \$25 in the outlying parts, and it is as high as \$50 in close proximity to the station. All seem to be making a fair living, though there is hardly a fortune to be realized at it.

T. BOWICK, in "Country Gentleman."

STATE OF THE CROPS—FALL PLOUGHING.

Grain—Roots—Fruit—Dairy products—Drainage.

BUCKWHEAT.—Is an excellent crop this season but the weather has been very bad for saving the crop. One third of the grain will certainly be lost, from having had to turn it over 3 and 4 times, only to get wet again. The straw is not worth much, even for manure.

CORN.—After all that has been said,

there are fields of corn that got frozen, and some even not cut yet at this late date (5th); but corn has done well latterly; those who grew it for the grain are well pleased with the result, and those who grew it for ensilage are highly pleased. Corn, when the season is favorable, is the best crop a farmer can raise, and when saved properly is nutritious. It is growing in favor more and more by the advanced class of farmers as the best and cheapest food for cows.

ROOTS are not all harvested yet, in fact they have grown more the last month than earlier in the season, mangels seem to be the best so far, although turnips are growing vigorously at present, and should be left the last crop to be saved: a light touch of frost seems even to improve them.

APPLES.—The idea I had in view last month, as to the "inspection of apples" before shipment, would have been an excellent thing as so many poor apples have been shipped, that the English Markets are all glutted and will take sometime to recover. And such a crop of apples! Had they been handled properly, Canada would have got some of the overplus of money they have over there. It will be a long time before we shall have to complain about too much money in this Grand Old Dominion of ours. Nevertheless, there are some fine things we produce here such as cheese, butter, wheat, bacon, and apples, that can hardly be beaten anywhere under the sun. Let us look after quality along these lines, and we shall get our reward.

BUTTER.—Has been looking up a very little lately, so a good many factories that are rigged for both butter and cheese have dropped making butter and are now running on cheese. The price has not reached the 20c limit yet, except on a pet lot or two, 19c seems about an outside price. We are coming back near to where we were years ago in our butter shipments. No doubt, if we can suit the tastes of the English we have a chance of an enormous trade with them.

CHEESE has been booming in great style lately, take the season as a whole it will not be too bad, the gain of 3 to 3½ per lb makes a vast difference to the patrons who have been furnishing the milk. Taking cheese round the 7c mark and under, there is nothing much for the farmer; but at 10 to 10½ it is quite a different tale. Nevertheless, the makers must

look out and see that cures are kept in the curing rooms. Makers often get careless at this time of the year though great care and attention are required, as there is no warm sun to heat up and aid the curing process; milk is richer, cheese requires more acid in the whey and a greater amount of salt per 1000 lbs of milk. The shipments of both cheese and butter combined are going to be away ahead of any former year. We can possibly spare more at good prices.

PLOUGHING.—A good many are busy at it, while others are waiting; some, because the land is not wet enough others, because it is too wet, and so will it be to the end of the chapter, try just a little to get the most of it done this fall, and I feel sure you will be satisfied with the result in the spring. It is rather early for the annual matches to take place yet, but they will be held before the close of the month.

DITCHING AND UNDER DRAINING.—A good many people are afraid to let the water off the land by an open

ditch, and fewer still think of under drains. I intend to try some tile this fall, and hope to be able to speak or write practically in future of tile drains. If you want good crops the land must be well drained. Drain well, manure well, and you are pretty sure of a crop of almost anything you like to sow. Trusting in my next letter to be able to say that more fall ploughing, more ditching, and more draining have been done than usual,

I am, very truly yours,
PETER MACFARLANE.
Chateauguay, 5th Oct. 1896.

CULTIVATION OF MANGELS.

Fall cleaning—Dunging—Sowing— Kinds for difference soils.

In preparing the ground for Mangels, I begin to plough it as soon as the oats are harvested, generally about the middle of August. I plough the ground (1) to the depth of six inches at least. About three weeks after ploughing, I pass the heavy cultivator, and then the light harrows so as to kill the weeds that generally spring up after early ploughing. Then, about the first week of November, I plough again setting the furrow well up on edge, so that the frost may thoroughly pulverise it. I find for a good crop of mangels that it is best to cultivate the ground well in the fall, as the less cultivating we have to do in spring, in a dry climate like ours, the better crop we are likely to get. About the first week in May, I pass the harrows over the ground to break and level it. (2) Then I take the drill plough and open the drills twenty-seven inches apart, then fill the drills with good rotten farm yard manure at the rate of twenty-five to thirty tons per acre. Salt at the rate of from three to four hundred pounds per acre will increase the yield to a profitable extent, especially on black soil. Then, I pass the drill plough again, bringing the drills well up to a point, so as to cover all the manure. Then, I pass the circular harrows lightly on top of the drills so as to get a fine mould for covering the seed, then, I pass with the drill seeder on the top of the drill, sowing from four to five lbs per acre covering the seed to a uniform depth of half an inch. As soon as the plants are about three inches high, I thin them out eleven to fourteen inches (3) apart being always careful to leave the strongest plants. Then, after the plants have got set up, about one week after thinning, I pass the light cultivator between the drills to loosen the soil, and kill the weeds. Then, pass with the hoes singling out any doubles that may have been left in the first thinning. Then I pass with the drill plough lightly, through the soil on top of manure so as to keep the drought from getting at the roots of the mangels. Long varieties succeed best on a deep sandy loam and for heavy ground, I find the Intermediate, and globe varieties do the best. (4) But all varieties

(1) Far better use the grubber, or the 3-furrow stubble-paring plough, so as to keep the weeds atop.—Ed.

(2) Mr. Stalker's land must be very tender to admit of dunging up with only one harrowing!—Ed.

(3) Far too much space, as we always told Mr. Tuck. Mr. Stalker's predecessor.—Ed.

(4) We have always found it to be just the reverse.—Ed.

of Mangels want thorough cultivation, and plenty of good rotten farm yard manure.

(Signed) Alex. B. STALKER
Farmer for Dawes & Co.,
Willows Farm,
Lachine.

MANGEL AND KOHL RABI.

Preparation—Manures—Chain-harrows—Thinning.

When spring arrives, every advantage will be taken to complete the seeding of these crops, which, for general purposes, are the most useful of any of the root crops. Under favourable conditions both are heavy croppers, and may be stored and kept sound for a lengthened period. Mangel are the staff of the sheep-breeder during spring and early summer, whilst for cows in milk and the rearing of young stock they are invaluable. If on strong land, assuming the land has had a deep furrow early in the winter if after a cereal crop, and has since been drill and received a moderate dressing of farmyard manure, the drills should be split and exposed to the mellowing influences of rain and sunshine. Advantage should be taken of the first spell of dry weather, when a light chain-harrow is passed lengthways over the drills, forming a finely comminuted surface. On this should be sown broadcast a liberal dressing of phosphatic and potash manure, (1) the latter having been already supplied to some extent in the farmyard manure. A double mould-board plough is passed between the drills, the fine soil forming the drills, and if the land is dry the seed is at once sown. If dry enough, to prevent clogging, a roll of considerable weight should immediately be passed over the drills; this has the beneficial effect of causing the fine soil more closely to embrace the seed and enable the spongiolate of the infant plant to become more firmly established. Immediately the young plants make their appearance, a horse-hoe or small grubber should at once be set to work between the drills. By this means the soil is loosened and aerated, and nitrification encouraged. One-half to 1 cwt. of nitrate of soda should then be sown broadcast, and the horse-hoe continued. As soon as the young plants have emerged from the cotyledonous state and donned the rough leaf there should then be no delay in setting them out. To do this different practices obtain. In some districts the work is entirely accomplished by the use of the hoe. The plants are bunched by a stroke of the hoe, and are afterwards singled by the double action of a thrust and a pull. In this way the work can only be skillfully accomplished by trained workmen; when such cannot be had the plants should be bunched by a clean stroke of the hoe drawn towards the operator, and the plants singled by hand by a small boy or girl. The way in which the work of singling is performed, to a large extent influences the subsequent development and quality of the crop. A profusion of roots all round is not desirable. A single tap-root, with the necessary small feeders, is much pre-

(1) We prefer sulphate of ammonia, nitrogen being clearly indicated by the mangels, and potash being generally present in sufficient quantities in strong land.—Ed.

ferable. By clearing the soil well from the roots during the early stages of growth this can be ensured. (1) We are frequently met by the contention that roots cannot be grown on strong clay soils under ordinary conditions; when the land is worked in season the heaviest root crops can be grown.

GILBERT MURRAY.

THE TENACITY OF ALFALFA.

Yield per acre—Laughed at drought— The crop for poor land.

"Eds. Country Gentleman"—The tenacity of alfalfa when it gets firmly rooted, its vitality and vigorous growth under adverse circumstances, are really wonderful.

Six years ago I seeded a patch of two and a half acres, and since then have cut annually remarkable crops. It makes a slender, upright growth, affording little or no shade, and the weeds have a good chance.

The second year we put in another drill between the old drills, and let the crop take care of itself. The weeds were pretty well subdued, but then timothy and red-top came in. For two or three years the alfalfa was the principal crop, but now it is set in a carpet of grasses.

The first crop this year was part alfalfa and part timothy and red-top, cutting fully seven tons. The second crop, as well as the third, was pure alfalfa, and we have cut fully 12 tons, all told, from the two and a half acres. We had a spring drought, and what impressed me was the uninterrupted growth the alfalfa made without any apparent concern for the dry weather. When the grass had reached above two inches in growth, the leaves seemed to die down to the roots, but the alfalfa kept right on growing. Subsequent rains started the grass, and our first cutting was a grand mixed crop.

I do not expect we shall be able to subdue the grass, but I see no reason why we may not cut large crops of hay from this patch for three or four years to come. The grass may run out—I wish it would—and then I would count on a big yield of pure alfalfa for years to come by the use of manure in top-dressing. In my judgment the land was too rich and too full of seeds of both weeds and grass for the best results with this special crop. Some time since a western correspondent—from Colorado I think—said when they had any land too poor for any other crop they seeded it with alfalfa. It does not require rich soil to make a start, and a thin, sandy loam, in which weeds will not riot, is the best for the purpose.

With my poor success in keeping the weeds and grasses in check, this plot has nevertheless produced three times the burden of fodder borne by any other plot of similar size on the farm. Farmers should experiment with it and learn how to grow it. According to my experience and observation, there is no fodder crop that will compare with it for profitable yield.

G. W. FARLEE

Bergen County N. J.

(1) This we agree with, as we have often said. Mr. Stalker is wrong, in our opinion. See his essay above.—Ed.

RENOVATING PASTURES.

Manure—Land selects its own grasses—
Harrowing and rolling—Worms' work—Grasses and clovers antagonistic—Besio-slag and nitrate of soda.

The most important agent in renovating pastures is manure. If plenty of manure is applied, then seed is specially useful. The cultivation permissible is limited, because it is confined to the surface, and little can be done beyond harrowing and rolling. Seeding alone is rarely of much good; something exceptional, such as want of drainage, must have been present to cause the plant of an old pasture to die out, provided there was sufficient manure available to produce a full plant. Poverty is generally the cause of failure. Land lying in grass for a number of years produces these grasses it is best able to carry. If well manured the better grasses increase; if further robbed by the crop being taken away and nothing being returned, the proper grasses gradually shove out the better. The sowing of poor varieties of grasses on a rich old pasture, being maintained in its fertility, would not have a great influence on it, as the richer grasses are there because they have shoved out the inferior, and, although the inferior may be induced to germinate and perhaps grow for a time, they will soon have to give way to those which are there because the surrounding are favourable to their growth. If the seeds of richer grasses are sown on a worn-out pasture receiving no manurial help, they may germinate and take root, but they will soon be ousted. The richer grasses would have been there already, had the soil been able to maintain them. As soon as fertility is increased better grasses may be sown, because the land has been rendered capable of producing something better than existed before it was altered by the addition of food for the grasses. Manure and seeds must therefore go hand in hand, although, as before stated, if the condition of the land is improved the herbage will improve also; but the improvement is gradual, and it is hastened if seeds of good varieties are sown with it, for, instead of the plants of the better varieties having to force their way, each new plant becomes an attacking force which will establish itself to the discomfort of the lower type of grass, even though the inferior grass is a larger-growing plant than the one with better nutritive properties.

Harrowing and rolling are beneficial because they cultivate the soil to some extent, and the advantages of cultivation are felt by grasses and clovers as much as by other farm crops; they require air to be let into the soil to convert the manurial substances into an available form of plant food. There is reason to suppose that special good is done in the case of clover, as it is probable that it has an effect on the amount of nitrogen the plants are able to assimilate through the medium of the nodules. Beyond the mechanical effect of loosening the soil, moss is torn up, and, instead of drawing on the food supply in the soil, it is left there dead, to be consumed by worms and converted into manure. Broadly speaking, a permanent pasture cannot be harrowed too much, and, within reason, a younger ley will stand a considerable amount of rough treatment. Provided

the roots are there, it does not matter if the surface seems almost torn up; it will fill in and grow more vigorously for it. Places trodden up into almost a slush by cattle very soon fill in and grow the sweetest grass. The question of manuring grass land is, in a way, a simple one; at any rate, anything that can be called manure does some good. Good farm-yard manure is never better used than when it is applied to grass. (1) It supplies the plant food necessary, and it sets the worms to work, and they effect a deeper and more thorough cultivation than can be made by any other mechanical means. This is one reason why manure which is little more than wetted straw always does well. Any decayed vegetable matter does good, and for this reason compost is valuable. Bone meal is valuable, as it provides nourishment for grasses and clovers alike. Kainit and superphosphate of lime are cheap, and essential on soils deficient in them, as is often the case where little manure has been applied, particularly if milk has been taken from the land for a large number of years. A deficiency of clovers is generally indicative of the necessity for applying them. Nitrate of soda is essentially a grass manure, and the want of a deep green in the colour of the grasses—at other times than during prolonged drought, when grass becomes brown even though there is sufficient goodness in the land—is indicative of the want of nitrogen. Excessive dressings are not desirable, as they tend to promote the growth of grasses to the sacrifice of the clovers. Sulphate of ammonia is more particularly a grass manure, but it does not check the growth of clovers to the same extent. It is, of course, by an admixture of manures that the best effects are obtained in the majority of cases, though in others there may be only one that is necessary to supply, and its application will make the others, which have apparently been dormant, wake up. The need of lime is by no means uncommon, and this is generally shown by sour herbage, such as sorrel, and the presence of hard, wiry grasses with little feeding value. Basic slag is useful for the lime it contains, as well as for the phosphoric acid. It does well where land is sour, and on moory land especially; but on hot gravelly soils I have frequently seen no better result than if sand had been applied.—Ex.

The Poultry-Yard.

What should be done at this season—It pays to be careful—Incubators and Brooders—Get the laying stock into proper condition—Canadian brains as good as any.

(A. G. GILBERT)

At this season, the aim of the farmer who intends to make money out of his poultry during the rapidly approaching winter—should be to have his laying stock, under two years, well over their moult and beginning to look their very best. If the proper care has been given to the moulting hens, the yearling hens have got their new feathers by this time. A hen or pullet never looks so well as she does when about to lay, or just after beginning to do so.

(1) The writer evidently does not agree with the waste of top-dressing.—Ed.

It has been pointed out in a previous number of this paper how to bring about early moulting.

These directions may be summed up as follows:

- 1.—Have no hen over two years of age.
- 2.—Give the laying stock a free run in the clover fields when it is convenient and possible so to do.
- 3.—During August and September feed cut bone, at least 3 times a week. If any kind of lean meat is cheaper and easier to get, feed that.
- 4.—If neither cut bone nor lean meat is cheap or handy, let the hens have the run, anyway, in the fields where they can get insect life. Try a soft mash, with kitchen and table wash mixed in it, three mornings in the week.
- 5.—If the hens are unavoidably confined to limited space, cut bone, meat or insect life will have to be supplied, in some shape. And so will green food.

IT PAYS TO BE CAREFUL.

It will pay the farmer, or poultry keeper to take a little extra care of his laying stock at their moulting time. It must be remembered that the earlier the hen gets her new feathers, the earlier will she begin to lay. The object should be to have the hens moult at the season when the market is flooded with eggs and begin to sell out when prices are becoming high. I am constantly asked (October) where new laid eggs can be had in any quantity. Indeed, this demand began last month (September) and I could only mention one or two places where new laid eggs could be had at 18 to 22 cents and as high as 25 cents per doz. I am speaking of strictly new laid eggs, not the eggs which have been preserved in the early and cheap season to be launched on the market at this time with every claim to be the "new laid" article. At this point, I may remark on the necessity of the farmer having his chickens hatched out early so that the pullets will lay about October, when prices are beginning to stiffen. I am aware it is not often possible to get out early chicks, for the hens will not "sit". A reason for this is that, in the great majority of cases, the farmers' hens do not begin to lay until early spring, and they are "late sitters" before they have laid their "quota" of eggs and become "broody." If the farmers' hens laid well during the winter, as they ought to do, I think there would be no trouble in getting early sitters.

WHY NOT USE INCUBATORS?

And if the farmers made the money out of their poultry that they would, if they gave them the same care and attention given to other departments of the farm, simple and reliable incubators and brooders would be more in vogue to-day than they are. I know it is said that incubators and brooders are "unreliable," "uncertain," "you have to sit up all night and watch them" etc. No doubt the incubators of the past were open to some of these objections, but there are incubators made to-day that are reliable and simple in operation. In many places in the United States, men have tens of thousands of dollars invested in the artificial rearing of vast numbers of ducks and chickens and make handsome profits. These men use their incubators and brooders as the market gardeners do their hot beds. They can no more get out their early ducklings and chickens wherewith to get the high prices, without their incubators and brooders, than the market gardeners can get their early vegeta-

bles, and gilt edged price for the same, without their hot beds. It is being regularly done by many, and what is being successfully done in the United States, can be done in Canada. It is only a matter of education and energy. To the "poultry specialist" in the neighborhood of large cities and who caters to the high priced markets, incubators and brooders are a necessity.

