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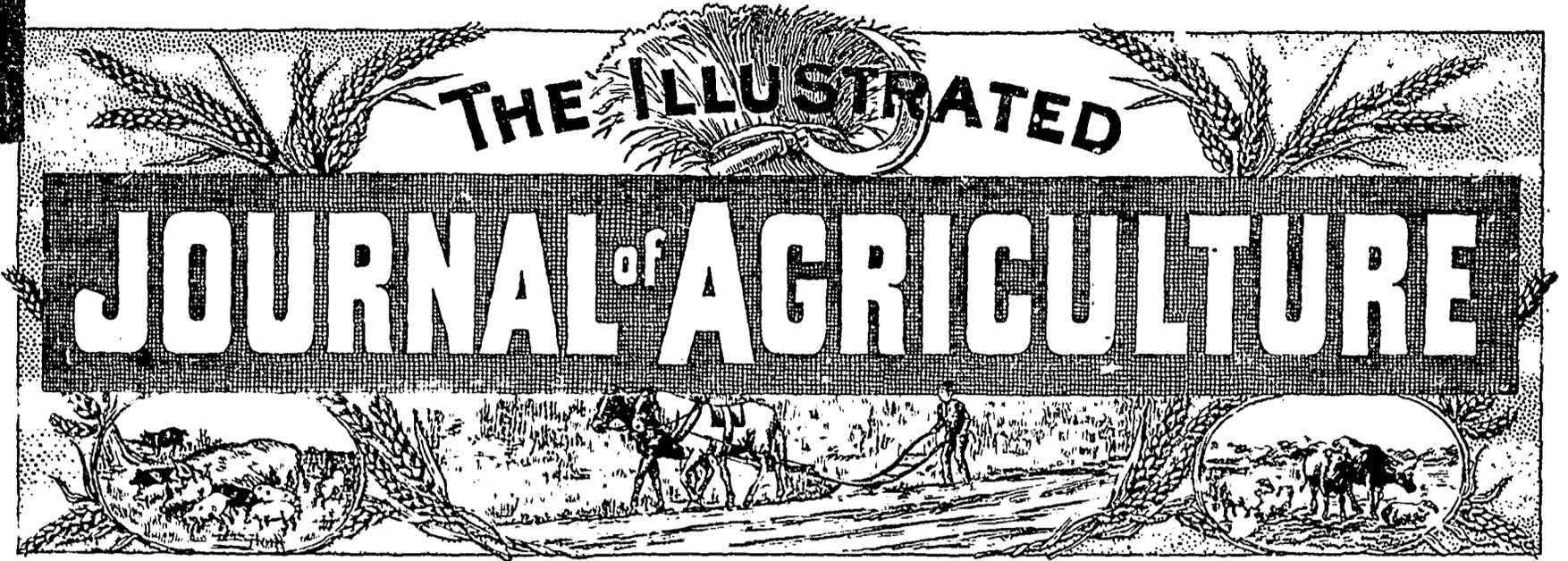
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MONTREAL, NOVEMBER 1, 1894.

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**Journal of Agriculture**

The ILLUSTRATED JOURNAL OF AGRICULTURE is the official organ of the Council of agriculture of the Province of Quebec. It is issued Monthly and is designed to include not only in name, but in fact, anything concerned with agriculture, as Stock-Raising, Horticulture, &c., &c.

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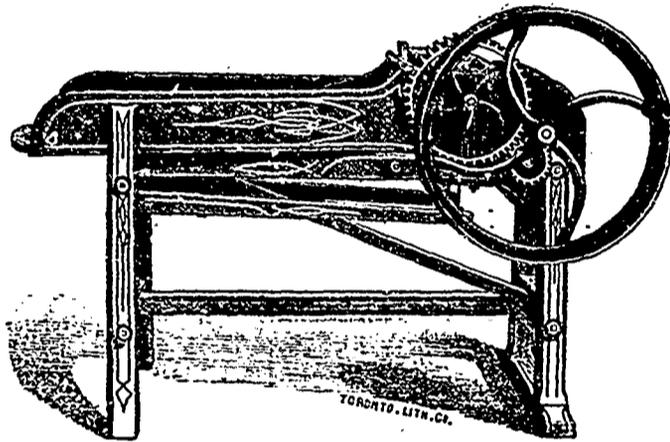
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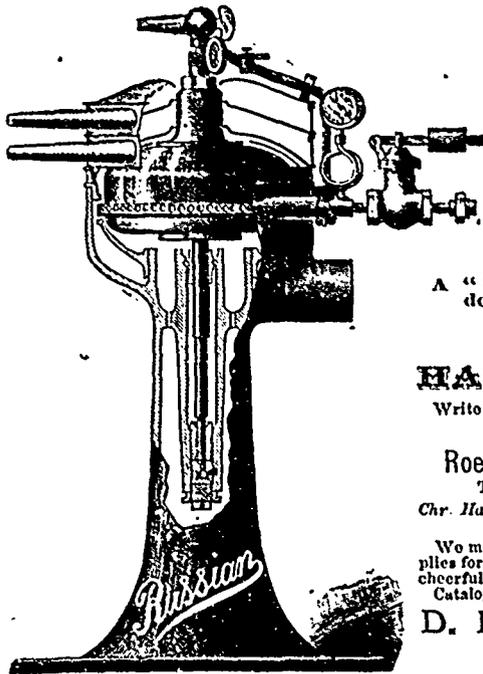
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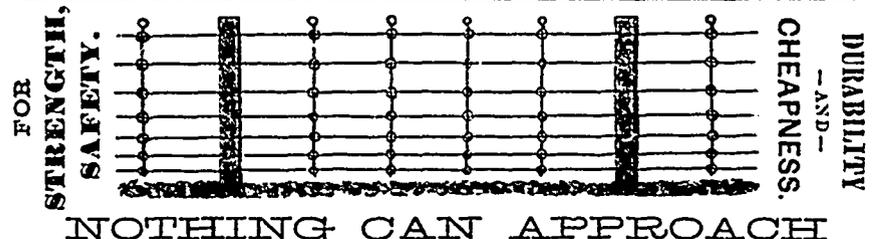
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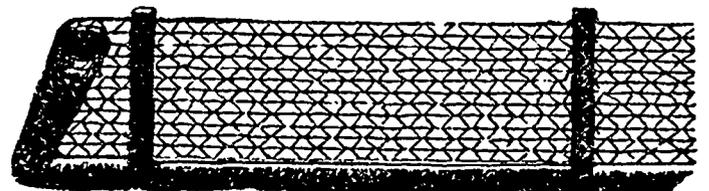
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THE ILLUSTRATED  
Journal of Agriculture

Montreal, November 1, 1894.

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Notes by the Way.

**Fertilisers.**—Mr. Thomas Macfarlane, *Chief Analyst*, Ottawa, in his report to the Com. of Inland Revenue, dated August 2nd, 1894, "regrets to state that out of the 83 samples of fertilisers collected, 29 were found of which no standard samples had been submitted to the Department by the manufacturer or vendor." We sincerely hope that this increasing unauthorised sale of unregistered fertilisers which is now taking place within the Dominion will be arrested by the government authorities. To allow it to go on is not only an injury to the farmer but is unfair to the manufacturer who complies with the law.

**Cider.**—At p. 000 of this number will be found a sketch of the most improved methods of making cider as practised by our Gloucestershire farmers. The resulting beverage is as *dry* as *Amontillado*, and will keep for any reasonable time. Most of our tenants can show cider five years old, and it is always drunk from the wool. We hope the good Fathers at Oka will succeed in their endeavours to promote the use of cider in this province: anything to stop the consumption of that abominably adulterated whisky must do good.

**English crops.**—"Harvest, a most enormously bulky one; all crops magnificent, but the heavy rains of July and August laid the grain flat, and the wheat and barley never recovered, so the quality of these two cereals is not fine. In Canterbury market, barley, of malting kinds, is worth 34s; and wheat 19s; a quarter!" (In 1853, we remember selling wheat for 84s; a quarter and barley at 44s) Hops very fine indeed, but price, naturally, low. Cherries a large crop, and pease abundant, but *no apples* to speak of. Potatoes a heavy crop; but the disease set in early. In this parish (*Preston, East-Kent*), though there is plenty of talk of depression and so forth, there is very little outward sign of it. The land is some of the finest in the county; all the farms are let; and every labourer employed—wages 2s 4d a day; not only now but all through last winter."

The above is an extract from a letter from the Editor's brother, some time Bishop of Dunedin, but now vicar of Preston near Dover, Kent: he knows what he is talking about.

**Thermometers.**—As most of our readers know, the thermomotor generally used in this country is Fahrenheit's. All thermometers are made on the same plan: a simple glass tube, air exhausted, and hermetically sealed; it is only in their notation that they differ. The scale of the *centigrade*, used in Europe, is, as its name imports, divided into 100 parts, starting from zero, the melting point of ice, up to 100°, the boiling point of water. Fahrenheit's melting point of ice is 32°, and the boiling-water point, 212°. The conversion of these scales is simple. Suppose we have 20° centigrade to be converted into Fahrenheit's notation; multiply by  $\frac{9}{5}$  and add 32:

$$20^{\circ} \times \frac{9}{5} + 32^{\circ} = 36 + 32 = 68^{\circ} \text{ F.}$$

$$\text{And contrariwise: } \frac{36}{9} \times \frac{5}{5} - 32 = 20^{\circ} \text{ C.}$$

Réaumur's instrument is so seldom used that it is not necessary to dilate on it.

Do not buy cheap thermometers; many of them vary by as much as 5 or 6 degrees and are useless, even for dairy-purposes.

It is a pity that the temperatures given daily by some of the Montreal papers are so carelessly noted.

**Butter.**—The appearance of butter is almost as important as its taste. Shape, colour, and texture all are to be studied if we wish to succeed in the English market as well with our butter as we have done with our cheese. The best way of testing butter, as regards texture, is to take a brick-shaped piece and cut it one-half through with a smooth damp knife, and break the other half. If properly made, the cut half will be smooth in appearance, showing no holes, and very little moisture exuding from the cut surface. The broken half should be similar to a broken bar of cast iron, granular in appearance, and not drawing or dragging out, but snapping off into two halves. In order to obtain this result, the butter-worker must be properly used. If the grains of butter are too fine when they leave the churn, they will hold a quantity of water, which cannot be got out on the worker without destroying the grain, and therefore the finished butter must have one of two faults: either there must be too much moisture in it, or the grain must have been destroyed in getting the moisture out. Therefore, collect the grains while washing in the churn so that they shall be of a moderate size when put on the worker.

**Dorset-horns.**—"Lindenbank," who writes for the Montreal Witness, "sees no special merit in Dorset-horns." Well, if early lambs are wanted here, as they are, and a good price is paid for them too, there is no breed that will furnish them like the Dorsets; moreover, the ewes, after the lambs are weaned, fatten very rapidly and yield a carcase weighing from 96 lbs. to 104 lbs. of excellent mutton. We kept them on the home-farm in Kent for many years and found them very profitable. As for their being "dog-proof," that is as it may be; but we should doubt it very much.

**Hampshire-downs.**—At the Toronto Exhibition, Mr. John Kelly showed six Hampshire-downs from his farm at Shakespeare, Ont. As his were the

only sheep of this breed exhibited, of course he took all the prizes. From what we have seen of his stock at the Montreal shows, we should not hesitate in recommending those intending to invest in this kind of sheep to visit Mr Kelly's flock.

**Oats for hogs.**—Mr. George Moore, who has just returned from a tour in the neighbourhood of Ottawa, tells us that, at the Experiment-farm, they were carrying on investigations in the fattening of hogs on differently combined rations, but in none of them were oats used. The Wisconsin Experiment Station recommends a small portion of oats, where pease cannot be grown, for the sake of the nitrogenous matter in the oats, but pease grow and yield so well in the province of Quebec that there is no need to substitute any other nitrogenous food for them here. One U. S. station recommends sowing pease, and, when they are in pod, turning hogs loose into them! Well may the "Farmer's Advocate" say: Agricultural experimental work in America, is according to Old World authorities, lacking in scientific guidance. Experimentalists make a very grave mistake in publishing bulletins, &c., merely to make a show that they have done something. A great deal of the work is done by raw subordinates, and many of the bulletins published evince crudity.

We say: rear your pig on oats, clover, boiled potatoes, corn, tares or vetches, wash, any or all of these things; but fatten them for bacon with pease for the only addition to the dairy-refuse during the last month.

**Green-manuring.**—"It is a mistake to plough into the soil for manure a pound of vegetable albuminoids that can be used for making milk or meat" "so says the leading agricultural report of Saxony, and as clover vetches &c., all the legumes in fact, contain large supplies of "vegetable albuminoids," it follows that to plough in clover, vetches, &c., is a mistake; about which we never had any doubt, but are glad to have our opinion fortified by such an authority as the *Ztschr. Landw. Cent. ver Sachsen*, which continues thus: Let us then take advantage of these recent discoveries in agricultural science, not to "manure the land with atmospheric nitrogen" but to produce and to utilise to the fullest extent the nitrogenous and carbonaceous materials derived from the atmosphere by feeding them to the animals of our farms.

**Tamworth hogs.**—There were 76 entries of Tamworths at the Toronto show, to 9 at the show of 1892. They are certainly creeping up in favour. Whether they will retain their popularity as the ideal pork- or rather bacon-making hog, is another thing, and depends upon whether they can be raised as cheaply as pigs of a different style of build. At any rate, they are not an early maturing breed.

**Turn-wrest plough.**—M. Joseph Beaubien tells me that the whole of his farm at Outremont is now ploughed with a *turn-wrest* plough that lays all the furrows in the same direction, doing away entirely with the need of open furrows and water-furrows. His land is of course well drained. This was the old style of ploughing in the S. E. counties of England, and probably is still practised in many parts of that district. In 1842, or thereabouts, there was an irruption of Scotch bai-



porceptibly affected by so trifling a quantity. It had just the same effect as *Chambertin* or *Clos Vougeot* has upon a brain not accustomed to those Burgundy wines. So much for the ciders we are personally acquainted with; we do not speak of the Herefordshire, the Normandy, or the German ciders, for we never tasted them.