GET THE LAYING STOCK INTO PROPER CONDITION

While giving all care and attention to the moulting hens do not get them too fat by overfeeding too much "soft stuff" or grain. With a free run, two rations per day one in the morning and another in the afternoon—will be quite enough. If there is abundance of insect life you must reduce the quantity fed. Pullets will stand more food than a two year old hen. The month of November brings some sharp weather and the laying stock should be comfortably housed at night. Any extra care and attention during moult will be rewarded with an output of eggs when the prices are 40 and 45 cents per dozen in Montreal.

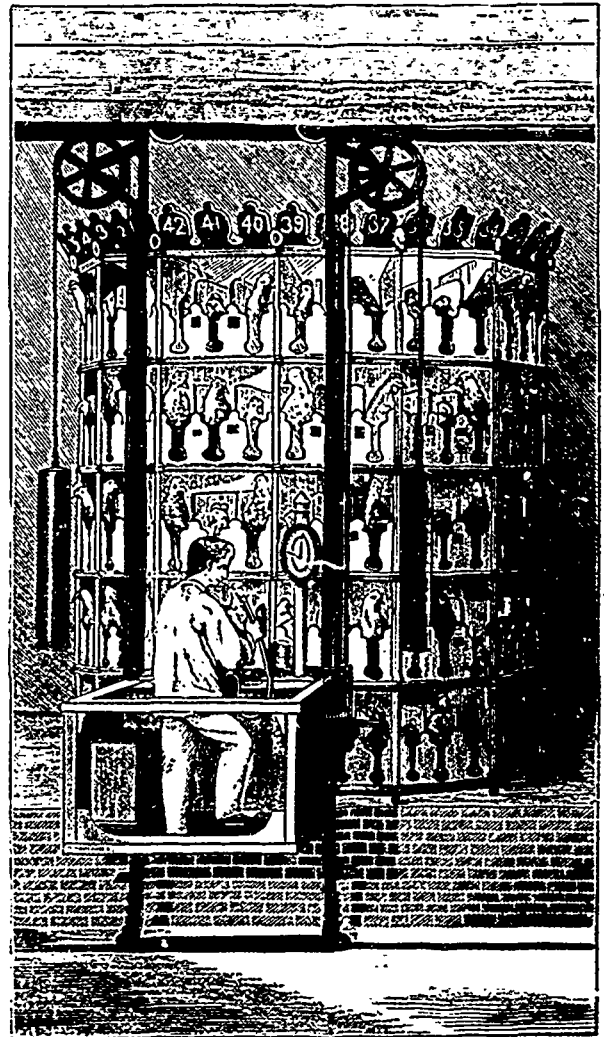
and energy. There are no brains in the world superior to the brains of the people of Canada.

THE "EPINETTE."

Description—The "Gaveur"—The food—Time required.

No fowls have such exquisite flavor as those submitted to this process. In the Gardens of Acclimatation at Paris it is very scientifically practiced under the direction of M. Odile Martin. "Its advantages," say the authorities, "do not consist in the rapidity of the process alone, but above all in the special quality of the meat thus produced. It is solid, very tender, exceedingly fine-grained, not overfat (which would not be an advantage), very white in color, and of flavor quite exceptionally excellent."

If this is so, of course there is no help for the chickens. They must perforce enter their "épinettes," and be mathematically crammed. Behold here the ingenious contrivance of the Gar-



THE EPINETTE.

CANADIAN BRAINS AS GOOD AS THE BEST

I am tired when I hear a farmer say: "Oh! that is very well for the people in the United States to do, or for the city folk to do, but we poor farmers ain't got the chance." This statement is untrue in every sense. If he said he had not the inclination, it would be true. The farmers of the Province of Quebec to day are breeding as fine cattle, as any in America; they are making as fine cheese and butter, as any on the continent; their root and field crops are famous and they can make much money and gain still more notoriety by developing the poultry interests of their Province, which they can certainly do by the application of their intelligence

dens of Acclimatation for manufacturing this "exceptionally excellent" flavor.

It is a huge cylinder with fourteen faces, each in five stories of three compartments each. It holds, therefore, 210 fowls. The cylinder is hollow and empty, except for the axis on which it turns. This hollow construction renders it easily ventilated and kept clean. Before it is a box for the operator. This box, or carriage, moves up and down by pulleys. The "gaveur"—that sounds less offensive than crammer—operates thus. Commencing at the bottom of one of these fourteen faces, he seizes with the left hand the neck of the chicken, and pressing on each side of the beak, the bird is forced to

open its mouth, as any lady knows who has doctored a sick chicken or canary. The "gaveur" then introduces the metallic end of the rubber tube into the throat of the chicken and by a pressure of the foot on a pedal the food passes, and at the same time the amount passing through the tube is indicated on a dial in front of the operator. It is therefore a skillful operation, for the "gaveur", whatever other motions are necessary, must pay strict attention to the needle on the dial, or he will give his chicken too much or too little. The three chickens duly fed, he turns the cylinder on its axis a little, and the next face of it is before him. When he has completed the round he turns the crank, and the carriage rises to the next story; and so he goes on to the top. Having completed the upper circuit, every chicken in that "épinette" is duly fed. Then he turns the crank in the other direction, and the carriage descends to the floor, where it rests on a railroad. It is then moved along before the next "épinette", and the whole operation on 210 more chickens is repeated. "A skillful operator will gave, or cram, 400 chickens in an hour!" That is less than nine seconds to each one; for the time to move the cylinder, to move the carriage up, down, and to the next "épinette", must be counted out.

Under this "épinette" régime it requires an average of fifteen days to fatten a duck, eighteen for a chicken, twenty for a goose, and twenty-five for a turkey. The food used for chickens is barley and corn meal mixed with milk into a dough so thin that no other food is necessary. The ordinary quantity given is from ten to twenty centiliters, or from seven-tenths to one and four-tenths of a gill each time; but this quantity is reached gradually. When the maximum that any chicken can assimilate is found, the number indicating this quantity is placed before its compartment, and the "gaveur" must measure it exactly on the dial.

Truly this is an age of wonders. What a labor-saving invention this "épinette" must be to the chickens! Maybe it is not wise to give these details. What if some enterprising American should be thereby tempted to invest his whole fortune in a grand improved automatic steam-power "épinette", warranted to feed ten thousand chickens a minute!

OUR DAIRY TRADE.

SUGGESTIONS FROM ABROAD

Canada Cheddar—White cheese—Canadian butter vs. Australian—Prices compared.

Mr. John Robertson, of Scotland, brother of Commissioner Robertson, of Ottawa, during the course of his recent visit to Canada made a call at the office of the "Farmer's Advocate." Mr. Robertson some years ago, after leaving Canada (where he first learned the dairy business), became instructor for the Wigtonshire Dairy Association, and subsequently made an extended tour in New Zealand, where the cheese business is making very satisfactory development. He is associated with Clement & Son, of Glasgow, Scotland, a firm doing an immense business in dairy produce, and his visit to Canada was especially in connection with the extension of their interests here. He went as far west as Manitoba. Mr.

Robertson adds his testimony to the fact that Canadian cheese continues to hold its high place in the British market, it being quite common to find in some of the best shops the legend, "Best Canadian Cheddar." Some Old Country Cheddars may, no doubt, fetch higher prices there, but the uniformity of Canadian cheese is a strong point in its favor. English cheese, being so largely made in private dairies, is more varied in its style and quality. While cheese is coming more into vogue, and the demand for a richer cheese is growing stronger. People are not so particular as to where their cheese comes from as they are to get what suits them.

Turning to the other great dairy staple, Mr. Robertson remarks that people here have little idea how bad the reputation of Canadian butter in Great Britain has really been, nor is it a light matter to remove the prejudice and build up an abiding place in popular esteem. He did not say that in years past it had been all inferior, but there was that lack of uniformity constantly cropping up that made butter from Canada a risky article to handle. Australia has built up a great butter trade, and uniformity is one of its strong points. We note by an April Liverpool report that finest American and Canadian butter was quoted from 70s. to 80s. per cwt., while finest Australian stood at from 90 to 92; finest Danish, by the way, standing at from 105 to 110! The Australian creameries are on a large scale, manufacturing being done in large central stations, the cream being brought in from separating stations through the surrounding country. Connected with the creamery is a refrigerator equipment, with refrigerator service on the trains and on the steamships. Cold storage has been brought to a high degree of perfection. Australian butter is very light in color and lightly salted, probably about one half as much being used as in the general run of Canadian butter; about three per cent. salt and one per cent. preservative is used. While not saying anything in favor of the latter, he said there had been no complaint on that score from the consuming public. That the Australians are able to ship their butter some 12,000 miles and across the broiling equator, commanding, say, 10s. a cwt., more in Britain than butter brought about a quarter of the distance, from America, in the temperate zone, should certainly set us thinking. The British consumer, Mr. Robertson observes, "will not" have "old butter"; so we see that an excellent system enables the Australian creameries, two months distant from market, to beat the product from America, less than two weeks distant. Freshness is not altogether a question of the number of days that have elapsed since making but rather a matter of so perfectly controlling conditions that the butter is actually held in the choice, edible condition in which it was when it left the churn and butterworker. It was recently announced that the Canadian Government had made arrangements with steamships for cold storage service, but this is not sufficient, for a summer trade at all events. After leaving the creamery our butter has, in many cases, hundreds of miles of transportation by rail, so that proper train service is absolutely necessary, or the butter might be in oil before reaching the harbor of export. One of our Western Ontario creamery men, who has been shipping to England all the

winter, complained to us that the lack of regular service on the trains might now stop him. In the next place, when once trade is started, shipments of butter must go forward regularly (weekly preferred). As to packages, the square 56 lb. box is preferred, particularly in the shops where that form of butter can be so readily cut up for retailing. It is carefully covered with parchment paper, the old plan of putting an inch layer of salt on top being out of date and discarded. We might add that the Australian packages are all banded. Clement & Co. handled some of our Canadian winter creamery butter this last season, which they found excellent, selling to within about 4s. per cwt. of the Danish product, but the trouble was that though it pleased their customers it did not arrive regularly. This firm receive and sell on consignment. A great deal of the British summer supply of butter is of home make, also from Ireland and Normandy. The latter sends over a good deal of fancy, unsalted butter. The Australian butter season in England is from November to May, at which time a great deal comes from Denmark also, so that Canada must be prepared to face this competition. Mr. Robertson, though not expecting high-priced dairy products, either cheese or butter, regards with a good deal of hopefulness, however, the development of winter butter dairying in Canada, owing to the many natural conditions in its favor, and the best results and the best returns to the producer are likely to accrue, if the success of the Australian is any guide, by strict attention to the points indicated above.

"Farmer's Advocate."

AMERICANS ON CHEESE.

Canada cheese—Relative food value of beef and cheese—Price at retail.

Mr. Eastman—If we are to regain our foreign markets, and thus have an outlet for our surplus cheese product, we must make such cheese as is made in Canada, not hard or skimmed cheese. At the same time, our dairymen should eat more cheese and less beefsteak. There are too many farmers who deliver milk every day at a cheese factory, but never buy any cheese, or but little, at best; while they will buy beefsteak at 12 to 15 cents a pound, that contains much less nutritive value than does cheese. These farmers seem to think that cheese is a luxury, only calculated for wealthy people's use.

Mr. Fowler—We are not a cheese eating people, and I don't believe you can make us one. A pound of it, cut and placed on my table, would stay there untouched a week. We must furnish the foods people want.

A Lady—I don't agree with Mr. Fowler. The reason why our people do not eat more cheese is, it is not fit to eat. Instead of making them dry, hard and indigestible, they should be moist and rich. Such cheese will be eaten, if it can be obtained.

A Gentleman—There are too many cheese makers who discourage the consumption of cheese among their patrons, just because they do not want to bother with them. Stop this, and I believe the consumption of cheese could be doubled in Lewis county within a short time. Then, too, when people find out the truth about it—that a pound of cheese has more food value

than beef has—it will be another inducement to eat it.

Mr. Eastman—A pound of beefsteak contains two and one-half ounces of digestible matter; while a pound of full-cream cheese contains nine and one-half ounces, more than three times as much as the beefsteak contains. In other words, a pound of such cheese is worth for food more than three pounds of beefsteak.

John Gould—The price is too high at the groceries. Those fellows buy a box of cheese for eight or ten cents a pound take it home, cut it, and sell it for fourteen to sixteen cents. They want the same price, no matter how cheaply they buy it at wholesale.

FEEDING VALUE AND CHEMICAL VALUE.

Skim-milk—Pigs on clover

"Ed. Hoard's Dairyman:"—Every once in a while some one is trying to convince feeders of the little feeding value there is in skim milk, comparing it to different food articles, as roots, corn, etc. With all due respect to chemists, who have given us considerable light on many subjects and been a great help to the art of feeding, it seems to me that some of them forget that the pig gets out of skim milk what chemistry can't. If they had served a term of years as practical pig feeders they would have found that nature's food, milk, cannot be replaced or duplicated, for health, thrift or growth, when used in combination with other food material. Any experienced feeder will bear me out in this. Its true value is owing to time and condition, and how fed, and age of animals, and could not fairly be computed with prices of pork. It is well known that not any one kind of food will give satisfactory results for a full and healthy development, and since it is true to all experience that where milk enters in the combination, the results are invariably better; its value could hardly be determined by chemical test.

It is too woefully true, that comparison of values of butter, cheese or pork with the products out of which they are manufactured, and not knowing how to do it intelligently, is the cause of many failures which make men give it up in disgust and return to the old routine of selling grain and with it the fertility of the soil on which it grows. I have never met as yet a dairyman or hog-raiser, or a combination of the two, that has entered into the business to stay, and arranged buildings and farm in all parts suited to this side business, but what were prosperous, because they have learned that not in singleness but in the combination of the whole is their success.

Therefore some men could value milk like friend Everett, at 35 cents per 100 pounds and get the value out of it, while it would be dear to some other men at 10 cents per 100. We have 15 sows and over 100 pigs in ten acres of clover and they could not, if they would, eat one-half of it in time. Before long some one will come and tell us the chemical value of that clover, and that it is not a paying investment with pork at \$3.50. He will figure interest on investment of fence and land, and will want to know how much live weight we are getting out of that clover, not thinking of the combination of things. In spite of such non paying investments and high and low estimates of

feeding values, where the animals found something that the chemist did not, we have risen from nothing to prosperity.

It is not always what we feed but how we feed it, and the how must receive as close attention and observation as chemistry.

But then the cow and the hog are partial to some men. Some men seem endowed with a faculty to make them do their best.

THEO. LEWIS.

THE SCIENCE AND PRACTICE OF DAIRYING.

Fleischmann—Butter and cheese—Bacteria.

This is the comprehensive title of the latest addition to our stock of dairy literature, and it refers to a learned treatise translated from the German by Dr Alkman and Professor Wright. The author of the book is Dr. W. Fleischmann who for a long period has enjoyed an excellent name in his own country and others as a scientific and practical expert in the art of dairying. He is now Professor of Agriculture and Director of the Agricultural Institute, Königsberg University, Prussia, and is one of the veterans of modern dairy research and reform. It is now close on twenty years since I had the interest and pleasure of paying a visit to the dairy station at Raden, in Mecklenburg, on the estate of Graf. von Schlieffen, and there it was that I became personally acquainted with Dr. Fleischmann, and with the well recognized work he was doing even so long ago as the winter of 1876-7. Dr. Fleischmann was then in charge of that important dairying establishment, in which butter and cheese were made on the most approved method of the period, and as a scientific addendum thereto the learned doctor had a well-equipped chemical laboratory in which his experiments were conducted. There, indeed, was practice and science combined in the one man, and there were laid the foundations of the book which lies before me, and which has been handsomely published by Blackie and Son. The work goes deeply into the science and practice of cheese-making and butter-making, as well as into the treatment of milk in all the conditions through which it has to go. There is a long chapter for the benefit of those who wish to acquaint themselves with fundamental questions, on the physiology of milk secretion, and on the properties and composition of milk. But the most interesting chapter, perhaps, at the present time, now that bacteriology has begun to disclose its value in dairy work, is that on "Milk in its Relation to Micro-organisms, Dairying, and Bacteriology." When we reflect that all fermentation and decomposition are caused by micro-organisms, the vast importance of this essentially scientific branch of the subject soon becomes apparent. Many years ago the necessity of strict cleanliness in dairy work was inculcated, even before the importance of bacteriology was suspected; that teaching was sound then and is sound to-day, but the present knowledge of bacteriology has shed a flood of light on the why and wherefore of the old tuition, and we come to see now, more clearly than before, that dirt is, to all intents and purposes, misplaced material. A care-

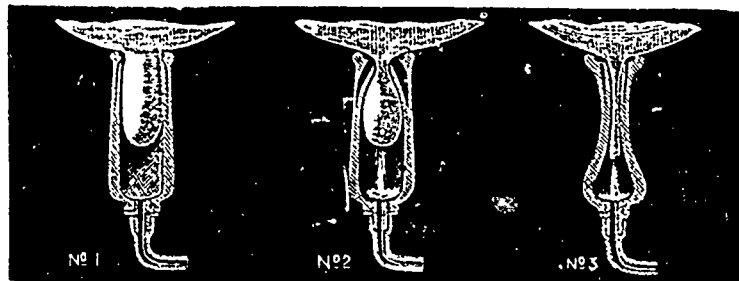
ful study of the chapter denoted herewith will prove a revelation to those who have not looked into the question, and the book as a whole may be regarded as a notable addition to the considerable mass of dairy literature which we now possess. Coming, indeed, from the cultured and matured mind of a man of prolonged experience, a man whom Germany properly regards as one of her most illustrious experts of the dairy, it is well that the book should have been translated into our tongue, in order that we may reap whatever advantage we can from the lessons which it contains. The book will no doubt at once take its place in the front rank of the class of textbooks to which it belongs, and it may be added that the translators have done their work well and with considerable credit to themselves.