**Planting.**—The apple-trees in an orchard should be set so wide apart and so pruned that the air and sunshine can obtain free admittance into all parts of them in order to thoroughly ripen the wood. Before leaving the nursery they will of course have been grafted with scions of the best sorts, according to the soil. The stems should be dressed with a mixture of cow dung, lime, coal-oil, and Paris-green, while the washing of the head with the mixtures already described in the *Journal*, will destroy lichens and insect pest, and encourage a healthy growth of wood. Cleanse the trees from all loose bark and moss, which afford shelter to vermin, but do not injure the sound bark. Let pigs and poultry frequent the orchard, taking care to ring the former and see that the rings if displaced be replaced.

In gathering the fruit, do not let clumsy lads in hob-nailed boots climb into the tops of the trees, breaking off the young shoots and damaging the bark, but use what we used to call "harvesting blankets." These are made of stout bed-ticking, and are placed round each tree by means of a slit extending from centre to edge, and then bound with strings: stakes or each corner supporting the blanket. Every branch of the tree should be then shaken and the fruit being caught in the blanket will be free from bruises.

When the apples are all down, they should be kept for some time to mellow before crushing. Generally, they are laid in small heaps on the ground, but a far better plan is to lay them on hurdles made of any flexible wood, what our French friends call *des harts*, Anglicised withes; a little straw laid on the hurdles will do no harm if the rain is kept off by some protection. If the apples are left on the ground, insects, of all sorts, affect them. The advantage of the hurdles is that they allow of a free circulation of air through the pile of fruit.

In a previous article on this subject, we explained the necessity of leaving the apples intended for cider-making in heaps to mellow: i. e., to ensure the conversion of the greatest possible amount of the starch, &c., into sugar. The test by which this conversion is ascertained is a very practical one, and may verily and indeed be termed "the rule of thumb": push the thumb into the fruit, and when it will go in easily the apples are ready for grinding.

The best mills for grinding apples are made in Germany; but very useful ones can be found in the States; some made by Messrs. Boechert & Co. do their work very well indeed.

In preparing for the pressing operation, some use straw to keep the cheese together, apples and straw in alternate layers; but the most careful makers we have met with use horse-hair bags. The modern press is made in the form of a cylinder, with a weight that presses the juice through the cloth. The cloths, unless carefully cleaned after every operation, retain part of the pomace, which necessarily decays and infects the cider, whether owing to that frightful scourge the bacteria or not we cannot say. This horrible invention of scientific research must be kept out at any cost, hence the absolute necessity of

perfect cleanliness in all things connected with cider-making.

Speaking of making the finest quality of cider, Mr. Harper, a large producer, said, in a lecture delivered before the Gloucestershire County Council, last month, that:

"Then came the points which he thought all wanted to be dealt with. The first was as to what kind of cider they wanted to make? If they wanted to make good cider they would put it into a cask until it became dry and clear, when it would become much purer and better than by the old method. It was much better in the cask and fermented much quicker. Cleanliness was the greatest essential with all cider makers. Anything good, pure, and fit for human food could not be produced unless kept scrupulously clean. There was a general impression that cider was made where cleanliness was not observed, and he urged upon them the necessity of absolute cleanliness if they wanted to produce good cider. As to filtering the juice, the German filter press was used all over the world, and it greatly refined the cider passing through it. The filter took out the thick residual matter which often prevented the finest cider being made, while it also got rid of the germs which produced the bad ferments. The great point in filtering was to do it quickly and with the least possible exposure to air. The filtering presses which he mentioned were made of cotton wool fibre, and were used for refining purposes, which gave out a clear juice. He used one of these presses at his own manufactory at Ebley with the best possible results, but he was afraid that its price would keep a good many farmers from adopting it. He might say, however, that in many places a good many farmers purchased these presses and let them out to others. These filters were a great boon to English makers of cider, for they took out all the germs of fermentation. The cider came out clear and bright. The liquor may be pumped from the cask in which it is stored through the filter into other casks without in any way whatever allowing it to come in contact with the air. It was impossible for the cider to take up any lactic-acid germs, or other ferments floating about in the atmosphere where the filter is used, while the cider is not flattened or deteriorated in any way. The cider also commands the best prices in the English market. Slow filtering and exposure to the air were the main causes of dark cider, the controlling of the fermentation giving the maker the power of having either sweet or dry cider, the sweet cider having more sugar and less alcohol than the dry. A large percentage of cider drinkers required to have cider sweet, and if they could produce such cider, the more ready would be the sale. The sweeter the cider the better would be the demand, and better prices would be realised, because it suited the taste of the general public, for there was cider and cider. He would not recommend sulphurising casks, and although that operation had been in use for many years it had now been discarded. Cider made by the use of the filter could be made with less than 2½ per cent. of alcohol. Filtering took the place of sulphurising, the latter method being a very objectionable one as it gave a nauseous taste. He also pointed out the mode of racking cider, and concluded by saying that something must be done to improve the quality of cider, if cider making was to regain its hold upon the public. If they wanted to supply it in their own im-

mediate districts they would have to improve it so as to meet the outside requirements, and if they did not do that some one else would. It would be to their advantage to make those goods which would command the best prices. Cider with a low alcoholic strength is one of the best drinks that could be taken into the system, and there was a very ready sale for cider of this description. If farmers would only make cider of this kind he (Mr. Harper) believed there was a great future before them. It would increase in value in the district, and it would improve the moral tone."

(To be continued.)

**A British vineyard.**—Strange to say, the Marquis of Bute, who has a large extent of land in Glamorgan-shire, S. Wales, has planted an extensive vineyard at Castle Coch, (1) near Cardiff. Last year a thousand dozens of wine were made there, and, we hear (though we do not at all believe it) the estimated value of the whole was \$15,000!!!

**The Dairy-school.**—The St-Hyacintho dairy-school will open on the 15th November for the regular course of instruction. All members of the Dairymen's Association of the province have a right to free entrance. There will be nine series of regular courses, specially for makers or people who have already had some experience in manufacturing. In each regular course the teaching will include practical work on the making of both butter and cheese and practical work in milk testing. There will be twelve lectures a day of an hour each and each lecture will be followed by a discussion of an hour on the subject of the lecture and of the practical work of the day. The number of pupils for each course is strictly limited to 30, and the fourth series is especially reserved to practical makers of not less than three years' experience.

From and after the 22nd of April there will be inaugurated one or more series of preparatory courses, intended for young men who intend to become apprentices next season in butter- and cheese-factories. These young men, after having worked in a factory during the summer, may come back the following winter to complete their course at the school. Makers unable to attend a regular course will on demand be admitted to an open shorter course which will take place on and after the 22nd of April, until the opening of the factory season.