J. P. SHELDON.

AN IMPROVED MILKING MACHINE.

Pulsation—Valves—Teat-cups—Vacuum—Ten cows milked in ten minutes!

Recent British exchanges describe the latest form of the Thistle Mechanical Milker, which has been brought, it seems, to a remarkable degree of perfection, after many years of labor and experimenting, by Dr. Alexander Shiel of Glasgow, and which may afford useful suggestions to American inventors. The contrivance is very simple in operation, and closely imita-



tes the action of the calf in sucking. It can easily be manipulated by the exercise of ordinary intelligence, and requires so little attention that ten cows can be milked by it with the supervision of only one attendant.

The principle is the application to the cows' teats of india rubber teat-cups, in which the action of suction is produced by pulsation.

The machine consists of a single action vacuum air pump running at about 67 revolutions per minute, which exhausts the air from a cylinder fixed in any convenient position. Valves are attached to the pump, which open and close 45 times per minute, causing the pulsation, the vacuum in the pipes alternating between 5 in. and 15 in. From the cylinder a pipe runs along the cowshed over the heads of the cows; short branch pipes, with valves attached extend downward between alternate cows. When beginning to milk each cow, an india-rubber tube is slipped on one of these branches, the other end being attached to the glass milk receiver, which is placed on top of the pail, and held in position there by the vacuum.

While the machine is working, the pail stands near the cow's fore legs. The pail is a tin milk pail with a fixed cover, made especially strong. A fitting is provided in the cover on which the glass receiver rests. A small hole

with a rubber plug is also provided, which enables the vacuum to be destroyed at will.

From the receiver another india-rubber pipe is connected with the teat-cups by a five-branch metal tube called "the claw," all connections being made by simply slipping the rubber tube on to the end of the metal tubes. When the cow is finished, the valve on the short branch pipe is closed; the teat-cups then come off easily, the tube is disconnected, and the contents of the pail may be emptied.

The teat-cups are made of india-rubber and are most ingeniously constructed. The top rounded edge consists of a ring of thicker rubber, which attaches itself, when the vacuum is put on, softly but firmly to the cow's udder, while the underpart of the teat-cup completely envelopes the teat. The peculiarity of these cups consists of the varying thickness of the sides, and also of two loose flaps or tongues of rubber inside, which act as follows: The pulsating action of the vacuum on the teat-cups alternates between a pressure of 5 in. and 15 in. The smaller pressure is just sufficient to hold the teat-cups softly but firmly up to the udder, but not sufficient to cause the sides of the cup to collapse and press against the teats. (See fig. 1.) The moment, however, the greater vacuum is applied, the two loose tongues inside the cup press the upper part of the teat (fig. 2), and the pressure gradually passes down the teat, beautifully imitating the action of the calf sucking, and somewhat resembling full-handed milking. (See fig. 3.) There are 45 of these pulsations every minute, and all four teats are

milked at once.

The advantages of the "Thistle" milking machine are many. The first is, economy of time and labor. A man or a lad can with it milk sixty cows in half an hour, or ten cows in little over ten minutes. The machine also milks the cows clean. The second great advantage is cleanliness. The milk passes direct from the udders into the pail, without coming into contact either with the human hand or the outer air. The milk is thus kept free from impurities. The milk being extracted in a vacuum is free from germs, and one user states that he obtains a better price for his milk on account of the cleanliness which the machine ensures.—"Country Gentleman."

Household-Matters.

Christmas Cheer. Many people complain every year of the great labour of preparing for the usual Christmas festivities, why this should be so I fail to see, unless everything is left till the very last moment, then of course there must be a great rush of work to get through everything in time.

Every body does, or ought to know that mince meat is much better for being made some time before it is eaten

Eaten as soon as made one can taste every article in its composition.

Packed tightly in jars or bottles well covered, the whole blends together and forms a most delicious flavour, no one thing is too pronounced but forms a delicious whole which helps to make the traditional Christmas Mince-Pie.

November is not one bit too soon to make this and you will have the satisfaction of knowing it is done and getting better every day and only waits your convenience for using it; keep it in a moderately cool place.

A few words about the pudding. This, like the mince, is just as good made and well boiled when there is time to spare, as left till the last day.

Many old fashionable people make 2 or 3 puddings at once; one for Christmas another for New Year's day, keeping the last till Easter, and if well made and cooked the last is as good as the first. Those for keeping are of course, left in the cloth they were boiled in and hung up till wanted in a cool place. See that the tie is all right before re-warming, and boil long enough to warm through.

PLUM PUDDING

Two pounds and a half of raisins, one pound of currants, 2 pounds of the finest moist sugar, two pounds bread crumbs, sixteen eggs, two pounds finely chopped suet, six ounces of mixed candied peel, the rind of two lemons, one ounce of ground nutmeg, one ounce of ground cinnamon, half an ounce of pounded bitter almonds, one quarter of a pint of brandy, one pound of flour. Mode: Stone and cut up the raisins, do not chop them; wash and dry the currants; cut the candied peel into thin slices; mix all the dry ingredients well together; and moisten with the eggs, which should be well beaten, and strained; then stir in the brandy; and when all is thoroughly mixed, add butter and flour, and put the pudding into a stout new cloth; tie it down tightly and closely; boil from six to eight hours, and serve with brandy sauce. This quantity may be divided into two or three puddings.

MINCE MEAT

Three pounds of beef, three pounds of apples, chopped fine, two pounds sugar, one of citron, 1½ pounds of raisins, 1½ pounds of currants, half a pound of suet, tablespoonful of salt, one nutmeg, one tablespoonful of ground cloves, one of allspice, one of cinnamon. When used, enough sweet cider should be added to make the mixture quite moist.

GARNISHING THE CHRISTMAS DISHES.

SEEING that even the common, inexpensive dishes of our ordinary everyday fare can be rendered most pleasing and attractive-looking by being tastefully dished up, while the most costly, delicately flavoured items fall in affording the looked-for measure of satisfaction if their appearance is unsightly, it must surely be worth our while, as practical, efficient house-wives, to carefully study and constantly practise the art of artistic garnishing, which is, after all, a very simple business indeed. But especially is this advisable about Christmas time, when, of course, we all wish our tables to appear to the best possible advantage without incurring more outlay than we can help. A few

suggestions, therefore, as given below, may prove useful to those of my readers who have not hitherto paid much attention to the subject.

ROAST BEEF, for instance, that old-fashioned dish of which we English folk never tire, if served hot, requires little or no garnishing. Frost a few tiny heaps or rows of finely-scraped horseradish, neatly arranged, on the top, and a small quantity of rich brown gravy poured round about. But if served cold, as a luncheon or supper dish, the joint looks extremely nice garnished as follows: Along the top of the beef, supposing it is a piece of shloin, arrange two or three straight narrow rows of horseradish, which should be beautifully white, and between these form other rows composed of small leaves of fresh green parsley; then round the edge of the dish arrange the horseradish in rings, the centre of each ring being filled in with a neat little mound of bright-red boiled beetroot cut up into tiny dice, or julienne shreds, and place between the rings a sprig of fresh parsley.

A **ROAST TURKEY**, if served hot, should be stuffed with veal forcemeat, and be garnished round about with tiny sausages not more than 2 in. long, prettily-cut slices of fresh lemon, and sprigs of parsley; but if preferred cold, as often happens, stuff the birds with sausage-meat, and cook it in the ordinary way, then when quite cold brush it entirely over with two, or even three, coats of glaze if necessary, in order to render the surface bright, firm, and transparent-looking, talling due care to let one coating dry before another is added, and, after waiting until the last coating is quite firm, place the bird upon its dish and garnish it round about with bright-red boiled beetroot, hard-boiled white of egg finely chopped, and sprigs of fresh green parsley arranged in the following manner: Cut the beetroot in slices about 1/4 in. thick, and stamp these out with a cutter, so as to make them all of equal size, then place them in neat order round the edge of the dish, and fill up in the centre of each a tiny little heap of the egg white; these, with a sprig of parsley inserted between each, impart to the dish an extremely pretty effect, the various colours, though bright, blending together so harmoniously.

SCOTCH SHORTBREAD. Five pounds best flour, two pounds and a half best butter, one and a half pound of fine sugar. The quicker and more equaly this is well mixed the better, so put your best strength to it.

Some allow a suspicion of carbonate of soda in their doughs, but many consider this a mistake.

In all cases shortbread should be well baked.

A DELICIOUS FRENCH CANDY

To make French "nougat," boil one pound of granulated sugar and one tea-cupful of water over a sharp fire until it begins to turn yellow, writes Nellie Willey in a practical paper on "Making Candy at Home" in the December Ladies' Home Journal. Do not stir while boiling. Have ready one-half pound of almonds blanched and dried. Put them in the oven and leave door open; when they begin to look yellow add to the candy as it reaches the turning point described above and quickly pour into a well-boiled tin... an about

one-half an inch thick; mark with a sharp knife into bars before it cools. By bending the tins between the hands slightly the candy will come out easily. **HOUSEKEEPER.**

The Flock.

THE LAMBING OF EWES, AND THE TREATMENT OF LAMBS.

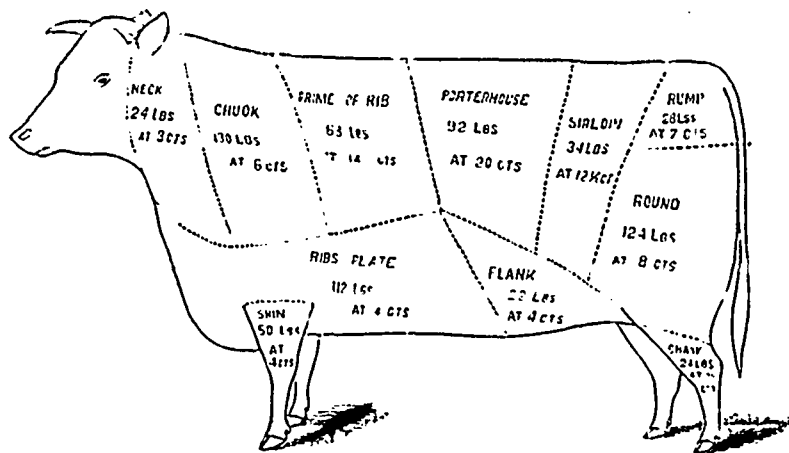
Condition of ewes and ram—Shepherds Rape—How many ewes to a ram What signs of lambing—When to assist ewe—Twins—"Cossets"—Castration—Diseases—The fly—Weaning—Sainfoin—Dipping—Foot-rot—The "rot."

The time, we 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 we imagine to ourselves 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, we need hardly be said, should be in first-rate condition when put to the ewes. Rape is what is generally used in England to bring the ewes into season, and we 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 inspection, will give them more additional value than an inexperienced man would believe.

and dams in search of each other in his lambing shed, his care was unintermitting, and he saved us, during the four years he was in our service, much more than the value of his wages. The number of ewes put to a ram depends upon circumstances. One, hired of Jonas Webb, of Habraham, served 110 ewes, which produced 185 lambs! (1) 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 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 ram-



How a STEER IS CUT UP IN THE CHICAGO MARKET.

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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 nursing when she was full of milk; there was no blaring of lambs

at 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 unlanbed 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 cutlay.

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 guarded against. Open sheds will do very well: in fact, I

(1) We gave £10 for his use: so, each lamb cost about 28 cts for the sire, and a fine lot they were, out of Hampshire-down ewes.—Ed.

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 stay out.

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 ofidgettiness, 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 jaws of the lamb will be seen lying upon them. The ewes 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, we are 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, "nousing" 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. We 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. we believe among the Leicesters wrong presentations are not uncommon, but we have no experience in that breed; in Down flocks we 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 we 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

"cosses," as they are called, are always a bore, blating 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. We 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 unmistakable, and injures the flavour amazingly.

should in this, as in all other cases of flying, be quite hot, very hot, and at least two inches deep in the pan. (1)

Of course, the lambs with their dams will, if you really meant sheep-keeping, as it ought to be done, be put on the best grass your farm affords, as soon as possible after the snow goes. This must carry them till the sown crops, rape, vetches, &c., are ready to take them. Of these sown crops we have spoken so lately, that we need not be repeated. But there is one thing we 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 diarrhoea. A dose of Epsom salt, say, half an ounce, with a little ginger to soothe the bowels, will coun-

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 place; 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

scour on it, and we have seen large numbers suffering from diarrhoea (on red clover), completely cured by a few days sojourn on this valuable plant.

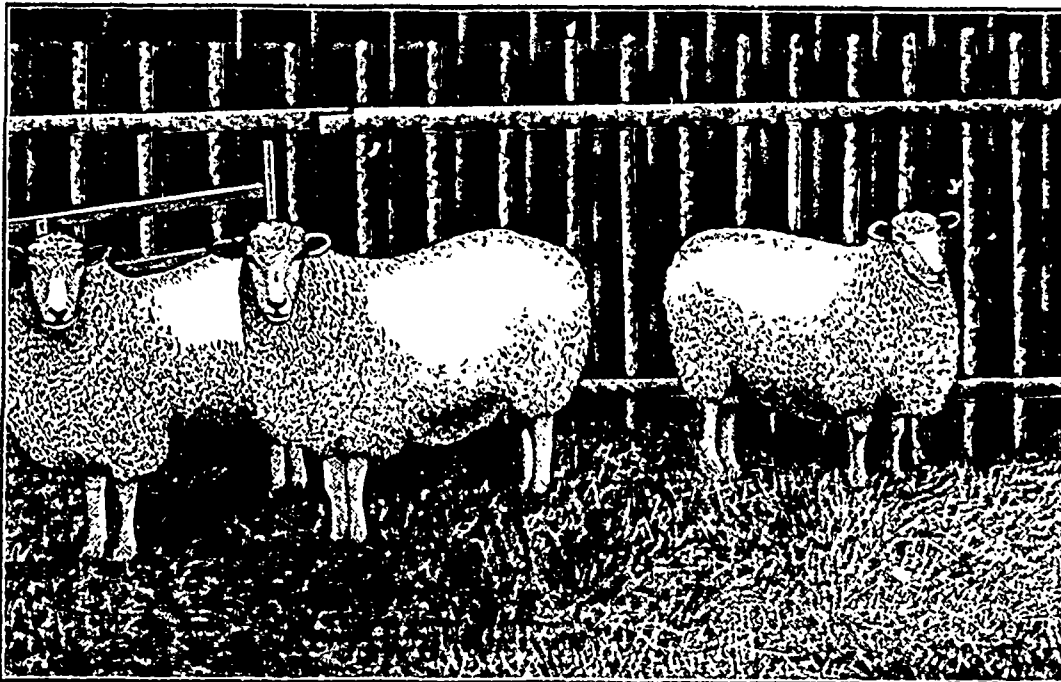
Our best flock-masters dip their sheep twice a year—at least they dip the lambs at shearing time, and the whole flock in the autumn. Bigg's composition was the most popular sheep-dip, when we were a breeder. We used it regularly for years and may be trusted when we say that no sheep of ours was ever troubled with scab or tick as long as we 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, we 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 or 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.

We forget 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 once 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. We don't see why short-wools should be more afflicted with this pest than long-wools, but with all our 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. We wonder that where sheep are kept, in winter and early spring, on damp straw, the disease does not show itself, even here. For us, we should prefer sheep lying on boards, with intervals of $\frac{3}{4}$ of an inch between, to letting them tread on a mass of damp straw into a puddle. The boards should 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, we have done it with our own hands, and, though it takes time and trouble, we



KENT OR ROMNEY MARSH EWES.

The Property of Mr. G. W. Finn, Westwood Court, Faversham. Winners of First Prizes.

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, we 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

won't settle the question. C stickiness, 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," is shorn off, and the lambs are dipped in one of the compositions set forth for that purpose, of which we shall have more to say presently. This treatment generally renders them pretty safe for the summer, but in spite of 't 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

(1) To "sauter" is not to "fry". The former is usually practised here; the pan is smeared with a trifle of butter, lard &c., and is sometimes warmed before the article is put into it, but frequently not even warmed; in which case the article tastes of the butter or lard, and is: cough!—Ed.

to soothe and tranquilise the minds of the others. Interesting little things! How we wish we 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 our 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 "sainfoin" in this country. It would do well on any of the calcareous soils (no where else, though,) and there is nothing so good for weaning lambs. We never saw them

don't think that any one ought to despair of succeeding, if he will follow out, precisely, our 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 un pityingly 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 sixty years ago, we heard a good deal of it in South Wales, and we picked up one evening, five or six hares, which had died from its effects. But from 1834 till we left England in 1858, nothing had been heard of it. Till 1878, when its ravages were dreadful, whole parishes lost every sheep a brother writes us word that on his property, in Gloucestershire, they had had neither hares, rabbits, nor sheep, for the last five years! The loss of sheep in England was 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.

THE ADVANTAGES OF SHEEP-RAISING FAIRLY STATED.

Practical Suggestion.

To the Editor "Farmer's Advocate."

Our sheep have come through the winter in much better condition than we expected they would, considering the unusual scarcity of fodder on the farm as a result of the extreme drought of last summer, following the destructive frost which struck the Province in the month of May. Clover hay, which is the principal fodder for sheep, was a complete failure, and had we not been so fortunate as to get a fair crop of peas we should have been at a loss how to carry our sheep through the winter. Our peas were sown late (finished sowing May 23rd), and they never got sufficient rain to wet to the bottom of the inverted sod on which they were sown, but two or three light showers came in time to send them forward when we had almost lost hope of them, and we harvested a nice crop of bright, clean vines, well covered with sound and good peas. When we have a fair crop of peas we have never any fears about the successful wintering of our sheep. (1) If we are fortunate in getting them harvested without rain, the straw—threshed with a flail, and not too cleanly threshed—makes excellent fodder, but if we have a wet harvest and the straw is damaged we feed the peas unthreshed, and when judiciously fed there is no better feed for

sheep. Of course the feeding must be light, for very little of such fodder will keep sheep fat enough for breeding purposes. For several winters we have kept the most of our breeding ewes at an off farm where no roots are stored, and their only feed up to lambing time has been peas in the straw—no roots and no water but the snow they have access to in a roomy yard, and we never had such strong and healthy lambs. The ewes have plenty of milk and are in fine condition. I know it will be said that sheep need water and ought to have it, and I do not doubt that a little water would be good for them, but, on the other hand, I feel sure that if they had free access to all the cold water they would take after, eating dry and heating food, there would have been more danger of sickness among the ewes and the lambs would not have been so strong and active. My experience has satisfied me that liberal feeding of roots to in-lamb ewes brings weak and flabby lambs, especially when the ewes do not get sufficient exercise. (2)

Our lambing season this year was very successful. We had a large proportion of twins and lost but one lamb, and that one of twins. Two have dropped out since, but that is not unusual. We are raising more than a lamb and a half to the ewe and all are going on well on the early grass, which has come so opportunely to help those who were so scarce of fodder.

TWIN-BEARING IN SHEEP.

Prizes to shepherds—Great crops of lambs—Herility—Fooland tares.

The following article appears editorially in the Mark-Lane Express:

In many of the leading sheep-breeding districts it is customary to give prizes to those shepherds who have been able to rear most lambs. Scarcely any kind of reward given to laborers is of more importance than this one, not that the best of shepherds can cope with the disasters of seasons, or secure by perseverance and industrial good management a satisfactory rearing of lambs if the system adopted by his master is a faulty one. But this not being the case, and there being no casualties or extraordinary vicissitudes of seasons to complicate matters, shepherds have a great chance, by careful management, and taking great interest in their work, to save many lambs alive which would otherwise be sacrificed; and it is the direct interest of all flockowners to give them every possible encouragement.

In most of the leading sheep-breeding counties it is customary for the leading society to carry out this laudable undertaking and the newly-organized Cambridgeshire and Suffolk Societies have premiums for those shepherds who have reared the largest numbers of lambs and sustained the smallest losses of ewes. The three classes into which the Cambs and Suffolk flocks were divided ranged up to 400, 300, and 200. In the largest section, after three lambs had been deducted for the loss of each ewe, the increase in Mr. J. G. Barclay's flock was found to be 20.05 per score, and his shepherd had first prize. The number of ewes reared was 402, and only seven ewes were lost, the lambs reared

(2) And the ewes would probably slip lots of lambs.—Ed.

being 605. The second prize was awarded to the shepherd of the Colonial College Flock, who reared 604 lambs from 403 ewes, losing 9 ewes. The increase of lambs to the score was in this instance 28.63. In the class of not less than 300 ewes, Mr. J. Sherwood's shepherd won first prize, who had reared 577 lambs from 355 ewes. He lost 12 ewes, it is true, but the increase totted up 30.47 lambs to the score. Mr. H. S. Dawson's shepherd got second prize, having reared 510 lambs from 332 ewes, his losses of the latter having been only 6. The two prize-winning flocks in the class of not less than 200 ewes gave even still better results. Mr. T. Hayward's shepherd reared 359 lambs from 224 ewes, losing 2 of the latter, so that his increase per score reached to 31.60. Mr. H. Orford's man was not far behind, for he could claim 371 lambs from 253 ewes, and he had lost only 3 ewes.

Now, as regards the propensity to bear twins, some flocks naturally possess it much more than others do, and, of course, the propensity can be educated. By taking care to breed from ewes that were themselves twin-born, and of employing rams which also were twin-produced, it is in the power of any flockmaster to get larger numbers of twins than he would otherwise be likely to do. Nor is this all, for the flockmaster must be a good keeper if he desires to favor large increases. Moreover, some breeds of sheep are naturally more productive than others, the Somerset and Dorset Horns being probably the most productive of any. Whether there should be a large percentage of lambs to ewes depends of course, therefore, on the flockmaster himself more than on his shepherd. The latter can by care and good management make a successful rearing of them after they are reared, but he has no control over the system which causes prolific crop or the reverse, beyond placing with the master's consent, the ewes when coupled with the rams into a forcing piece of keep such as clover or rape, which is well known to old shepherds to be one way of promoting the object in view.

There are flockmasters, no doubt, not over-anxious to induce the twin-bearing propensity in their flocks, which as a rule will be found to be those who either have poor farms on which flocks are occasionally subjected to great scarcity, or when bad management in the general farming system is often the rule. (1) Shepherds are powerless under such masters, and the men have no encouragement to make the best of things. Only when flockmasters and shepherds work hand in hand together can the best results ensue. A really good shepherd is invaluable, how much so only large sheep-owners know. When the right sort of man has been obtained the master should take care to try and keep him, as large numbers do. We often find shepherds remaining on the same farm from youth to old age, or at least it was customary to find this in the early part and middle of the present century, and although agricultural laborers roam about more than formerly, faithful servants are still to be found, and many shepherds take the greatest possible interest in the welfare of the animals they have to tend.

Although we have used the term twin-bearing in our title, it must be considered to include the production of triplets, and even quartettes also. By educating the propensity it sometimes

(1) Worthy of attention.—Ed.

develops into a prodigious success, and the ewe may possibly rear a larger family than she can bring up. Nature generally imparts the milk-bearing function equal to the other, however. The one naturally accompanies the other almost invariably; but it must be admitted that the strain would be very severe on the constitution of the ewe to have to rear three lamblings, especially when they begin to grow big. Of course, a little trough food should be regularly supplied both to ewes and progeny under such circumstances, and in all cases when ewes have to rear more than single lambs they should have extraordinary assistance, and be adequately well nurtured.

DEATH IN THE SHEEP PENS

Three dangers—Overdoing it—Mixed foods—Too much nitrogenous food—Bleeding—Linsed-oake.

At this season the sheep farmer has an anxious time, for three reasons. First, if he is forcing his fattening sheep there is danger of overdoing them. Second, when stocking his young clovers there is danger of bursting the sheep. Third, if the sheep are not shorn there is a danger, particularly among the longwools, that they may be lost.

The danger from over-forcing sheep is, of course, not confined to this season, although it is often more marked in the spring months than at other periods, because in those districts where tews are fattened out the supply of keep, the desire to get the land cleaned in time for a spring-sown crop, and market considerations, tend to make the farmer hasten out his sheep as rapidly as possible. Every fattener of sheep knows the liability of the unwelcome information from the shepherd, "There was another sheep dead this morning," or "One of those tews would not come up to the trough, and I had to cut its throat." This happens most frequently when the sheep are being fed at high pressure. Of course there is always a liability of sheep dying from other causes, but, except on change of food, more particularly when first put on to roots in the autumn, the losses are few. A shepherd knows the cause—overdoing, or, as he puts it, making blood too fast. Making blood too fast is not, however, a strictly accurate term to use, and for this reason is somewhat misleading. Within the last day or two a large farmer complained to us that he was losing four or five sheep a week, and he was of opinion that it was the maize they received which caused it. In this we think he was mistaken, as will be shown. It is generally recognized that the mixing of a large variety of foods is beneficial, and, as a rule, it is so; but the mere fact of mixing a number of feeding-stuffs does not ensure that the best results will be obtained. When, using the several kinds of grain produced on an ordinary farm the mixing of these in equal proportions is generally attended with safety and good results. When, however, the farmer goes into the market and buys cakes and other feeding-stuffs to add to the mixture, it is not unlikely that he may upset its feeding value, and render it less efficient though more costly.

The farmer referred to was giving his sheep a very mixed mixture, as it was composed of undecorticated cotton

(1) Perfectly correct.—Ed.

cake, linseed cake, lentils, beans, barley, oats, and maize. They were also receiving roots and hay. What upset the sheep? The over-proportion of flesh-forming substances contained in the first four as compared with the fat-formers. Why? This brings us back to the shepherd's remark: the sheep are making blood "too fast." They are making blood too strong. "When there is an undue proportion of flesh-formers in the food there is risk of too much of the nitrogen contained in them becoming taken up in the blood. When blood becomes surcharged with nitrogenous matter it "presses on the brain." The shepherd notices the effect of this, as the sheep becomes listless and dull. The shepherd knows nothing about the nitrogen, but he knows that if the sheep is left to itself it will most probably die a painless death in a little time. It will, because, unless the pressure is relieved, it will cause paralysis, the brain will become congested, and hope of recovery is very remote. The shepherd very properly "weakens" the blood by taking some away. If he is in time the sheep may be saved; if congestion has taken place, it is very unlikely that it will live. This points to the necessity of bleeding promptly. If the sheep does not recover, it is a mistake to leave it unwatched, as it may die at any moment. In all bad cases it is best to convert the sheep into good mutton rather than risk its dying and becoming useless. The farmer recognises that the sheep are "doing" too fast, and orders the corn to be knocked off all the sheep in the same fold for a day or two. This is correct when the effect of the overdoing is noticed. It is better, however, that the ailment should be avoided. It is not necessary although the sheep are fed at high pressure. Sheep for exhibition purposes are fed highly, but good shepherds rarely lose one from this cause.

It is well to notice under what conditions the ailment presents itself. When lambs are receiving their mother's milk in addition to grain "ad lib.," provided that grain is not too nitrogenous, they do not suffer in this way. One reason for this is that their frames are growing rapidly, and a considerable amount of food is required to build them up. A fattening leg (1) has little frame to build up. It is less frequent when sheep are being fed on soft green fodder than when they are on roots, because the congestion is doubtless somewhat induced by stomachic troubles, and chunks of roots involve more stomach work. Large lumps of cake irritate the stomach, and point to the necessity of giving it in finer pieces. These conditions do not wholly influence the weakness; they only predispose the animal to it. The real cause must be looked for in the excess of nitrogenous matter in the concentrated food. In the mixture quoted earlier in the article, cotton cake, linseed cake, lentils, and beans contain a large proportion of nitrogen; oats a rather high, barley and maize a low percentage. The albuminoid ratio, although one which is not a thorough guide, reveals much that is advantageous to follow within certain limits. In building a house it is necessary to have at hand bricks, mortar, wood, &c.; but extra labour is involved when twice as many bricks are brought together as are required. So, with feeding mixtures, an excess of nitrogenous matter is waste; and worse—it is inju-

(1) When a lamb is weaned it becomes a leg.—Ed.

rious, as it throws an excessive amount of work on the kidneys, and if they do not succeed in getting rid of the surplus it renders the blood unhealthily surcharged with it. If there is a great excess of carbonaceous matter there is waste, because of the deficiency of nitrogenous matter to work up with it.

When sheep that are being forced by large quantities of concentrated feeding-stuffs suffer from paralysis it is a sure sign that there is too much nitrogen in the food, and the nitrogenous foods should be partly withheld. It is better to prevent than to cure. Feeders should, therefore, use such substances as contain a moderate amount of nitrogenous matter. The topping-up of animals consists largely of laying on fat, for which fat-producing foods are best adapted. Linseed cake, when given in moderate quantities, is an excellent, almost a typical food, but if given at the rate of more than 1 lb. per day it becomes risky. The oil it contains is beneficial not only for the fat which is produced from it, but it tends to keep the bowels open. A much better and safer mixture than the one quoted would be made by taking out both the lentils and the cotton cake. The maize and barley should certainly be retained. Whenever the corn is stopped for a day or two the sheep receive a check they do not get over for several days; the object, then, of the feeder should be to force the maturing of his animals by giving them foods which will increase their weight safely. This is not the case where the food is of too nitrogenous a nature.

W. J. M.

"Eng. Ag. Gazette."

FARMERS' SYNDICATE
OF THE
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Fertilizers and agricultural implements of every kind. Send in your order at once for feed-cutters. Farm products of all kind sold for our members. Informations of all kind given to members.

LONDON MARKETS.

Mark Lane: Prices current; Sept. 8th	
Wheat, per 504 lbs.; British.	s. 8.
White...	28 32
Red...	31
London flour per 250 lbs...	28 —
Barley, malting...	34 45
Barley (grinding)...	18 10
Oats, English per 3 bushels	15 29
White pease.....	32 36

FOREIGN

Wheat—Manitoba...	30 32
Canadian white pease...	— 25

Milk-cows, per head, £15 to £22.

BEASTS.		s.	d.
Scotch per stone of 8 lbs...	4	7	
Herefords do do	4	6	
Wash (runts) do do	4	4	
Shorthorns do do	4	1	
Fat cows.....	3	6	

SHEEP.

Small Downs per stone of 8 lbs..	5	6
Half-breeds and Scotch do do	5	6
Lamb trade over.		
Calves nominal.		

BUTTER.

Fresh, (Finest factory) per doz.		
lbs.....	12.6	to 14.6
English Dairy-butter fresh....	varies	
Irish (creamy) ...	11.4s.	
Danish... ..	12s.	

BACON.

Irish... ..	54	59
Canadian	35	44
American... ..	48	49
Irish hams (small)...	88	—
Hay, per load of 2016 lbs.....		
Prime meadow....	88	
Prime clover... ..	90	95
Straw, per load 1296 lbs... ..	34	36
Hops from 550s. to 105s. per 112 lbs.		

Notes by the Way.

FLAX is said by some not to exhaust the land more than a crop of oats does; but, there is one thing in which oats and flax differ. Whereas oats are, generally speaking, consumed on the farm, both grain and straw, flax is, generally speaking, sold off the farm, both grain and straw. Hence the old clause in most farm-agreements in the South-East of England; that no flax be grown on the farm.

GRASS IN STUBBLES.—Where early fall-ploughing is practised, a great blot is that the grass in the stubbles is hardly ever buried out of harm's way, (1) and, if the weather of latter autumn proves fine, it grows freely and binds the furrows together, giving a vast deal of trouble in spring to tear them asunder. We were mightily struck with this at St. Thérèse, last month, and pointed it out to our friend M. Bouthillier, who asked for a remedy. We strongly advise him, and all other farmers who wish to have their land work freely in the spring, to fix a "knife," as it is called in Kent, i. e., a small mould board, just behind the coulter; (see fig.) this is set so as to pare the top of the furrow about 2 inches wide by 1½ inch deep, which slice the real mouldboard turns over and throws down to the bottom of the furrow, thereby smothering the grass and entirely preventing its future growth. Of course the use of this addition to the plough presupposes that the land is free from stones.

FRUIT.—If grapes can be sent from Australia to England, arriving there with both bloom and flavour intact, though three months from port to port, then, as says the "Farmer's Advocate:" Why not from Canada?

RAPE.—We cannot approve of sowing two crops together, except as in the case of grass-seeds. But, to sow rape in a crop of oats, seems to us an in-

(1) This does not mean coach-grass, or quitch.—Ed.

fringement of good practice. If the harvest is any other but a very dry one, how on earth are the butts of the sheaves ever going to be fit for carting? We, and most farmers would agree with us, say: if you grow oats, give the oats a fair chance to do their best, if you want rape, sow it at the proper season, and you will have "splendid feeding for the sheep," and a good chance of cleaning your land into the bargain.

THE DODDER.—F. C. writes, from Yarmouth Co., N. S., to the "Farmer's Advocate," as follows:
INFORMATION WANTED RE CLO-

VER TROUBLE.

To the Editor "Farmer's Advocate:"
SIR,—I remember reading in the "Farmer's Advocate" a few years ago something about a weed, or little vine, that saps the clover. I noticed some spots in my grass last season; they have spread considerably this year. I can see no roots that enter the ground, but it clings and mats on to the clover. I presume plenty of salt would kill out little spots? Would fall ploughing and some other crop next season destroy it? I think it came with the clover seed.

F. C.

Yarmouth Co., N. S.

This troublesome parasite is the "Dodder," (*Cuscuta Europæa*) and a destructive pest it is. As the enquirer says, it "clings and mats on to the clover", and is introduced with the seed. We should advise great care in purchase of clover seed, and should feel very much inclined to burn the aftermath. We had a small field of red-clover seriously injured by dodder in, or about, 1849, in England, but after the crop was consumed, it never re-appeared. We have never met with it on this side of the Atlantic.

AYRSHIRE AND JERSEYS.—A proposal to make a permanent breed of cattle, by persistent crossings of these two races, we saw in a farm-paper the other day. Now, as Henry Stephens, in his invaluable "Book of the Farm" says:

"Attempts have been made for some years past to cross the Alderney with the Ayrshire, in both ways, putting the Alderney bull to the Ayrshire cow, and the Ayrshire bull to the Alderney cow, but the endeavours to imitate the form of the Alderney cow have not succeeded, and the result has rather tended to produce in both progenies the inferior points of both breeds, as might have been expected; for the Alderney bull has not so good a frame as the Ayrshire cow, nor has the Alderney cow so good a constitution as the Ayrshire bull. The light weights have been attained by the reprehensible practice in all breeding—by starving the young heifers, with the avowed object of making them good milkers, whereas its direct tendency is to injure the constitution of the milking stock. On the contrary, were the heifers bred and reared so as to attain heavier weights and greater substance, they would not only prove better milkers, but afterwards feed to greater weights. The paramount object of the Ayrshire breeders, for profit, ought obviously to be to obtain the largest quantity of rich milk, with the greatest disposition to fatten."