Very bad poetry but very good sense, is the following, extracted from the columns of one of our contemporaries:

#### ROOT, HOG, OR DIE.

RHYME AND REASON

The hard road the hog had to travel in the past, and his soft snap in the future:—

Heretofore it has been the cry  
That the hog must root or die,  
And he was forced to whet his tusks  
On hardest, driest kind of husks.

He was worse treated than a dog,  
And vilest man was called a hog;  
But now prolific breeding sow  
Ranks as high as the best milk cow.

Light land is the best for clover,  
And when, with plough, 'tis turned over,  
Its coarse roots make the best manure,  
And good crop of grain doth insure.

(1) We know Cattle Coch well. The meaning of Coch in English is red; wherefore, when the the Welsh peasantry wished to distinguish between the editor and his numerous brothers, they always spoke of him as the *Pen coch*, i. e., the Red-head. Ed.

A clover-field sown for swine,  
If the farmer will pry fine,  
But to get best recompense,  
He must have a movable fence.

So'er whole field they cannot roam,  
But can eat in their allotted home;  
And when first spot is eaten bare,  
They should be removed elsewhere.

Until they have eaten over  
The whole field of green clover;  
Then they begin on the second crop,  
Where first they did crunch their chop

And thus to them doth joys sweeten,  
Till the whole field is re-eaten;  
But their troughs must be filled each day,  
With chopped grain, salt, slops and whey.

Change of feed promotes their health,  
And doth increase their owner's wealth;  
And the next year hog-trodden field,  
A fine crop of grain will yield.

JAMES MCINTYRE.

Ingersoll, Sept. 24.

**Feeding fat into milk.**—The following extract from *Hoard's Dairyman*, seems to us to settle the oft disputed question: can food alter the percentage of butter-fat in milk? We have never in any manner traversed the position that "a cow has a capacity beyond which she cannot go." What we have always held as an incontrovertible fact is; that poor food makes poor milk, and rich food makes rich milk; in other words, that if a cow is fed on wheat-straw, mangels and brewers' grains, she will give milk poor in butter-fat, but that the same cow, fed on good meadow-hay, crushed flax-seed, and pease-meal, will give milk rich in butter-fat.

We are glad to see that so practical an authority as Mr. Hoard takes the side of the innumerable body of British farmers who hold that "Fat can be fed into milk."

#### THE MAXIMUM LIMIT IN A COW.

In the report of the Pennsylvania Guernsey Breeder's meeting, which appears in another column, we read that Mr. J. C. Higgins read a report from the Iowa Experiment Station of a test of feeding for fat in the milk which, the report says, "Showed conclusively that feed does affect the fat in dairy cows, as opposed to the theory that a cow has a capacity beyond which she cannot go."

We do not understand that the Iowa report traversed in any way the theory of a born limitation of capacity in cows. If we understand the doctrine of that theory, it makes no claim that feed does not affect the fat deposition in milk. What it claims is that every cow is born with a certain maximum limit of proportion of fat in the milk, beyond which no amount of feeding will take her. But that does not say that she may not be handled and fed so as to keep her milk down to the minimum proportion, or per centage of fat, nearly all the time. Suppose the theory to be true. A cow is born say with a maximum limit of 6 0/10 of fat. At times she may give milk which has only 4½ 0/10 of fat. Some man gets hold of her, treats her kindly, houses and feeds her well—in other words, does all he can by feed and treatment to stimulate her to her full limit of fat percentage in production. Under the stimulus of such treatment she mounts up to 6 0/10 of fat. But does she exceed it? We believe not. We are inclined to think that feed may affect the fat per cent of milk, but always subject to the born, or normal, limitations of the cow herself. We also believe that but few cows are so fed and handled as to be kept up to their maximum limit of proportion in fat content. Therefore, it follows, that it is to every man's

interest to find out for himself just what that maximum limit is in each cow in his herd. Whatever the maximum, he may be sure that she will not exceed it, but she may go along giving much below in fat proportion to that maximum. Now, that difference in maximum limit constitutes the difference in breeds and the difference in individual cows in the same breed. It is the *individuality* mark of cows. Therefore, it is fair to say that the cow will respond to good feed and wise treatment, but *only so far as her maximum limit will allow*. If this were not so, we could take any cow no matter how poor, and by feed make her milk as rich as the richest. This we know cannot be done. Therefore it is always best to breed from the cow that has the highest maximum limit of fat, in order that she may give to her daughter all the talent she herself inherits and furnish also a stimulating heredity for the potency of the sire. It is more important to consider this in breeding than the question of mere quantity, for we can much easier influence quantity by feeding than we can quality.

#### Two Letters from M. G. A. Gigault.

London, July 23rd, 1894.

TO THE HON. LOUIS BEAUBIEN,  
Commissioner of Agriculture,  
Quebec.

Until there are refrigerators on board our steamboats, the development of our butter-trade will be difficult. If we hope to sell our butter in England, we must deliver it there in a fresh state. According to M. Leclair, we can make as good butter as the Irish can, their reaches this market in square boxes, wrapped in parchment paper, without brine. When at Dublin, we visited the Dairy-school, and had a long chat with the professor of agriculture and dairying, who stated that butter, properly made, will keep fresh with very little salt. They were making butter when we arrived. The school is well arranged, and very much in advance of ours. There are 40 pupils. A chemist is making lactic ferments, which are now used on a great scale in Denmark for the production of the finest quality of butter, and from which he says he has obtained satisfactory results. M. Leclair will make a special study of these ferments, which are of the greatest utility, especially in butter making from *Pasteurised* milk. This process of pasteurisation is useful in ridding milk of any bad smells that may affect it, and may be found advantageous in the making of butter in winter.

Canada bacon is in high favour, but our pork men ought to vary their cuts more. In Ireland, I gathered some hints on the mode of feeding bacon-hogs. They get cabbage, cut up, mixed with meal, and scalded; milk is added when the mixture is cool. Very little grain, but boiled vegetables and potatoes, if they are cheap. This seems cheap food enough. Salt-pork seems to be quite out of fashion here; so, if we wish to develop our trade in pork-products, we must make *bacon*. At Limerick, the farmers were getting 44 shillings the 112 lbs. for their hogs, equal to about 9 cts. a pound. I saw there some fine lengthy hogs, half-bred Chester-whites, that had been fattened on cabbage, milk, and a little meal, as I described above.

As for our apples, they are well liked. The English apple-crop is but trifling this year, and ours will fetch a good price. *Fameuses* are not in request, but the apples we are advised to send are such as will not get bruised

in transit; and will stand tight packing in the barrels. If they reach here loose, or *slack* as it is called, they fetch but a low price. Almost all fruit is sold here by auction, at one of which I was present for a short time. A small lot of apples was offered for sale thus: one barrel was taken at random, emptied into a large basket, and the biddings were made after that sample. In each barrel, all the apples ought to be of the same size; the smaller ones should be separate from the larger ones.

Mr. McGeorge, of Liverpool, who has sold a great many of our Canada apples, advises our farmers to sell their fruit to merchants, like Messrs. Hart and Tuck, of Montreal, who thoroughly understand the art of packing. Mr. McGeorge showed me the note of a sale of apples last year, there were in it *fameuses*, with the word "slack" opposite the name, this was enough to considerably lower the price they were worth.