Of course, the "Alderney" mentioned here stands for the Channel Island breeds in general. If any one of them

is suited to cross with the Ayrshire, it is, we opine, the Gaurusy, but, individually, we must say that, were we trying to improve the Ayrshire, a feat M. Linn's Drummond would call an impossibility, it would be by using a true "Dairy Shorthorn" bull on an Ayrshire cow.

"THERE WAS A DINNER-PARTY ON THE TAPIS."—We should prefer a dinner-party on the table. A dangerous thing using foreign words, unless acquainted with their meaning. The quotation is from a story in a farm-paper.

PARSNIPS. Fatten pigs by all means on this root, if you have more than your cows can manage, but hand on them off on pease for the last three or four weeks, unless you want soft, pappy pork. Oh! this cry for lean bacon! How can a ham be tender unless it is from a ripe, fat pig?

SHEEP AND CATTLE. As the periodical, "Farming", very properly says, should not be pastured together." The cow wants long grass to lap her tongue round; the sheep bites close and eats up all the clovers before they attain any height at all. But the article ends, in the opposite sense, by a long quotation from "The Prairie Farmer": "I believe the pasture will be improved by sheep lying on it;" a statement from which a pretty extensive experience in sheep-farming on poor Kentish grass lands leads us entirely to dissent.

DANGERS OF RAPE.—The "Farmer's Advocate" thinks it is necessary to warn farmers against turning sheep into wet rape! Surely an unnecessary warning, except to amateurs. As for fat sheep getting cast and lying so unable to rise, in drilled rape, we never heard of such a case; but, as we always sow rape broadcast, we do not fear it happening. Probably, the "drilled rape" here mentioned means rape sown on raised drills, like swedes or mangels: that would be dangerous of course, unless the drills were, as they ought to be in every case, hoed down level with the spaces between the drills.

BELLS ON SHEEP.—Mr. B. H. Bull informs the same paper that, although he farms close to the town of Brampton, where plenty of dogs are kept, his sheep have never suffered from their attacks since he made a practice of hanging a nice, clear-sounding bell round the neck of every fifth sheep!

TRIFOLIUM INCARNATUM, commonly called crimson clover, seems to have answered very well in Western Ontario. Mr. Geo. S. Cornwall writes to the "Farmer's Advocate" that he sowed some in August, 1864, and found it in bloom on May 5th, standing two feet high. This is clearly a successful experiment, and what with Lucerne ready for cutting for green-meal on May 12th, and crimson clover ready-allowing for the difference of climate—to cut here on the 24th of May, we may be said to be living under very different auspices to those which ruled us ten years ago.

RAPID GROWTH OF POPULATION.—The late Captain Jenner, of Wenloe Castle, Glamorganshire, sold Barry Island, in the Bristol Channel, over which we have shot many a

brace of partridges, to Lord Windsor for the trifling sum of £5,000 \$25,000. It is evidently not partridge land now, as is shown by the following, which we extract from "Weekly Press Siftings." "Another remarkable instance is that of Barry, in Glamorganshire. As late as 1856 it was the habitation of a few fisher families, numbering some fifty souls. The construction of a railway and dock was then commenced for the purpose of the conveyance and shipment of coal from the Rhonda Valley. Barry is now a town of 25,000 inhabitants."

Lord Windsor, receives a rental of £30,000 \$150,000 a year for the 750 acres of every poor land which, when used as a farm, never was worth more than a rent of 7s. 6d., an acre.

SOBEL FARMING.

Draining—Foul land—Buckwheat—M. Guévremont's farm—Pease Turnips.—Green-fodder—Banner oats—Clover—Potatoes—Tomatoes.

Such a day, October the 1st, as the Editor of this periodical selected for first visit to his friends at Sobel for two years! It rained from morning till night, and the heavy land along the railroad, from St. Lambert to Varennes, was by no means likely to attract buyers of building lots. Cannot something be done in the way of draining them? The immense production of weeds show that there is force still in the soil, in spite of the too frequent recurrence of grain-crops. However, as long as drainers persist in opening the drains at such an absurd width, and when "bottoming out," standing in the drain, instead of using the 18 inch-tool and standing on the last draw of the common spade, so long will draining be too costly a job for any but the rich to undertake. A four-foot drain only requires to be opened 14 inches wide: we have done thousands of rods of it and ought to know. No man ought to set foot in the bottom of the drain, unless in the case of a stone that needs the pick-axe for its removal.

The land after Varennes is passed looks in better trim: the pastures are grazed more level, and the weeds are not so numerous. As for the cattle, it is difficult to judge of them from the line, but they seem to be good common dairy-stock, no one breed predominating.

One point struck us all the way along: the almost total absence of root-crops. There may be some growing close round the farm-building, but we only saw two trifling slips—one of swedes, the other of mangels—in the 45 miles. There were a few pieces of fodder-corn some of which were severely frost bitten, and the cows were trampling it about: hardly an economical way of consuming it, one would think. Are there no silos to be filled? Lots of buckwheat; most of it cut, and lying rotting on the ground.

As for the land that lies along the railroad for the last 8 or 10 miles, it is nothing but a bed of sand, and cannot possibly pay for farming.

Ah! but it was a refreshing thing to come upon our good friend M. Séraphin Guévremont's farm. To see real cultivation going on over the whole of it; root-crops in plenty; total absence of weeds; headlands ploughed, dunged, and sown with turnips, which had been singled, horse-hoed, and were bearing

as good a crop as the rest of the piece, and to find that the proprietor had been obliged to raise all his barns several feet in height, so great is the yield of his land in hay and grain compared with what it was eight years ago, when M. Guévremont bought the farm.

During these eight years, the entire farm has been gone over with root-crops two years running, dunged each time. For the first three years, some of the meadows were top-dressed after the hay was removed, but as the land only lies in grass for at most, 4 years, it is found more convenient to apply the whole of the dung to the potatoes, etc., in the spring, as the hoeing, etc., takes all the labour that can be spared, and there is no opportunity of carting dung and preparing mixtures in the busy season of from the end of May till the root-crop is harvested.

PEASE were sown last spring, on this farm for the first time: may we say by our advice? Fortunately for our credit, they turned out to be a first-rate crop, and will now enter regularly into the rotation. Next year, we hope M. Guévremont will try sowing them in rows two feet apart, and horse hoeing them, drilling in white-turnips between the rows of the pease, to be singled and horse-hoed after the removal of the crop. For the first time within our recollection, there has been a demand for white turnips, this year, in Montreal; we have had them for dinner on several occasions, and very good they were; far superior to any swede. They should be thinned out to not more than 7 inches apart, as the smaller they are, within reason, the better they are. At Sobel, close to Mr. Guévremont's farm, we grew them fit for the table 43 days from sowing. In cooking, when done, pass through a sieve, mash them with a wooden spoon, sprinkle with a little black pepper, and by no means add butter.

Mr. Guévremont does not think that fodder-corn is to be compared with "our mixture", oats, pease, and tares, which he grew most successfully this season, winning the prize for "Fourrage vert" at the county exhibition with great ease. By the bye, a curious circumstance, or, as it would be called in slang terms, "dodge", is concealed in the list of prizes of the Richelieu county Competitions. In order to make sure that the green-fodder crop is really intended for consumption as "green-fodder", the ingredients stipulated are Pease, oats, tares, and maize. The idea is this, that though the pease, oats, and tares might be made into hay, that cannot well be done if a bulky stalk like that of maize is mixed with it.

The "Banner" oats we sent to Mr. S. Guévremont last spring, (1) he says produced a very fine crop; so fine, that many people came from a distance to see it; he will have no difficulty in selling all his surplus of this oat for seed at good prices.

No sugar beets grown this year, the Berthier factory having been given up altogether. A most disheartening account of the management of this establishment. Heaps of fine beets left in heaps till heated, etc., etc.

The hay-crop looked doubtful, owing to the dry spring, till the beginning of June, but made up ground before it was time to mow and gave a good average yield.

"No clover grown yet?" said we, as the meadows came in sight; "Yes, replied our friend, with a reserved air.

(1) As a present.

"What is the matter with it?" asked we "a bad crop?" By no means; a very good crop; only look at it." We did so, and found out the reason of the "reserved air". It had been cut once, and the second crop was starting us in the face, now far too late to be mown for hay, and half rotting on the ground as it stood! Before next season, Mr. Guévremont promises to build a silo, for the second and third crops of clover. This, the neglect to trim up the sides of one of the fences, and the having left the carrots a little too thick, were, honestly, the only faults we could find on the whole farm, though we came prepared to judge very severely, even hypercritically.

The only roots M. Guévremont sells off the farm now, are carrots; as he milks 26 cows in the winter half-year, he requires nearly all the farm-produce to feed them. He finds that milk, at 5 cents a quart, pays better than anything. What profits must the Montreal milkmen make with milk at 8 cents a quart?

A curious fact, connected with the swede-crop here, is worth noting: the sowing of the whole piece about seven arpents—was finished, all but three rows, on the 15th June; the three rows were sown on the 25th of that month; and, whereas, the first sown produced the usual yield of, say, 800 bushels an arpent, those sown on the 25th had no bulbs at all; nothing but tops. Now, as on this farm, we have often seen swedes sown in July produce a fair crop of 600 to 700 bushels an arpent, the ten days later sowing cannot possibly have been the cause of the absolute failure of the three rows. Our own impression is that some queer seed must have been used, as was the case with ourselves in 1874, when we had about half an acre more land prepared than we had seed for, and found it necessary, to save time, to get seed from a country shop: result, no bulbs, all tops.

The potato-crop, yielded fairly, and was all safe, with no disease, but it should have been got up earlier. One or two new sorts, "Maggie Murphy," and a sort of bastard "Early Rose", are not considered to be worth sowing again. The number of bushels to the arpent may be about 160, equal, in our English computation to 5.8 tons (2240 lbs) per imperial acre; a fair yield, though nothing wonderful, considering the manure and cultivation; but, then, though the reason we never could understand, Sobel sand never does turn out either a full crop of potatoes or a full crop of yellow globe mangels. Swedes, Belgian carrots, and long red mangels are the roots it affects.

The tomatoes grown here were the earliest in the market (12 July) a fortnight earlier, at least, than any brought from Montreal. These are Madame Guévremont's special pride, and are grown on the "one stem plan," so constantly advocated by us in this periodical.

M. Guévremont did not enter his farm in the "Competition of Agricultural Merit" this year, and, in our opinion he was right, as the buildings are not, at present in a pleasant condition, and this want of proper conveniences would lower the total number of marks awarded by the judges so much, that they would not be satisfactory to the farmer. Want of funds, owing to family affairs has, up to the present time, prevented the erection of compact stables, barns, silos, etc., but we trust another year will see things in a proper state from the St.

Lawrence to the railroad, and this will include the deepening of the main ditch, so as to bring it to about four feet deep at the upper end of the farm, which will altogether settle the question of the "mouron," i. e., chick-weed, which was a terrible sight in the root-harvest of 1894, though, this year, there was not a bit of it to be seen.

To sum up, we are rather proud of our pupil, and as a friend, a French Canadian who knows farming down to the ground, says, in a letter lately received.

"It must be very gratifying for you to see the good work of your pupil at Sorel. What bosh to talk of English farming methods not being adaptable to Canadian farming.

When I have finished reading a number of contradictory scientific reports from experimental stations, I always sigh to myself "cul bono," and think of Dundreary, and his pill-box of soil from his farm, and long to back, at any odds, the scientifically unaided and uneducated British farmer, who nevertheless can cultivate his farm, in a manner quite unapproachable by any other farmer, of any other nation under the Sun."

As for the prizes won at the County and Parish Competitions by Mr. Guévremont and his brother Baptiste, "nomen illis legio", they are what "Uncle Remus" would call "scaw'lous!"

DESERTED FARMS.

Deserted farms in Maine—Reclamation sheep—Rape—Rotation.

We hear, from Bingham, Me., that in the district surrounding that town there are a "great many deserted farms. Whole settlements, a dozen farms in a place, are given up to bushes and rabbits!" We were really in hopes that the New-England farmer was beginning to see that a cure existed for this complaint. How long ago is it that we heard of a wealthy patriot having bought four of these deserted farms, thrown them altogether, and devoted them to sheep-breeding and fattening? A full account of this will be found in the October number of the Journal for 1892, p. 154. The reclainer of these farms, Bennett, by name, did not take the Merino for his "foundation stock", but as the well known correspondent of the "Country-Gentleman", Mr. Webb Donnell, writes, "stocked his farm with 'Hampshire-downs,'" in the sensible attempt to obtain mutton, with a fair average clip of wool thrown in. Mr. Bennett is on the right track when he takes a mutton breed as the base of his operations. Wood may fluctuate and even rule permanently low, but lamb and mutton, provided they are of extra quality, will keep up in price for many a long day."

Unfortunately, we have never been told how this wise plan was eventually managed. Sheep are, no doubt, the proper reclaimers of worn-out land, at a distance from towns; but, then, sheep will not grow their own food; provision must be made for them, and the cheapest and most easily grown food for sheep is rape.

Had we to conduct an enterprise of this kind, we should divide the farm into five parts, and work it, as most of our S. E. of England farms used to be worked, some fifty or sixty years ago:

- 1st year—roots and rape;
- 2nd " barley;
- 3rd " half-clover; half pease;
- 4th " Oats.

In the first year of the rotation, supposing each limb to consist of 100 acres, we should grow 75 acres of rape, with bone-dust and a trifle of nitrate of soda; and 25 acres of mangels and swedes, for the winter use of the lambs and ewes of the first year.

The clover and pease, of the third year, would do wonders for the in-lambd ewes, and the oats, with their straw, and the barley-straw might be reserved, in part, for the horses. The barley itself would sell for enough to buy timothy hay, if the horses needed it; but, on a farm of the size in question, one would hope the greater part of the ploughing would be done by steam. Oh! if we were forty years younger, how we should like to go into such an undertaking! It would pay, in Maine or in this province; we are sure of it.

FARM-OPERATIONS FOR NOVEMBER.

October begun badly; too much rain for ploughing the heavy land of the province; but fine weather for all sorts of out-door work after the 8th of the month up to the 16th. A great deal of Lord will be laid up this fall, thanks to the pressing instances of Mr. Macfarlane and others. Even the Sorelois are at last being convinced that their light soil is all the better for a winter's exposure in the furrowed state. And, while fall-ploughing is going on, pray do not imagine that your horses can do without oats. The weather, at its best, is not agreeable. In November, but too often cold and wet. As soon as the horses are on hard food alone, do not forget to give them each a bran-mash every Saturday night, if you are not intending to take them out the next day. The mash, like a dose of physic, opens the pores of the skin, and renders the animal subject to catch cold.

As Mr. Guévremont said to the editor on the afternoon of the 1st of October: "Look at those cows, Sir. How much milk will they make standing out this raw wet evening?" He very wisely took them into their comfortable house, and gave them a warm "mess of moulée," composed of oats, pease, and linseed, ground up together, and, I have no doubt, they testified their gratitude in a day or two by yielding additional pounds of milk. How much better prepared for the winter are cows treated thus, than those poor wretches that we see every day shivering knee-deep in mud at the gate of the pasture upbraiding with their meek eyes the cruel master who, while he himself is smoking his after-supper pipe, is entirely forgetful of the pressing wants of his unfortunate servants.

HOGS are getting ripe; remember that pease will make lean meat and corn fat. Push on the last April litters, and have the August, or September, pigs ready for the Montreal market soon after Christmas. Plenty of buyers for young, tender pork at that time and place, but very little really good pigs of from 70 lbs. to 80 lbs., carcass weight to be had. No one knows what pork really can be made, until he, or she, has tested the boiled leg of a 16 weeks old, well bred pig, that has never eaten any thing, since weaning, but skim-milk, or whey, and barley meal. The "hand," or shoulder with a small piece of the fore-rib or neck, is almost as good as the leg. A week to ten days, according to size, in plain salt—not a particle of salt-petre, please—is sufficient; and, if the cook has sent

up the joint not quite done enough, cut a few slices out of the thickest part, and send them back to be broiled, you will thank us for the suggestion.

THE FLOCK requires plenty of fresh air, and complete protection from the wet; this is the true secret of sheep-rearing in the winter in this country. Cold, sheep do not do not care about. If your ewes are with the ram, feed the latter liberally, though, as here, the Sultan has rarely more than a dozen or so Sultanas, his fatigue will not be very great, even if they all "come" on the same day. As we have often said, in this periodical, if we had pease-straw and timothy hay at our disposal, we should give the pease-straw to the ewes, and the timothy to the horses. If ewes get no food containing a full supply of nitrogen, their lambing time will not be satisfactory.

Whatever repairs are needed in the barns, etc., make up your minds to get them out of hand before spring: you will not be able to find time, then. We shall never forget the muddle a farmer was in at Beaconsfield, two years ago, in the middle of his harvest; doing work in the barn, to the neglect of pressing work in the field, that ought to have been done six months before.

TIME IN PLOUGHING.—According to the calculations given in "Stephens", most ploughing, including turning and time spent in occasional stoppages, is done at the rate of about a mile an hour; and "a ridge of no more than seventy-eight yards in length requires five hours and eleven minutes out of every ten hours for turning at the landings, with a ten-inch furrow-slice; whereas a ridge of two hundred and seventy-four yards in length only requires one hour and twenty-two minutes for turning—making a difference of three hours and forty-nine minutes in favor of the long ridge as regards the saving of time" in one day's work.

SIR JOHN LAWES ON THE ENGLISH WHEAT CROP.

We publish to-day, fully a month earlier than usual, Sir John Lawes's letter on the wheat crop. He first remarks upon the favourable character of the season for wheat, and upon the earliness of the harvest. In both respects the season has strikingly resembled that of 1868, one of the best wheat years of the century; but Sir John appears to think that premature ripening was more common in that year than in the present one, the summer temperature having been considerably higher than it was this year, while the harvest was even earlier than that of this season. At Rothamsted wheat-cutting began on July 14th in 1868, and on July 18th in 1896. Judging from the yield of wheat at Rothamsted, it might be concluded that the latest crop is a greater one than that of 1868; but we shall be surprised if it proves to be so, because we believe that in some of the best wheat-growing counties the crop was not as stout as it was in that year of abundance. On the unmanured plot, which has grown wheat yearly without manure since 1844, the yield this year is no less than 16½ bushels per acre, or nearly 4 bushels over its average from 1852 to 1895 inclusive, and one-eighth of a bushel above its yield in 1868. The farmyard-manure plot yields 44 bushels, or 9 bushels in excess of the average for forty-four years; while the mean yield of the

three artificially-manured plots is 30½ bushels, or 4 bushels more than the average. The mean of all the plots is 53½ bushels or 5¼ bushels above the forty-four years average. Ad these figures represent measured bushels. But the grain is so much heavier than usual this year that 33½ measured bushels, averaging a fraction over 63 lb., in weight, are equivalent to 35¼ bushels of 60 lb., or 7½ bushels more than the average yield of forty-four years reckoned in the same way, and five-eighths of a bushel more than the yield in 1868. Of course this would be too much for the United Kingdom, and the 33½ bushels by measure would probably be beyond the mark. Sir John Lawes apparently estimates the average yield of the kingdom at 33 bushels an acre, or a fraction less, as he puts the home produce from 1,731,876 acres at rather more than 7 million quarters. The mean population for the cereal year is put at a little over 39½ millions, and the consumption, including seed and wheat given to live stock, at 6 bushels a head, or nearly 30 million quarters in all. Thus the imports required during the twelve months are estimated at nearly 23 million quarters. We believe that these calculations will be closely verified.

EXPERIMENTS.

Superphosphates—Potash—Rape-cake—Dung—Sulph. am.—Nl. soda.

If any farmer wishes to try experiments with artificial manures, he must bear in mind that perfect equality in the several plots is an absolute condition of through comparison. To attain this end, a piece of land, pretty well worked out by a few years successive cropping without manure of any kind, should be selected. Otherwise, all sorts of anomalies will occur, such as may be seen in the following:

In some experiments on turnips at Ripon, noticed in the Report of the Agricultural Department of the Yorkshire College for 1895-6, 8 tons of farmyard manure alone gave an increase of more than 15 tons an acre over the produce of the unmanured plot, while the addition of 5 cwt. of dissolved bones alone gave 8 tons more than the unmanured plot. Again, the addition of 5 cwt. of superphosphate to the farmyard manure resulted in a decrease of 3 tons per acre of turnips, although 6 cwt. of superphosphate alone increased the yield 9 tons 8 cwt. 84 lb. over that of the unmanured plot, and the increase cost only 2s. 2d. a ton—the cheapest increase of any in a long list of results. In this trial, it may be mentioned, the greatest success was a crop of over 31 tons, or nearly 16½ tons more than the produce of the unmanured plot, at a cost of 4s. 1d. a ton for the increase, obtained by the use of 8 tons of farmyard manure, 5 cwt. of superphosphate, and 3 cwt. of rape dust. In other experiments on turnips, carried out at Stainton, the addition of 5 cwt. of superphosphate to 8 tons of farmyard manure gave less produce than the former alone, although 6 cwt. of superphosphate alone gave within 1 cwt. of the produce of the farmyard-manure plot. In this set of experiments kainit greatly increased the yield in several instances, as in one, for example, in which 2 cwt. of it gave 1¼ tons more than ½ cwt. of nitrate when added to 6 cwt. of superphosphate. The greatest increase

over the produce of the unmanured plot, and the cheapest increase, was over 7½ tons, costing 3s 2d a ton, produced on a plot dressed with 3 cwt. of superphosphate, 2 cwt. of bone meal, 1 cwt. of kainit, and ½ cwt. of sulphate of ammonia. In some experiments on grass both nitrate of soda and superphosphate greatly increased the crop, and yet when used together the result was smaller than that of the nitrate alone, and not much more than that of the superphosphate alone. Leaving curious results, we notice an interesting trial in the manuring of clover. Nitrate of soda, superphosphate, and sulphate of potash each increased the yield when used alone, and profitably increased it too; but the most profitable result was an increase of nearly 1¼ tons of green clover at a cost of 6s. 5d. a ton from the use of ¾ cwt. of sulphate of ammonia. With 3 cwt. of superphosphate added, the increase was brought up to 1 ton 12 cwt., at a cost of 10s. 7d. a ton, which was still profitable.

POTATOES.—A tremendous crop of potatoes in the United Kingdom this year, as well as in the Dominion; but we fear that the persistent rain of the early autumn in the U. K. will have materially injured the tubers. We were surprised to see so many fields here undug on the 1st October. We remember, but too well the first out-break of the disease, in 1846, and the past fifty years of experience have only proved, what the best farmers of that day held and practised, namely, that as soon as the potato is ripe it should be dug.

SMALL MUTTON.—We were much amused at seeing in an exchange, the other day, a plea for the Merino as the best foundation stock for an improved breed of mutton-sheep! Hardly necessary to say that the contributor of the article was a breeder of Merinos. The pet sheep of the butchers, doing the best trade in the West-End of London, is the "Down"; whether Southdown or Hampshire-down does not matter one bit; but the weight does matter very much indeed. At present prices, there is a difference between 8s lb. Hampshire-downs and 6s lb. Southdowns of one penny a pound; while, between the latter and the heavy Lincoln, the difference is at least three half-pence a pound, besides the smaller sheep being easy, and the bigger one hard, to sell. The following remark of the reporter—all market-reporters are practical men in England—is constantly occurring in the farm-papers:

Trade for choice small Downs and half-breds was firm at fully last week's rates, with an early clearance. Heavy half-breds, Lincolns, as well as Kents, met a slow trade, especially towards the close, when sales had to be forced at a slight decline in value.

As a means of imparting agricultural information the large fairs are growing less valuable each year.

"The New England Farmer."

According to statistics, the yield per acre of the farms of the United States follows in the ratio of the intelligence or illiteracy of the farming population. Natural fertility of soil and favorable climatic conditions are of secondary importance.

"The New England Farmer."

CLOVER HAY.—Is nearer a perfect ration than any other. It contains 12.3 per cent, proteïn with a nutritive ratio

of 1 to 5.8. Timothy contains 5.9 per cent. of proteïn with a nutritive ratio of 1 to 16.1. The market value of clover hay is \$8.35 per ton, and that of timothy but \$5.03. While clover is the most profitable for hay, it is also the best for the soil.

THE FRENCH GOVERNMENT.—Has issued an edict which provides that cattle imported into France, other than those intended for immediate slaughter, must, after April 15th, 1896, be subjected on landing to the tuberculin test, and will be kept under observation, at the expense of the importers, for not less than forty-eight hours. In the event of the test not being satisfactory, the cattle will be turned back after having been marked, unless the importer consents to the immediate slaughter of the animals under the supervision of the Customs' Veterinary Officer. Cattle intended for immediate slaughter are not subjected to the tuberculin test, but can only be sent to the markets of places which possess a public abattoir, and their slaughter must be certified by the veterinary surgeon in charge.

SINGLE JUDGING.

Single judging is coming more and more into favor in the Old Country year by year. At a recent meeting in connection with a Scottish live stock show, man after man declared for it. To tell the whole matter in a few words, it is considered that if a man is good enough to judge at all he is capable to judge alone. The single judge realises his responsibility and cannot do other than act accordingly. An argument which may be advanced against single judging is the possibility in very large classes of the one judge overlooking an animal, which could hardly occur with two or three judges. A single judge, fit for his position, will give more uniform decisions than is likely to be given by more men working together, which is always more educative than when animals of decidedly different types are chosen among the prize winners.

The Horse.

PROFIT IN BREEDING RIDING HORSES.

A bad stamp never pays—Hunters—Steeple-chasers—Thoroughbred stallions, and roomy mares—Prices.

No sort of horseflesh other than that used for racing, either running or trotting, commands so high a price as the hunter, after which comes the true actioned hack, by the latter I do not mean an animal that seems always striving to hit his nose with his knees, and, as the old farmer said and it drinking claret, "gets no forrader," but a well bred comfortable vehicle, for such, there is always a market and at a paying price. On the other hand can it be wondered at that many of the animals sent to the English market, in comparison with which the domestic clothes horse is a thing of beauty, and of far more intrinsic worth, do not bring a profit to the breeder? Far better for the country from which they emanate and for the breeder's pocket, had they

been relegated to the oblivion of a German sausage factory, in early youth.

Now for a good, upstanding hunter, "well bred," up to one hundred and ninety to two hundred pounds, with a fair turn of speed, a long price may always be had, and when one is found that can live in the first flight in a grass country with a few more pounds up, or can take his own part in the local hunt steeplechases, the vendor has only to name his price and count his money. For handsome light weight carriers, ladies hunters, nearly or quite thorough bred, large—though not so large as for the heavier sorts—prices may be obtained, but of course among these it is hard to draw the line between hunters and steeplechasers. A very fast hunter, clever at his fences, and a good stayer at a fair speed, generally finds his way to the course "between the flags," very soon after he has demonstrated these capabilities. But it is not of the steeplechaser I write, but of the hunter "pur et simple", up to weight, with the pluck to carry it, and if with a good turn of speed so much the better. In these days of recruiting steeplechasers from easts-off from the flat, the good old fashioned hunter, safe as the proverbial church, has not much chance in the big cross country events, and owners have to be content with having a "cut in" in the local hunt meetings, and many are the good sportsmen to-day who would rather win the "Cup," riding their own horse than own the winner of a Grand National. I therefore eliminate what may be called the professional steeple chase horse from the discussion.

To begin with, the thoroughbred is the only horse fit to beget hunters, and the dams should be half bred, one or two crosses of pure blood is not sufficient. Big roomy matrons only will produce good hunters, narrow-waisted, tucked up mares, should never be tried for this purpose, in fact such might be left old maids with advantage. The mares should have nicely laid shoulders, long necks and strong backs, with great depth through the heart, and long back ribs. Cobiness is as much to be avoided as weediness, for the reason that a cobby horse, though perhaps up to some weight, lacks always stride sufficient to go fast and far, and moreover that class can be bred from a cheaper sire, than should be used for begetting good hunters. The stallion chosen should have plenty of individual excellence, apart from belonging to an aristocratic, or to one or other of the best staying families. One of the best horses for the purpose that has come under the writer's notice, is Blue Grass, a son of Lexington, which, sent from America to run in England, was practically a failure on the Turf, but is now the most fashionable stallion for begetting hunters, having gained the Queen's premium of \$1000 for the best sire for hunters. It is needless to say that perfect soundness is essential in the sire, and, therefore if for no other reason, it is perhaps best to use an oldish horse, whose unblemished legs bear witness to their quality. The above mentioned horse is now twenty one years old. This horse is a standing proof of some thorough bred being far more successful with half bred mares than with others more highly bred, for he was a failure at the commencement of his stud career, when mated to the equine aristocracy, and it was not till he was 9 years old that his

(1) Plutely called, in stable usage, "herring-gutted."—Ed.

real usefulness made itself apparent, in the produce of two or three half bred mares to which his owner had put him.

It is strange that with such large prices being paid for hunters, I mean hunters, not an animal that will carry a certain number of pounds "avoir-du-poids" through so many gates and gaps in fences, after, very much after, the hounds—and the unmet demand for them that always exists in the British markets, that such a comparatively few horses of this stamp are bred in this country.

Perhaps the scarcity of mares of the right sort may be advanced in explanation of this condition, but as very fair performers are produced by half bred mares, there is no reason why breeding these horses should not pay from the start if due care is exercised in selecting the foundation stock. Australian-bred horses have been transported all the way to England, and sold there both by private sale and by auction, at figures which left a handsome margin of profit, so, surely breeders here, with a shorter distance to ship, should do even better. There is much profit in breeding the hunter, and the breeder who devotes his time, capital, and energy intelligently to that pursuit must, with ordinary luck, make money.

W. R. GILBERT.

THE QUICKEST AND MOST ECONOMICAL MEANS OF IMPROVING OUR HORSES.

SIR,

The above is the title of an article, signed by M. C. F. Bouthillier, of Ste. Thérèse, which appeared in your last number. M. Bouthillier's article may be summed up in the following few words: "The acquisition and extensive use of so many thoroughbred stallions of the right stamp will be the quickest and most economical means of improving our horses, by their use we shall obtain a very fair sample of a carriage horse, that sometimes turns out to be a very fair saddle horse or weight carrying hunter. The accursed craze for the Standard-Trotter has driven out from the Province of Quebec and the United States the thoroughbred stallion."

I wrote these very words ten years ago, and since then, I have never missed an opportunity of either writing or speaking in the same sense; so that I am glad, very glad, that M. Bouthillier has taken the same stand, and I beg of him to keep on hammering the nail, until it is driven right in.

I like the hackney and the French coach-horse; but, pray tell me, what made both what they are to-day? Thoroughbred horse. M. Bouthillier is right in saying "that every country under the sun, where good horses are generally bred, used thoroughbred horses! Why not do the same?"

Some years ago, when I still had some illusions (I have none now), I had dreamt of gathering all the best types of French-Canadian mares and using thoroughbred stallions on part of them. I knew that we should have had an excellent stamp of horse out of them. Let the coach-horse come forward (as a breed) which does not owe its qualities to the thoroughbred!

Let us search for the saddle horse, the war horse, the roadster, "the general purpose horse," that have no thoroughbred blood. Even that "accursed standard trotter," as M. Bouthillier says, does he not owe his endurance

his pluck, his energy, to the thoroughbred blood in him?

Let us have thoroughbred horses and plenty of them, and let us try to make horses with a short upper line, a long lower line, a long shoulder, showing more capacity of chest than belly, and strong limbs.

Don't you believe that we have had enough "beef"?

J. A. COUTURE.

Thanks, Monsieur for your energetic reclamation in favour of the thoroughbred. We agree with you on every point, and would only be too glad if you would favour us with more letters of the same tone.

Ed. J. of Ag.

THE HOUSE IN QUEBEC.

Ste. Thérèse, Oct. 12th 1896.

Horse breeding in Quebec should be encouraged—Farmers would then have good horses to use, and good horses to sell—Unsuccessful attempt to get the commission of agriculture to prohibit use of unsound stallions; or to give any aid in way of premiums.

DEAR SIR,

You remember the story of the Highland minister, whose heart so overflowed with charity for everybody that he concluded a great number of petitions for very many various things by entreating his congregation to offer up a petition for the devil. "Ma brethren" shall we not say a word for the poor Devil? Naebody says a word for the poor Devil? (1)

I am afraid that if I did not try to say something in favour of the poor horse nobody else would.

During the first eight months of the current year there were imported into Great Britain horses to the number of 30,716, against 22,755, in the corresponding period of 1895. Of this year's imports 14,211 came from the United States against 7,729 last year 7,611 from Canada, against 7,015 and 8,894 from other countries against 8,011, aggregate value of the whole, £752,891, in 1896, and £605,586 in 1895.

Do not these figures show that the industry of horse-breeding by farmers in the Province of Quebec, in order that, 1st, they may be enabled to provide themselves cheaply with a much superior and more efficient style of animal for their own use, than we have at present, and 2ndly dispose of those that they do not want for their own use, at a fairly remunerative price in the foreign market, is worthy of some encouragement from the Province of Quebec.

In the French edition of the Journal of Agriculture for the 15th of August last; mention is made of an interview between Mons. Albert Forest, member of an important business firm, in France, commissioned to obtain information on the subject of the development of possible commercial relations between the two countries, and Mons. l'assistant commissaire d'Agriculture de Québec. Mons. Forest thinks that cattle, horses and butter might be exported with mutual advantage, although the butter would probably, be re-exported. As far as horses are concerned, the result of his observations is, that a very large

(1) Did not Origen hold the eventual restoration of Satan?—Ed.

number are unsound, and that the breed would have to be improved if we wish to be able to dispose of them at all, as inferior unsound horses are not wanted either in France or England, any more than bad cheese and inferior butter.

At Mons. Auzias-Turenne's request I went to Quebec last autumn with that gentleman with a very modest request to the commission of Agriculture for a small mite of encouragement for the breeding of horses by farmers in this Province. 10; We wanted some legislative measures to prevent the indiscriminate use of unsound stallions and, 20; a small grant of premiums to selected stallions, standing at a low price, for the use of farmers in those portions of this Province where the most of horse-breeding, such as it is, is done. With regard to the first question, there are no valid objections that can be made to it whatever. We have veterinary inspectors invested with power to order glandered horses to be destroyed, and to stamp out other contagious diseases in cattle and swine. The same powerful means being used, why should not equally effective measures be taken to prevent stallions ineligible in a variety of ways from contaminating the whole equine race of the country.