If you want to sell goods to the English, you must not try to deceive them.

I made the acquaintance of Mr. Banks, of Liverpool, who has sold some of our turkeys; they will sell wholesale at 12 cents a pound. He told me how to dress them. The entrails and feathers are to be left on them; they should be killed by cutting the throats - or by the knife being run into the upper part of the mouth - (*saignés par le bec*); the head, after being washed with a solution of borax, is to be tied to the back, and they should be cooled off before packing. Turkeys should reach Liverpool before the 18th December, and the heavier they are the more are they worth a pound. All our goods must be prepared so as to have a dainty appearance. The heads of the birds should be wrapped in paper. All these niceties of details are, according to Mr. Banks, of great importance.

This week I leave for Denmark.

Yesterday, July 24th, I visited the celebrated Experiment-farm at Rothamsted.

Sir Henry Gilbert, M. D., gave up to me three hours of his valuable time. He related the results of the experiments made on the fattening of pigs. They prove in a conclusive fashion that the carbohydrates contribute to the formation of fat. Sir Henry says that there can be not the slightest doubt on this subject, in which conclusion Dr. Frazer concurs.

Canada poultry command good prices on the London market, but here, as at Liverpool they must retain their feathers and entrails. (1) The boxes should not contain more than two layers of fowls.

Plenty of French butter is sold here. It is almost free from salt.

(Signed) G. A. GIGAULT.

#### Second Letter.

Canadian cheese.—Dairy-school—  
Butter.—Poultry.—Hay.

Copenhagen, July, 28th, 1894.

TO THE HON. LOUIS BEAUBIEN,  
Commissioner of Agriculture,  
Quebec.

When in London, we received some information that seemed to us very important. There is a vast amount of prejudice entertained there against the

(1) Monsieur Gigault, since receiving the above information, has had letters from other dealers stating that the entrails must be drawn.

cheese from our province. We met with a dealer who refused to buy any of it, because, in his opinion, a great deal too much of it is of inferior quality. At Mr. Rowson's, an importer of Canadian cheese, we found both Belleville and Quebec province cheeses; we tasted both, and the Belleville cheese was certainly better than ours; for ours had a rancid flavour that greatly injured its sale. Mr. Rowson sees no reason why we should not make as good cheese as the Belleville folk make.

At Mr. Anderson's, another cheese-importer, we found that our cheese is not included under the head of "Canadian cheese," but is designated as "Joseph" or "St Joseph" cheese.

I saw a telegram, offering 46s. 6d. for "Canadian," and 45s. for "Joseph," if you can recommend the quality. Another telegram, also, spoke of "Joseph," and of "Canadian." It may be that the dealers pass off all our best cheese as "Canadian," giving the epithet of "Joseph" to inferior qualities.

Our cheese is not liked because it is not as soft in flavour as the Belleville make, is too moist, and not prepared with that regard to look that the London market demands. The English consumer buys an article that pleases the eye and satisfies the taste: this is strictly the rule, and, if success is aimed at, must be attended to.

Another point, of equal importance is the different mode of preparing the same article for different markets; for, at Liverpool, no complaints or remarks like those we have quoted were made by any dealers.

Continuing our account of interviews with the London dealers, I have to say that certain brands from our province, highly approved of up to date, are losing a good deal of their good reputations on account of the inferior quality of some of the cheeses. Each lot of cheese must be uniform, perfectly uniform. On this subject, we had to listen to some remarks that were truly humiliating; and we came to the conclusion that all those inferior makers or unscrupulous dealers ought to be liable to a heavy fine, if such a thing be practicable.

You were a hundred times right in founding a dairy-school to be kept open both winter and summer, to replace those inferior workmen who declare on arriving at the school (if they do attend it) that they have nothing to learn in the art of cheese-making. The organisation, too, of the syndicates, and especially the choice of inspectors, cannot be too carefully watched.

Nova-Scotia and the Northern States export a great deal of very superior cheese: the northern New-England States, too, are improving the quality of theirs, and will soon be competitor to be feared.

And now for a little consolation to brighten this rather dark picture: the dealers are unanimous in acknowledging that during the last few years we have made much improvement, and they seem to see that we may maintain our position on the market, nay, that it is even possible that we may improve it, if we neglect no means to do so.

As to butter, every one appears to think that for the development of that trade, we must: 1. Alter and improve our method of making it; 2. Have refrigerating storage on our steamboats; 3. Send our butter fresh, and devise means of exporting it in winter as well as in summer.

The London market requires *fresh* butter; the French send theirs perfectly fresh, without the slightest addition of salt. Dealers recommend us to pack our butter in boxes of 56 lbs.

each, as the Irish do, and to brand them "Puro buttor."

Our apples are in favour on the London market. Mr. Taylor, an auctioneer, who has sold much of our fruit, knows our famous ones, and thinks that they might be exported and sold at good prices in London. On account of their tenderness, they should be packed in shallow boxes, which should be enclosed in a larger one. He showed me tomatoes, just arrived from Spain, that were packed in that way, and were in perfect condition.

Turkeys, for the Liverpool trade, should reach that port by the 18th December, as I said before; but, for London, they should be sold in November, or in January and February, as the Xmas market there is always overstocked. We are advised not to send them to London alone, but to all the great towns of England. Not more than two layers of poultry, one above the other, should be put into the same box.

Hay, for London, should be baled with wooden bands: almost all hay here is cut into chaff, and accidents have occurred from the wire bands on some bales.

As at Liverpool, so in London, Canada bacon is highly approved of. I met Mr. Barnes, who has a bacon factory at London, Ont.; he says he is ready to establish one in our province, if we will engage to furnish him with the sort of hogs he wants. He gave us some very useful information as to the best breed of pigs to rear, and the best way to feed them.

We have, without doubts, something to learn from the practice in Denmark as to the exhibitions of dairy products, if we wish to make them useful. The government of that country has established competitions of dairy goods; it buys the goods sent, has them examined on their arrival, and again after they have been kept a fortnight. At that period, it is an easy matter to judge of their keeping qualities.

(Signed) G. A. GIGAULT,  
Asst. Com. of Agriculture  
and Colonisation.

### Poultry-Yard.

Eggs in Winter—How to get them—  
Some egg making rations—The  
three factors in winter laying—  
A boy's first attempt—Miscellaneous.