It is no unjust interference with the liberty of the subject, not to allow him to do that, for the sake of a small immediate benefit to himself, which entails a serious and general loss to the community at large.

When a farmer sends a mare to an unsound stallion he is either quite ignorant of the fact, in which case he should be protected against fraud, as I have not yet met the owner of an unsound stallion in the country who loudly proclaims the fact to his neighbours; or knowing that the stallion is unsound, he acts under either of two motives; first, under the inducement of a very low service fee, which is in itself, an injury to those who have good sound stallions; or he does not believe that hereditarily unsound stallions will communicate their effects to their progeny, in which case, he ought to be protected against his own ignorance.

The only possible objection to the 2nd question is that of expense. It would cost something to provide some money for premiums to selected stallions standing in the country districts for the use of farmers. But that expense, would not be very great to start with, and, is about the cheapest way, in which, some encouragement could be given to horse-breeding.

The small beginning proposed was in exact imitation of the Queen's Premiums in England. For the benefit of those farmers in Quebec, who do not know what the Queen's Premiums for Stallions are, I may say, that they consist of a certain grant of money, formerly given by the Queen for certain races, in England called Queen's Plates, (1) of which we still have two, one in Ontario, and one in Quebec.

These plates were originally given in England, and are still given here, for the purpose of encouraging horse-breeding. Some years ago, a commission on the improvement of horse-breeding in England, came to the conclusion that this money, might be more judiciously expended, if divided up into small sums as premiums to the owners of approved stallions standing for the use of farmers' mares exclusively. The object of giving this premium was

(1) Or "Guineas", each being of the value of £100.—Ed.

to induce people to breed more good horses, in competition for the prize, and to enable the winner to allow his horse to stand at a very low fee, without suffering loss.

These horses are not only examined as to hereditary soundness, but are also selected as to their suitability to the class of mares, in the district to which they are sent to serve.

The system has worked admirably in England for several years now, and there is no reason, to suppose, that, on a smaller scale of course, it would not work equally well here.

When we got an answer from the committee on Agriculture it was not very satisfactory, as the first part of the petition was entirely ignored and, the answer to the second, was that they had come to the conclusion that it was better to leave all matters concerning the improvement of horse-flesh to private enterprise. What this private enterprise amounts to, is well exemplified, by the fact, merely to instance one case, that at a late fair in a certain county, formerly the great heavy draught horse breeding county of Quebec, out of 32 stallions exhibited only two were sound, at least so I am informed.

C. F. BOUTHILLIER.

Orchard and Garden.

QUEBEC FRUIT GROWERS.

INTERESTING SESSION OF POMOLOGICAL SOCIETY AT ST. JEAN PORT JOLI.

Raspberries—Apples—Strawberries—M. Dupuis and his work.—Morella cherries.

St. Jean, Port Joli, Que., September 26.—The time of the Pomological Society, of the Province of Quebec, in conference here, was taken up yesterday morning in reading papers and discussing the same with special reference to the conditions which exist in this locality. Apple and plum culture is an ancient industry here, and has developed many peculiarities foreign to other fruit growing sections. The region abounds in seedlings of apples and plums in common with other sections. The names of the newer varieties have in many instances been lost. A large number of those were brought up to the meeting for the purpose of securing their names and Mr. Craig, horticulturist, of Ottawa, was busily engaged in this work the greater part of the morning.

In discussing the winter protection of raspberries Norman Jacks, of Chateauguay Basin, stated that the ordinary methods of covering raspberries by bending down the canes and holding them in place with a shovelful of earth did prove entirely satisfactory with him, and it was an open question whether it could be carried on successfully in a commercial way. The discussion brought out the fact that varieties as hardy as Hansall, Marlboro and Turner did not as a rule need winter protection, but that it paid the grower in Quebec, whenever the snow-fall is light, to protect Cuthbert, Golden Queen and Yellow Antwerp and other kinds of the European type. In this connection the interesting fact was developed that the red and yellow

Antwerp raspberries were cultivated with success upon both sides of the St. Lawrence eastward from Quebec. Seedling production and acclimatizations have assisted in perfecting varieties well suited to the demands of the climate and soil of this district.

An interesting collection of apples was shown by Mr. Craig from the Ottawa farm, and by Mr. Baimard from Quebec. In discussing the relative merits of these Mr. Craig recommended the cultivation of Lawver or Delaware red winter, Swayhee, Pomme Grise, Rawles and Janet, are long keeping sorts. (1) Specimen fruits of the crops of 1895 and 1896 were shown in illustrating his remarks. Among the new varieties which appeared hardy on trees at Ottawa that bore handsome autumn or early winter apples were Gano, McMahon and White and North Star. They should not be planted extensively, however, on account of the perishable character of the fruit, unless the grower was situated near a large market.

The newer varieties of raspberries and strawberries were discussed in a paper by Mr. John Craig, Central Experimental Farm, Ottawa. Among the raspberries recommended were Heebner, Hansall and Kenyon, red, Older black and Shaffer or Columbian purple. Mr. Craig detailed some of the results obtained in testing 140 kinds of strawberries; among the best were Bisol, Buster, Greenville, and the scarlet ball.

The members of the Society drove in the afternoon, nine miles, to the Village des Aulnaies in response to an invitation from Mr. Auguste Dupuis, the veteran nurseryman and fruit grower of that place. Mr. Dupuis has long been known in Eastern Quebec as the leading fruit grower and has been instrumental in disseminating reliable knowledge regarding the many phases of horticulture peculiar to this section.

As a director of the Society, Mr. Dupuis is continuing his good work. The members of the Society were delighted and surprised with the results Mr. Dupuis has secured under an especially extensive system. His grounds are literally packed with nursery trees in addition to others permanently planted and now loaded with fruit. By liberal manuring and good cultivation, he is able to do this. The peculiarities of the climate were illustrated when the visitors were shown Morella cherries still hanging to the trees. Among the apples which are doing well may be mentioned English Golden Russet, Wealthy, St. Lawrence and Duchess. After partaking of the hospitality of Mr. Dupuis and passing a vote of thanks, the members dispersed to their respective homes. The place of the next meeting will be decided by the directorate.

MONTREAL PAPER.

HAWTHORN HEDGES.

Hawthorn and Cockspur-thorn—The seed—Planting—Cleaning—"Pleaching"—Pruning—Fence and rail.

I was glad to see an article in your last issue from Mr. Bouthillier on the advantages of the use of living fences. Sometime ago I wrote in the "Journal" on the subject, but, as M. Bouthillier asks for further information, I cheer-

(1) The names of the varieties of apples, as printed in the original from which this article is taken, would puzzle any one.—Ed.

fully comply with his request, because I think that your readers may profit by my remarks, and be encouraged to pay more attention to this branch of farm economy; feeling confident that, in certain situations, no more thoroughly impregnable fence can be employed. If properly raised from the start, and kept pruned and attended to, no animal will be able to pass through it, or robber to scale it, as he could a wall or board fence, however strong or high. In England they have the White Thorn, or Hawthorn, admirably adapted for the purpose, but it is doubtful if that would suit this climate.

We have however the native Cockspur Thorn, which is a good substitute, and can be managed in the same way with nearly the same results, although, perhaps, its coarse habit of growth might not permit of its becoming quite so dense as the English Hawthorn.

The berries of the hawthorn are gathered in the latter part of the autumn, after they have become quite ripe; they are then mixed with a little sand, buried in the earth and some allow them to remain until that winter and the following one passes; not sowing them the first, but the second spring after they have been gathered. When the time, early in the spring, has arrived, trenches about 1 foot wide and three inches deep are made, in clean well improved land without manure, and in these the seeds are sown. The following spring the young plants are transplanted into nursery rows eighteen inches apart, and the plants about three inches. These young plants are called "Quick" and are sold by the nurseryman to the planter of the fence after they have stood in the nursery two years, sometimes three, but they are considered the best at two, as there is not so much risk in transplanting, the roots being more fibrous.

The bed on the fence line to receive the plants, must be perfectly free from weeds, and deeply dug, two feet wide. Some planters dig in with the plants a small quantity of well rotted manure, but if the land is rich, this is not considered necessary.

The best fences are made by planting a double row of "Quick" the plants alternating each other thus, but many plant only a single line, the plants being set close together; ten plants are set to the yard, in the latter case, and 15 in the former. The land should be kept perfectly free from weeds and the space 1 foot on each side of the plants kept loose by forking. This extra cultivation is not absolutely necessary, but the better it is attended to the faster the hedge will grow, and "whatever is worth doing is worth doing well." For the purpose of inducing a rapid and vigorous growth, a coating of manure should be applied and dug in, in the spring. When the plants have been set out three years, if it is desired to make a fence very thick at the bottom, which of course it should be, the hedge is "laid, or what is sometime called "pleached".

This is done by cutting out, close to the ground, a certain number of the plants according to the judgment of the workman. A good hedger is a man of superior skill and intelligence; he generally performs his work by the piece, and can make better wages than the ordinary day laborer.

When the proper quantity of stems have been taken away, the remainder are cut about half through and laid down flat, being kept in their places by means of stakes placed about five feet apart, and firmly driven into the

ground. This has the effect of making the hedge very thick and impervious quite down to the ground level. When a new growth is made, the forming and pruning of the hedge commences, and this must be done in such a manner as to make it thick at the bottom and rising to a point at the top (this figure



represents the transverse section of a well made Hawthorn hedge. If reared in this manner, it is better than a flat or round top, because it is more easy to prune, and more picturesque, which should be some consideration.

A post and rail fence will be required to guard the hedge until it is of sufficient strength to take care of itself, and then it will be kept in repair at a trifling cost, and will last for ages and although it will take time and labor to accomplish this the value of the farm will be proportionately enhanced.

GEORGE MOORE.

AN OLD ROSE GARDEN.

I was much interested in the description (p. 653) of an old garden containing many shrubs and flowers said to have been set 100 years ago. While I cannot write of a garden as ancient as the above, I will endeavor to give a brief account of one which has flourished for the past two generations. It is a front yard filled with many kinds of hardy shrubs and bulbs, such as wax-drops, honeysuckles, syringas, bridal wreath, lilacs, peonies, lilies, daffodils, jonquils, rockets and a profusion of the old hardy varieties of roses, among which are prominent the old Damask and the double red rose. This garden, or flower yard, was begun in pioneer times, and judging from the vigor and vitality these plants and shrubs yet possess, we freely admit that our pioneer mothers wrought more than they thought when they selected these hardy shrubs and flowers and left them as a legacy to their second and third generations.

These pioneer mothers had the same instinctive love of the beautiful as have their grand-daughters of to-day, and the pioneer mother of whom I write loved roses, because they reminded her of a distant home garden in which grew the lovely damask and double red roses that had been so carefully tended by a loving mother's hand. The country here at that time was comparatively new and sparsely settled, with neighbors few and far between; but by making diligent inquiry, this pioneer mother learned that a still earlier settler than herself had these two named varieties, and would spare one root of each kind. With a little stretch of the imagination, we can see her mounted on the back of Dobbin, cautiously threading her way over rough roads and log bridges in quest of her much coveted roses. Roses at the period of which I write were scarcely to be found in newly settled regions. Florists were practically confined to large cities, and the usual way of obtaining shrubs or flowers was from the good fellowship of a free and friendly neighbor. These roses were duly set in the door-yard, where an outgrowth of them remain at the present time.

Among the old varieties of roses, the Damask for antiquity stands first, and the double red second; after these came

a May rose, also a pure white, and a yellow-rose, but none of them were as luxuriant or as fragrant as the Damask, and a large scarlet-rose a little less double, but fully as sweet as the Damask, which is now known as the double red rose. The Damask rose came originally from Syria, and at a very early period was introduced into European countries, and thence to the New-England States, about the time the pilgrims came over. While there are among the multitudes of modern varieties many lovely to the eye, yet there are none that for beauty, fragrance and hardiness equal the two above-named sorts. Unlike the moderns, they are self-propagators, and require no winter protection, neither much cultivation. They adapt themselves to all climates and situations, and may be transplanted at nearly all seasons of the year with safe results.

In the beginning of this article I said that my rose yard was begun in pioneer times, and from the roots of only two varieties of old roses. Like many another small beginnings, these roses have propagated and spread themselves over the yard until they really obstruct the right of way, and have grown into a veritable rose garden. From June until the middle of July the yard is a mass of lovely pink and scarlet roses. Other varieties have been added but the standard are the old reliable Damask and double red. These roses have become exceedingly scarce, as they have been rooted out to make way for the more modern sorts; but the hand of the spoiler has at least been stayed in the rose garden of which I write. There are now hundreds of roots that sprang from the two above named varieties set nearly or quite sixty years ago. "Country Gentleman."

A. C. B. "Meridian, N. Y."

PRACTICAL FARMING.

(by James Dickson, Trenholmville)

The use of water in plant life—Top dressing meadows.

In previous articles I have endeavored to combat the idea, almost universally expressed, that rain, dew, turnip juice, hay juice (that is extracted in the curing) is water, and water only. And in your last issue I say, "It cannot be denied (not desired, as it is printed) that to solubilise the soil, or manure, it is necessary that air and moisture come into contact with it. Dry earth will not grow a plant, nor will dry manure yield its virtue, but the moment it is moistened, a plant can extract from it its strength, and the atmosphere also. But in the same number of your Journal, which I read very carefully, I find that Prof. Shutt says "of late years progressive agriculturists have begun to recognise that the crop yield is, in many instances, directly proportionate to the supply of water available for plant use. Hence the desirability in many districts of irrigation." And I tax myself to know whether he agrees with my view, that previous to the plant making use of water, the soil and manure make use of it in solubilising, or melting it, so that when it reaches the roots of the plant, it is in the form of juice of the soil, and not water. In the same way that I claim that rain, dew, turnip juice, hay juice, etc. are not waters, so I also claim that the moisture evaporated from manure is not water. As I say in my last, "I challenge to the proof that in either

case the loss is water only." And I have not had long to wait, or far to go for the proof. Since writing that, Experimental Farm Reports have reached here, (strange enough, two copies to the same family, and none to others.) I borrow one, and on page 41 I find that a certain weight of "fresh barnyard manure" (1) gave a greater yield of potatoes than the same weight of "well rotted barnyard manure." On page 42 I also find that 8,000 lbs of fresh barnyard manure was dried, and in a few months showed a weight of only 2,600 lbs. I also find that the Report of the Director, on page 42 says. "It would appear that the action of fresh manure is almost equally beneficial ton per ton to that of rotted manure in the growing of nearly all the staple crops." That I claim is strong proof from good authority, and what is better, backed by figures, by facts, that slow, that what evaporates from manure is not water only, but the essence of the manure, which every glint of the sun, and every breath of wind steals from the top dressed field, impoverishes the farmer, and ruins the country.

Many experiments compelled me in the Essay competition '95 (See January number '96) to write. "Keep manures covered, and mix with the soil as soon as possible." And when farmers realize, when they themselves experiment, so that they can believe, that urine soaked droppings, covered up in the soil, is the way to use manure, these farms will improve by leaps and bounds, and a run out farm will be a thing of the past.

In this connection, I notice the Editor's note re "English farmers." So much the worse for them. I am aware I am treading what is new ground to some, but it is what I have proved myself to be the scientific method of using manure.

Another point re "English farming", and which I think the Editor will corroborate, that the grasses sown in Britain for hay, are different from those which succeed best in Canada. The Secy. of the Lullithgowshire Agl. Society of Scotland, said to me, "we do not grow timothy here; we have better grasses that last longer." This in answer to my remark, that I had not seen a stack of timothy hay on that side of the ocean. I do not know whether the grasses sown there would make permanent grass-land here, but it will be conceded on all sides, that with clovers and timothy there can be no permanent grass-land.

I am satisfied that the experiments at the Dominion farm are correct, they fully agree with my experience, and with what I have previously written on the subject. And the sooner farmers accept it as a paramount duty to keep the manure covered with a roof until it is covered with the soil, the sooner will cease the cry. "The farms are running out."

(1) Barnyard manure in this connection is no doubt a misnomer. As properly understood, that is manure which is made in the barnyard, composed of waste straw, dung, or other material that will enrich the soil, (a method deemed to be discarded and condemned) and with which, I know no such results could be obtained. I venture to say that the experiment was made with what would properly be called stable dung, i. e., the excrement of animals. With manure of that sort, there is no doubt of the correctness of the experiments.

SHEEP IN EASTERN OHIO.

Fall in prices—Delaine wool—Wool and Mutton—Cosing.

"Eds. Country Gentleman"—Very few who are strangers to the Ohio Valley realize the extent of our loss in sheep in the last ten years. It is over twenty years since we had the greatest number; but the decline for several years was not rapid. Those engaged in handling sheep at that time have told me that it was no trouble to buy three or four hundred feeders in a day. Every farm was stocked with sheep, and the surplus always brought good prices. To-day, it may be doubted whether there are three hundred good feeding sheep in our township. You will pass scores of farms that are not trod by the "golden hoof". In the early seventies, when wool sold at 50 cents a pound, every one was happy; but when it came to be quoted at 40 cents, some said the profit was gone, and parted with their holdings. When wool was quoted at 30 cents, many more of the faithful deserted us. Only a few have held their sheep, while the price of wool continued on its downward course, apparently striking bottom when good unwashed Ohio delaine sold at 10 cents.

This revolution has not been without its effect on the make-up of our sheep. Indeed sheep adapt themselves to the demands of the times more quickly than does any other animal. When the call was for wool and lots of it, the sheep soon grew enormous fleeces at the expense of every other function of the body. To increase the wool-bearing surface, they crowded on wrinkle after wrinkle, until from the tip of the nose to root of the tail, they were a mass of huge folds. In their zeal, the work was overdone; the constitution broke down, the blood was thin, the lungs weak, and thousands were sent to the West for their health.

Ten years ago there came a demand for delaine wool on a mutton carcass. Quickly the sheep laid aside their greasy folded robes, and put on long, smooth, glossy coats over broad, deep-chested bodies. These were an ideal wool and mutton sheep. To-day it is an unsolved problem what kind of a sheep is demanded. Apparently our politicians do not want any kind. There seems to be but little demand for our wool, even at 15 cents, and mutton is unprofitable at 3 cents a pound. Many have been crossing their Merino flocks with Cotswold, Shropshire and other long-wool breeds, sending the offspring to market as soon as possible.

It is difficult to obtain the greatest success in this with the Merino ewe as the mother. There is needed a slight mixture of coarse-wooled blood to give greater milking powers with ordinary feed and care. The lambs are generally dropped in February and March, part to be sent to market in May and June, others to be kept until the following February, and sold after five weeks' heavy feeding. Fifty pounds at 6 cents a pound have been the average returns from June lambs, while 100 pounds at 5 cents have been a good weight and price for the lambs kept until a year old.

It is open to debate as to which plan gives the more profit. One side say that the additional two dollars will not pay

for keeping the lamb from June to February. The other side retort that if it cost two dollars to keep the mother through the period of gestation (and the ewes must be heavily fed for profitable spring lambs), then there is but one dollar profit in the June lamb, while there is three dollars profit in the February lamb. Certain it is that the margin in either case is too small, but it will compare favorably with 15 cents butter or 50 cents wheat.

Those who are sheep owners are living in hope of better times. Both political parties are holding out their hands with the promise of better prices for our sheep products, but it is very doubtful whether the halcyon days of wool-growing will ever return.

JOHN G. ICKIS.

THE WATER SUPPLY OF DAIRY COWS.

Foul waters—Well water too cold—Tanks.

The above subject was suggested to my mind while passing through a certain village a short distance from Minneapolis to-day. Several cows kept for the purpose of supplying milk to the villagers had been yarded over night in a small yard and were just being given drink of water as I passed. They were gaunt and apparently very thirsty and as they came in sight of the water started on a brisk run for it. The pool containing the water was about twelve feet square and perhaps one foot deep. It apparently was also used as watering and bathing place for geese and ducks. The water was, perhaps, the most filthy, foul-smelling, green-looking substance that one could imagine, and those cows were gulping it greedily as if they were quite accustomed to it.

I have not the least doubt in the world that had I suggested to the owners of these cows that they use that water for drinking purposes themselves, that they would have considered themselves grossly insulted; or had I informed them that their children had been drinking such filthy, diseased laden stuff, they would have no doubt called in a physician forthwith to prevent typhoid fever or some other fearful disease. Yet the cows furnishing their families with milk were driven there day after day and forced to drink such filthy. They probably never thought that a cow's milk contained about 87 per cent water, and that they might just as well drink the water themselves and expect to remain healthy as to have the cow drinking the water day after day and give milk for them to drink 87 per cent of which is made from such water. There is nothing, perhaps, which the average man is more careless about than the water supply for his live stock. So long as it is liquid and the animal will drink of it that is sufficient. There is nothing that will taint a cow's milk more quickly than giving her impure water to drink. In this dry, hot climate, milking cows should have access to good, pure water several times a day. It should either be provided them from a well or from a clean running stream. We have found in our practice that a cow in summer will very much prefer water above 60° F. to water below that temperature, will drink much more of it when moderate-

ly warm and will give a much larger flow of milk. Water pumped directly from a deep well appears to be too cold. We practice pumping it into a large tank to which the cows have free access, and which is kept supplied by a windmill pump. This provides an abundance of pure water at a temperature warm enough to admit of the cows drinking large quantities of it, and we find the flow of milk greatly decreasing if by any means we are obliged to pump the water directly from the well for them. Give cows all the good pure water they will drink at all times, and avoid stagnant water of any kind.—W. L. C., in "N. W. Farmer."

MILK PRODUCTION and PROFITS.

Bottled milk—Fillers.

"Eds. Country Gentleman"—In your last issue Mr. Monrad started out to give an "inkling" of Mr. Gurler's certified milk business. I expected to read of the methods Mr. Gurler had in handling his milk from the cow to the consumer, but was disappointed. The article was interesting, but it failed to develop the subject. Now for one, I wish Mr. Monrad would give an accurately detailed account of the methods employed in Mr. Gurler's business. The production and sale of milk is ordinarily, yet mostly done in so slovenly a manner that when we hear of any one adopting improved methods we are eager to learn the details.

I have been selling bottled milk for a decade, and it is only now that I feel at all as though I were conducting the business properly. Every year has brought some new apparatus, some additions or improvements to the old, and when one is fully equipped for the proper conduct of the business, he is amazed at the capital invested simply in the apparatus.

I have a bottle filler that I got after years of searching to discover the best. This filler is not advertised, nor is it kept by more than one supply house. I don't know where it is made nor can I find out. After using it six months I know that it is good, easily handled and easily cleaned, and expeditious in its work. It is not made as substantial as it ought, nor are some of its parts of the proper material. Considering its structure and material it costs double what it ought. Thinking of it, I become vexed over the facts that the manufacturer fails to advertise, fails to improve, and fails to put a reasonable price on the machine; so I was disappointed in Mr. Monrad's not giving a detailed description of the methods and apparatus used at this farm.

In connection with my milk business I buy quite a quantity of milk to put with any surplus of my own and make butter. I now pay 3 cents per quart for this milk delivered, and get for my butter 30 cents per pound, 1 cent a quart for part of the skim-milk and 2½ cents for the buttermilk. What by-products are not sold I feed to hogs. At these prices I am not making much of a profit above the cost of the milk, and when I read of Elgin butter selling at 14 cents, I cannot see where the farmer comes in for anything above the cost of his milk, if he gets that.

T. A. STANLEY.

"Hartford County, Conn."

A WONDERFUL CONCERN.

One of the most wonderful productions of the age is "The Family Herald and Weekly Star," of Montreal, a paper of marvellous interest to farmers and farmer's families. "The Family Herald and Weekly Star," of Montreal, has been growing in attractiveness year by year, adding new features, improving old ones, and placing itself right at the head of the list of great weekly papers, until now it stands supreme. Thousands upon thousands of farmers subscribe to "The Family Herald and Weekly Star," and there is scarcely a successful breeder or dairyman or a farmer conspicuous for his success who does not owe much to the wonderful fund of information in the "Family Herald and Weekly Star." How such a paper can be sold for one dollar a year is the puzzle! It comes each week with one hundred and twenty-eight columns, crammed full of good things. There is not a dry bit about it, every department being brimful of interest. We hear that the publishers this year are celebrating their most successful year by presenting each subscriber with that wonderfully pathetic picture, "The Orphan's Prayer" in twenty colors, 25 inches by 19. No wonder there is a scramble amongst new subscribers to get on "The Family Herald" subscription list. A good thing meets with certain appreciation.

PUREST AND BEST

Windsor Salt

Is the only salt manufactured by the Vacuum Process in Canada and is much superior to any Imported Vacuum Process Salt.

TABLE SALT Made by a patent Process solely in use at the Windsor Salt Company's Plant.
DAIRY SALT Each package containing these grades is marked with our Trade Mark.
CHEESE SALT

Best quality Ordinary Fine Salt for general purposes.
WINDSOR SALT CO., Limited.
WINDSOR, ONT.

Notes and Notices.

Dandruff is an exudation from the pores of the skin that spreads and dries, forming scurf and causing the hair to fall out. Hall's Hair Renewer cures it.

OF VALUE TO HORSEMEN.—Do you turn your horses out for the winter? If so, we want to call your attention to a very important matter. Horses which have been used steadily at work, either on the farm or road, have quite likely had some strains whereby lameness or enlargements have been caused. Or perhaps new life is needed to be infused into their legs. Goulait's Caustic Balsam applied as per directions, just as you are turning the horse out, will be of great benefit; and this is the time when it can be used very successfully. One great advantage in using this remedy is that after it is applied it needs no care or attention, but does its work well and at a time when the horse is having a rest. Of course it can be used with equal success while horses are in the stable, but many people in turning their horses out would use Caustic Balsam if they were reminded of it, and this article is given as a reminder.

If your hair is turning gray, restore to it the hue of youth by the use of Ayer's Hair Vigor. The best hair-preservative.

MEND THE ROOF YOURSELF.

You can do it with
"Reed's Pat'd Asphalt Cement."
 Anyone can use it.
 Will neither run nor crack.
 A 5 lb. Can will cost you 35 cts. A 10 lb. 60 cts.
 Full Directions on every Can.
 Ask your Hardware Dealer for
"REED'S PAT'D ASPHALT CEMENT,"
 MADE ONLY BY
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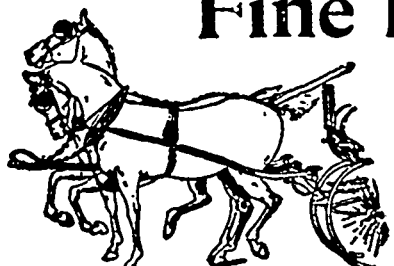
DAW'S & CO., LACHINE, QUE.

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 Pure Bred Horses,
 Ayrshire and Jersey Cattle,
 Berkshire and Yorkshire Pigs.

Horse Owners! Use

GOMBAULT'S
Caustic Balsam
 A Safe Speedy and Positive Cure
 The Safest, Best BLISTER... the place of all liniments for mild or severe action. Removes Bunches or Blomches from Horses and Cattle. SUPERSEDES ALL CAUTERY OR FIRING. Impossible to produce scar or bluish. Every bottle sold is warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars.
 THE LAWRENCE-WILLIAMS CO., Cleveland, O.

Fine Drivers



cannot be made out of horses that are out of condition. Merely to feed plenty of oats is not enough. A horse gets run down the same as a man and needs a general toning up.

Dick's Blood Purifier

is a scientific preparation in the form of a powder. It purifies the blood, strengthens the digestion, turns a rough coat into a smooth and glossy one and puts the animal "in condition." He then has "good life" and feels like holding up his head and lifting his feet.
 MILCH COWS are greatly benefitted by it. The whole system is toned up. The digestive organs being strengthened, more nutriment is drawn from the food and the flow of milk increased.
 Dick's Blood Purifier will pay for itself ten times over.
 For sale by druggists, at general stores or sent post paid on receipt of 50 cts.
 Dick & Co., P. O. Box 452, Montreal.

Saskatchewan Buffalo Robes

Received Highest Award at World's Fair.
 Have had six years' experience in Canada.



We guarantee every robe to be absolute wind, water and moth proof, and will not wear bare in spots like a skin robe. They will dry quicker and never get hard, are as strong as leather and far more durable and warmer than any cheap fur robe. The robe is made in three parts—the Fur Cloth, the Astrachan Lining, and Rubber Interlining. All these parts are without seams. The increased sale of these Robes is the best evidence of their popularity.

Others having noted the great sale and popularity of these Robes have undertaken to imitate them. We would caution the public that none are genuine unless bearing this Trade Mark. Manufactured by

Newlands & Co., Galt, Ont.
 AND American Buffalo Robe Co., Buffalo, N. Y.

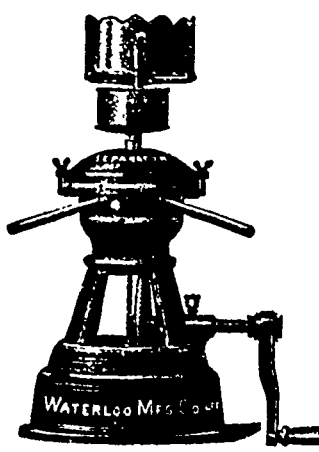


Helderleigh Fruit Farm and Nurseries.
 Salesmen wanted in Province of Quebec to sell a full line of HARDY FRUIT TREES and ORNAMENTAL STOCK.
 Prices suit the times. Terms liberal as I am a grower and not a dealer.
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HOME DAIRYING.

In order to make Home Dairying a success you must be fitted up with modern machinery and utensils. A CREAM SEPARATOR IS INDISPENSABLE.

THE WATERLOO SEPARATOR

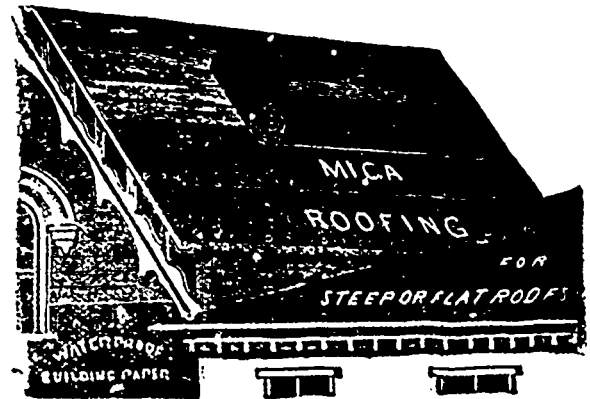


Is specially adapted for such work. It is easy running, simple, and durable. A Waterloo Hand Separator is sufficient for a Dairy of 10 or 12 cows. Prices and terms reasonable.

Send for Circulars.

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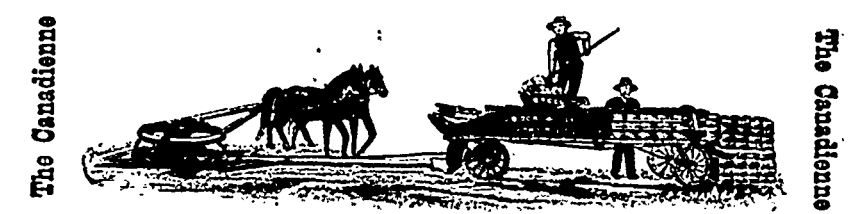
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Rapidly taking the place of Shingles. Use Mica Roofing on all your buildings. It is cheaper than Shingles. Waterproof and fireproof. Use Mica Paint to repair leaky roofs. Shingle, Iron and Tin roofs painted with it will last twice as long. Is put up in rolls of one square each, 40 feet long by 28 inches wide and cost only \$2.25 including nails, thus affording a light, durable and inexpensive roofing, suitable for buildings of every description—especially flat roofs,—and can be laid by any person of ordinary intelligence.
 Mention this paper.

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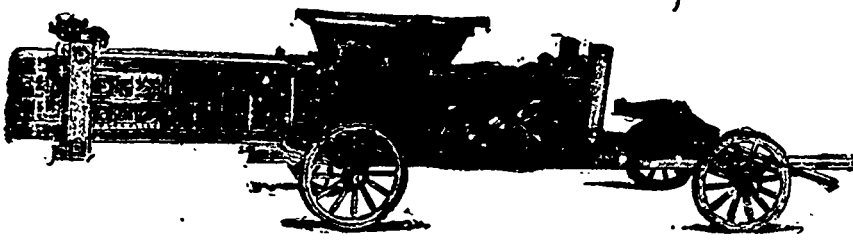


New designs from our 1895 Model WHO PROVE THE BEST. We don't look to build a cheap Hay Press, BUT THE BEST FOR THE LEAST MONEY.

We want to furnish to all a machine well built and with good material and workmanship. ... WE LEAD, OTHERS FOLLOW. ...
 Catalogue, Prices and Terms given on application. We always carry a stock of One and Two Horse Thresher, Vibrators, overshot and undershot style. See what we could give for your money before placing your order.

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FULL CIRCLE HAY PRESS, IN STEEL



This press has an all steel baling chamber. It has an extremely large feed opening and is a full circle Press. The power works well at any angle so that the machine does not require to be set level. Has gone to tell when dividing board should be inserted.

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Stop The Leaks. Equal Results

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WITH HERBAGEUM AS FROM A

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The Beaver Mfg. Co. Galt, Ont. Sole Manufacturers

Dederick's Patent Steel Case Reversible Lever Hay Press.

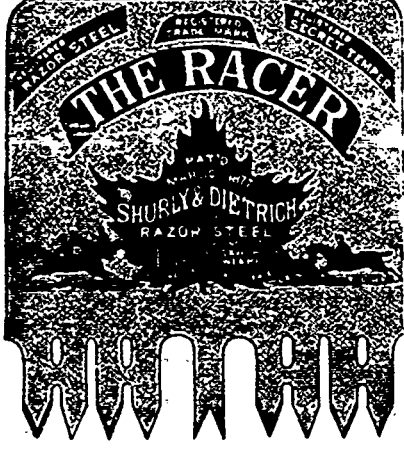


IMPROVED FOR THIS SEASON.

- Patent Retainers,
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These improvements make the Press lighter, stronger, easier on the horses and more power with a shorter level. This is the leading Press in the United States and Canada.
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We take pleasure in offering to the public a saw manufactured of the finest quality of steel, and a temper which toughens and refines the steel, gives a keener cutting edge and holds it longer than by any process known. A saw to cut fast "must hold a keen cutting edge."

This secret process of temper is known and used only by ourselves.

These saws are elliptic ground thin back, requiring less set than any saws now made, perfect taper from tooth to back.

Now, we ask you, when you go to buy a saw, to ask for the Maple Leaf, Razor Steel, Secret Temper Saw, and if you are told that some other saw is as good, ask your merchant to let you take them both home, and try them, and keep the one you like best.

Silver steel is no longer a guarantee of quality, as some of the poorest steel made is now branded silver steel. We have the sole right for the "Razor Steel" brand.

It does not pay to buy a saw for one dollar less, and lose 25 cents per day in labor. Your saw must hold a keen edge to do a large day's work.

Thousands of these saws are shipped to the United States and sold at a higher price than the best American saws.
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