A. G. GILBERT.

In a previous letter I promised to give particulars as to the growth and development of certain crosses made at the Experimental farm during the past season. The crosses were made with an Indian Game Cockerel and Light Brahma and Coloured Dorking hens and the object was to get a large, early maturing market chicken. It was my intention to have taken up the subject on the present occasion, but it occurred to me, that a more important topic to our farmers at this time would be the proper ways and means whereby they may secure eggs from their hens during the rapidly approaching winter. It may be like going over old ground to urge upon our farmers the getting of eggs from their hens when the product is of most value, but the matter is of such importance that repetition is pardonable. In a bulletin on "Poultry and eggs" recently issued by the Department [and which bulletin every farmer

should made application for] the writer makes the following remarks which size up the situation so correctly that I give them here as follows: "He would be considered a poor business man who should hold his stock until it was of least value and then begin to sell it. Yet it is something similar that our farmers are doing with their poultry. During winter their laying stock have remained non-productive very likely at actual loss. With the arrival of warm spring weather everybody's hens begin to lay and prices go down to their lowest value. It is at this time that the hens of the farmers begin production." Let me ask the farmers if the quotation does not correctly describe a state of affairs that should certainly not exist. The consideration then of the subject should be of interest to all concerned.

#### BEGIN WORK NOW.

The first duty of the poultry keeper, be he farmer or fancier, who intends to make his hens revenue producers during the coming winter is to see that his laying stock are well over their moult and that they are not over two years of age. His old hens viz:—those over two and a half years should,—as soon as their moult will permit,—be fattened and sold. Indeed, this should have been done before their moulting commenced. By generous feeding and a good run his layers will have all moulted or very nearly so by this time. His yearling hens will have been the first to commence and to get over their moult. Hence the advantage of young stock.

His next duty should be to see that the premises in which his laying stocks are to be housed are in good order. If this necessary work has not been already done it should be seen to at once. It must be remembered that where the laying stock are kept in cold quarters that the food instead of going into eggs is drawn upon to keep up the animal heat. What is the correct temperature? Above 40°, or warm enough to keep the drink water from freezing. Having got his laying stock of the proper age in comfortable quarters, the next consideration is the best and cheapest egg-producing rations. It may be mentioned here that while the layers have been well fed and looked after, care should be taken that the Brahmas, Plymouth Rocks and Wyandottes do not go into winter quarters too fat. If they do, the superfluous fat will have to be worked off before good laying can result.

#### RATIONS FOR EGG PRODUCTION.

The three great factors in winter laying are cut green bones, green food, and exercise, and a fourth might be added in the shape of comfortable quarters.

Cut green bones are valuable because they contain phosphate of lime for the shell as well as other valuable egg forming constituents. It should be fed night or morning in the proportion of one pound to every 15 or 16 hens. When fed in the morning a light feed of oats may be given at noon, if the hens are laying well. The layers should all be sent to roost with a cropfull of wheat or buckwheat to keep them over the long night-fast.

A warm mash might be fed in the morning composed of ground wheat, ground oats, bran and a little cornmeal with the table and kitchen waste mixed in. The addition of a couple of handfuls of every fine gravel, or coarse sand will do no harm. Of this mash enough should be fed to satisfy:

not gorge. A light feed of oats at noon; cut green bones as last feed, with oats or other grain to fill up the crops, will make a good egg ration. Meanwhile, the hens should be kept in constant activity, if possible, by scattering their grain food in out straw, cut hay, chaff, dry leaves, or sand and coal ashes mixed, which should be on the floor of the house in one shape, or other.

It need not follow that because a variety of ration constituents are mentioned that the hens are to be constantly fed. On the contrary, overfeeding is to be avoided. What should be aimed at is to have variety at as little cost as possible. With some farmers it may be cheapest to boil turnips, or small potatoes, to mix up with wheat bran and cut clover hay. The latter is generally plentiful on every farm, and a quantity should be cut and dried in summer for winter use. When used in winter it should be cut up in half inch lengths, steamed or soaked in boiling water and mixed in the morning mash, or fed alone if the hens will eat it.

Lime, gravel, and water—the latter fresh and pure, and with the chill taken off in cold weather—must of course be supplied.

#### WHAT A MONTREAL BOY DID.

I had a letter from a boy in Montreal and I quote the following from his communication, for I think what a boy can do a farmer can also achieve and at less expense. He says: "Last winter I had ten common hens, which I had in a little compartment, or box if you like, 6 x 4 x 5, and they laid 240 eggs during January, February and March. I sold the eggs at 60 cts per dozen, and after paying expenses of feed, which I bought at highest price, I cleared seven dollars, which I think was very good with 6 x 4 floor space. My box was lined with 15 inches of sawdust and it was covered on the top with the same. My hens had to scratch for a living. I am going to build a new house." The result would no doubt have been better had he had cheaper way of getting his feed, but the boy is on the right track, and his first experience will lead to better results.

As I have said before I shall be happy to furnish any further information, as to winter laying, housing of laying stock, or rations, that your readers may desire, by either writing to me, or asking through the medium of your columns.

#### GENERAL INFORMATION.

##### HOW TO SET A HEN.

Make a comfortable nest on floor or ground.

Place the sitter where other stock cannot annoy her.

Dust the sitter and nest with lice-destroying powder.

Put three or four imitation eggs in nest.

Allow hen to sit on these eggs for two days.

Then give her the valuable eggs.

Give a small hen nine eggs in spring.

A large hen may have eleven eggs, later in season thirteen. If possible choose a light sitter to put on early eggs. (1)

##### TREATMENT OF A SITTING HEN.

Have food, drink and dust bath convenient.

(1) Twice we have had 16 chickens hatched out of 16 eggs under one hen!—Ed.

In cold weather see that the sitter is not off nest more than seven to nine minutes.

In early spring Indian corn is the best food, as the crop can be quickly filled with it.

Do not disturb the sitter, particularly when the chicks are hatching out.

Choose hens that have proved reliable sitters and good mothers.

Should an egg be broken in nest, gently wash remaining ones in lukewarm water and return to nest.

#### TREATMENT OF CHICKENS.

After hatching leave them in the nest for twenty-four hours.

Take hen apart and feed her well and give water to drink, or she will eat all the chicken food.

On coming out of nest feed chicks on bread soaked in milk and squeezed dry, or give dry bread crumbs.

After a few days give chicks all they can eat, and as often as they will eat, of bread and milk, or bread crumbs.

After second day give milk or water in shallow pans for drink.

Be careful the chicks are not stinted of food or they will become stunted.

If chicks appear sick or drooping look for lice. Dust with insect powder carefully.

After two weeks feed wheat sparingly at first, afterwards all they can eat, particularly at night. Vary with crushed corn.

Remember that a chick stunted in first five weeks of its life will never make a plump fowl.

If the hen and chicks are placed in small coops the latter should be cleaned every day, or second day. As the early chicks grow large they should be removed from the younger ones, or the latter will be crowded and make no progress.

#### POINTS TO REMEMBER.

Bronze turkeys are the largest.

Pekin ducks are the best layers of their class.

Select your best laying hens for the winter pens.

See that the layers are regularly supplied with bone, oyster shells and grit.

Kill off the non-layers or they will eat the profit of others.

Get out as many chickens as possible in time for the early grass.

With care the Spanish family will be found excellent winter layers.

Cut green bones, green stuff, and exercise are the three great factors in winter laying.

Keep the layers, if possible, in a temperature where the drink, water will not freeze.

With proper care the cockerels should be fit for market in three or four months; and the pullets become layers in five or six months.

The laying stock should be supplied in winter with all the material necessary for making eggs.

Where the water is kept from freezing, it is of special advantage to the hens with large combs.

In cold poultry houses the food instead of going into eggs goes to keep up the animal heat.

Fowls divided into small colonies lay more eggs than when crowded together.

Keep no layer over two years, for it then moults so late that all future profit is eaten up before it commences laying.

Intelligent and systematic management is as necessary in the poultry department as in every other line of business.

From the Ex-farm bulletin.

## Household-Matters.

A talk about pease and beans.—I wish every body could be made to feel the true value of pease, as an article of consumption in the house. It must be prejudice, that keeps people from using them more freely. Their strength-giving power is well-known, as witness, up in our lumber camps pease-soup and baked beans form the chief part of the men's diet; and why? because they like them, and their work being very hard they find them nourishing and from them they receive a sustaining power for their work. Fancy men starting off on a cold morning, well primed with a good breakfast of pork and beans, returning to dine off pease-soup; and I have heard few cooks come up to the idea of a real shanty dish of pork and beans, or soup for that matter. Nobody can deny but that they are a hardy set of men, who must be well fed to endure the cold and keep up their strength for the work. I have been told, that nothing has yet been found to take the place of the pease and beans, with a beautiful supply of good pork. Now that cultivation is getting nearer the lumber camps they get a good supply of fresh meat and vegetables, but I have never heard of their giving up their staple dishes of pease and beans. I hope no further plea is needed than to decide on the nicest way of preparing them.

Good pease, one must have to make good food; they must be clean, and of a good colour, no green ones. It is labour for nothing to cook bad pease. Good ones, after soaking all night, will soon throw off their skins after a little boiling. I believe they are like potatoes, better grown on sandy soil.

How to make good soup.—One quart of pease soaked all night and looked over in the morning to throw out any bad ones. Put on to boil in plenty of water, and if they are good they will soon throw up their skins, which must be skimmed off as they come to the surface, putting on the pot-cover every time after skimming, to let the skins break and come up quite free from the pease. After doing this 3 or 4 times cut up a good bit of pork into small pieces, a couple of large onions sliced, a generous bunch of parsley, tied up so as to be taken out if you do not like it in the soup, celery salt if you have no celery handy, a little pepper, no salt, as you have plenty in the pork and soak them if there is any danger of its being too salt. Your soup can now be safely left to cook, giving it a good stirring now and then to keep it from burning, or add a little water if it is needed. The soup should be about the consistency of cream when finished, and a good biscuit colour. Very good soup is made with butter or a cold roast meat bone, if you have no pork.

Pease-pudding.—To be eaten with boiled pork and cabbage: 3 cups full of split pease tied up loosely in a cloth and boiled till quite tender. Turn into a cullender and pass them through it free from water. A little pepper and salt, and one egg to bind it firm, tie up in the cloth, quite tight this time, and boil for half an hour, turn out and serve up whole. It should be cut in slices or carved with a spoon, and makes a nice addition to the dinner.

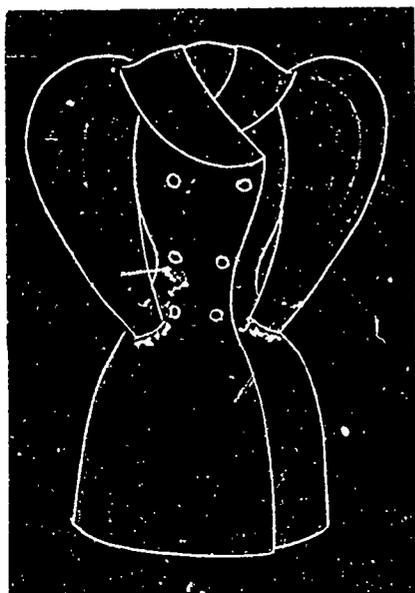
Jelly-Cake.—Two cups and a half of sugar; one cup of butter; one and half

cups of milk; four cups of flour, four eggs; four teaspoons of B. powder. Sugar and butter to be beaten up eggs, and the rest added a little at a time.

**Useful Hints.**—Close the oven door as gently as possible, when baking, as heavy cake, or bread, is often the result of shutting it with a bang, instead of doing it very carefully, with the feeling, that you wish to take every precaution against spoiling that which has given you time and labour, to make.

**Quince Jelly.**—Wash and wipe the fruit carefully, there is no occasion oven to core them, cut up in pieces, and boil till quite tender, using just enough water to cover the whole. Drain first through a cheese-cloth bag, and then through white flannel, using no pressure. Boil for about 20 minutes. One pound of sugar, moistened with water and heated up, is to be added to each pint of the liquid, as soon as a film shows on its top. It should, after dissolving, jolly well, and be ready to be put up in jars for use.

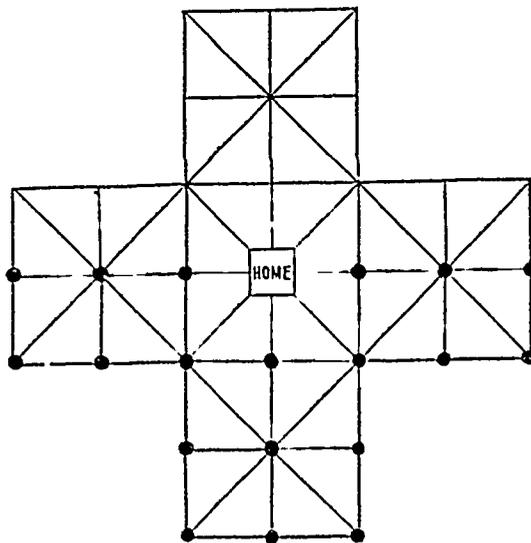
The Jacket shown this month is, next to the Golf Cape, one of the most fashionable garments of the day and it has this advantage: if you have an old jacket with sleeves not quite the present style, you can get a pair of fashionable ones made of a colour to suit. Black ones I have seen on a brown



jacket and they looked very well, but I should have preferred them brown, with a collar of the same, which collar is meant to turn up, and form a good protection in cold weather. If your jacket is not double-breasted, you will have to make it so with some of the same material as the sleeves. Velveteen is not expensive and is quite good enough for an old jacket, and it wears well. Do not forget that the very large buttons form a great part of the style of the jacket. You will notice when the collar is turned down some sort of necktie or filling up must be worn, a bit of crêpon, or anything suitable to the wearer: a square of Nuns'voiling, pink, blue, or red, answers very well. Take two ends of a square, turn in about two inches, turn up about the same once or twice, pin the two ends at the back, to suit the size of the wearers neck, put on your jacket, and with a little pulling out here and there, you will find you have a very pretty filling in for the neck. This, with a nice brooch in the centre, will give just the finishing touch to the whole.

**Fashionable Colours.**—I see that brown, black, green, dark mauve, and wine colours, are to be some of the fashionable colours this winter, and very handsome dresses can be made in any of these with very little trimming.

**The childrens corner.**—Fox and Geese. —By HENRY REEVE.—The geese are 17 in number, and are to be placed on the lower half of the board, as shown by the marked spots; they may be represented by 17 buttons, grains of corn, or whatever is convenient. The fox, which may be a thimble or a large button, is to be placed in the centre of the board, in spot marked "Home." The object of the geese is to "pen" the fox in a corner, or to surround him in such a way that he cannot move; the fox, on the other hand, can jump over any geese that has not another geese behind it for protection,



and take it off the board; and after jumping one, if another is in his way unprotected he can jump it also—and it sometimes happens that as many as 4 or 5 geese are taken off at one move, therefore, the most important thing to be remembered by the player playing with the geese is to keep them together in a solid body, so that no open places are left for the fox to break through and carry off the geese. The fox should endeavor to keep in the centre as much as possible.

**ENSILAGE.**

I see by the press that many farmers do not intend filling their siloes this year. Many complain of losing a larger number of calves, and also of losing quite a few cows more than usual, and of course it is all or nearly all attributed to feeding silage. Of course, silage is like most other things, there is good silage and there is also some bad; now in my opinion, the great and principal reason of bad silage is due to improper filling. Filling a silo is like building a fire; if you fill the silo too quickly before the proper heat generates and starts, it is like piling lots of wood on a fire before it is properly kindled; and the chances are that you put the fire out. In starting to fill the silo, do not put too much in at once; start it to heat and as soon as your heat comes near the top fill in more and continue as soon as this has properly heated, and so on until your silo is full. In this way you will have good silage, the cheapest of all the different kinds of food you can give to cows giving milk. A very good illustration of how much cheaper it is than feeding dry food and plenty of grain was given at the Kelso Creamery of Huntingdon County dur-

ing December and January last. Those who fed silage, and I believe there were only 5 patrons who did not, their cows gave nearly double the quantity of milk daily compared with those that were fed on other feed. Mr. Ironholme, of Montreal West, had some very fine silage this year in May, and was still feeding it to his cows. He is a very large milk dealer in Montreal, he says it is far more profitable than any other food he can get for his cows. He usually milks between 60 and 75 cows all the winter. He started to fill his silo this year at the end of August. He does not believe in getting his corn frozen before filling the silo. I have seen lots of corn that was not yet out the first week of October. The stalk were white and dried up. Corn should be cut before the 15th of Sept. to escape the frost. I hope many will give the siloes a fair chance before condemning them altogether.

**APPLES.**

Since writing my last notes on apples I have it on good authority that the spraying recommended by Mr. Fletcher of the experimental Farm Ottawa has a very beneficial effect in preventing the rust on Fameuse apples. For the past 5 or 6 years, many growers of this well known variety have almost despaired of raising them, and were seriously thinking of cutting their orchard down and replacing them with others varieties not so liable to rust. Mr. Robt. Jack, of Chateaugay Basin, sprayed his trees 3 times last spring, the first time as the buds were formed, the second time when nearly all were in full blossom, and then again as the blossoms had about all fallen off. He will have between 700 and 800 barrels. Of course these will not all be first-class fruit, but the great majority of them are No 1.

I hope and trust that many others will follow his example next year and test the matter fully, and if it is possible to prevent it even if only partially, at least it will put many dollars into the pockets of the fruit growers of the Dominion, many of whom had begun to think that the fameuse apple was like the early rose potato; its usefulness departed.

**FALL PLOUGHING.**

Very little ploughing done so far this fall, the soil has been too dry, but the recent showers will help matters a good deal. In some sections, where the soil is not too heavy, they have begun, but generally speaking clay soil has been too dry and hard. Before this will appear in print, there will be the usual

ploughing matches. The district of Beauharnois is noted for its ploughmen. There are usually about 6 to 8 different contests. There is a report of a match to be held at Ormstown, open to the whole district, and some valuable prizes are to be given.

PETER MACFARLANE.

Chateaugay Oct. 9th 1894.

**MONTREAL HORTICULTURAL SOCIETY**

AND

**Fruit Growers Association of the Province of Quebec.**

By what means can the love of horticulture be best encouraged, especially amongst our young folks?

It would be difficult to find a child who does not love flowers; but how to foster and cultivate that inherent love so that it will take the form of a hobby, that in his maturer years; when other pleasures may be strewn along his path he will still cling to, and continue to love and occupy himself in it to his own and others happiness and advantages in many ways; being a real health-giving as well as a pleasant hobby. The above subject is worthy the attention of all horticultural societies; whose proper functions should be at all times directed towards the improvement of all matters appertaining to the subject of horticulture; but also to the making of horticultural matters more popular in the very widest sense. The question raised in the above heading has in one instance had a sort of an echo by way of an answer in so far as it goes at least that at a recent meeting of the Montreal Horticultural Society and Fruit Growers Association of the Province of Quebec it was suggested that the Society admit juvenile members at a very nominal membership fee. That said juvenile members be allowed to compete for a set of prizes amongst themselves. That two thousand tuberos rooted Begonias be distributed amongst these juvenile members belonging to the different schools in the district gratis; that the girls be allotted one thousand roots, and the boys one thousand roots; that the School Commissioners and teachers be petitioned to assist in obtaining members; that the juvenile age be below fifteen years; that each school compete for prizes if the requisite number of members be obtained and that there be a set of champion prizes besides. The bulbs to be delivered to the intending competitors on or about the Queen's next birth day. That each number will be furnished with one bulb with the number corresponding to his or her member's number with printed instructions how best to grow it through the summer. The exhibition of these to be held along with the Societies exhibition in September 1895. The above arrangements are in every likelihood to materialize, if the co operation of the School-Commissioners and teachers can be secured to favor the speculation. There is an opportunity here to introduce the horticultural wedge as an educator which it is hoped will be worked for all it is worth. How often have such undertakings proved to be of immense success principally through the infusion of young energies and young hopes. From amongst the ranks of the young not only in horticultural but in far weight in matters must im-

provement be looked for; and it is sincerely hoped that it will not be looked for too long or in vain.

In many cases to do a mere duty when it is imposed upon you; or when you are hired to do something, if that duty is merely executed according to the letter, and very little spirit is instilled into its execution, you will observe a want; a flatness, a disinterestedness; a very deadness take as it were possession of the whole concern. What is wanted is something to arouse the more cautious though older member to exert himself again; something to strike up in quicker time, and to be there in time and where else can we expect to find our hopes realized in all these acquisitions except from our young members. Let us be up and doing then, not only advocating the horticultural hobby; but in all the ways within our reach assisting the cause in every way possible. A great deal has been achieved already; but the field is large and a great deal more can be done. There is no danger of exhausting the field not of running out of subjects of importance to operate upon.

Let every member, senior or junior, put their shoulder to the Horticultural wheel and give it such a turn round in the year 1895 as will be worth recording and trying to beat. Co-operation can do it. Everyone doing his whole duty will make a success of all our efforts. A success that all concerned will be proved to have had to do with.

FRANK ROY.

## Fruit and Garden.

### CENTRAL CANADA FAIR.

The exhibition just held at Ottawa was unusually fine this year, the general opinion being that it had never been excelled. Not only were the entries of live stock numerous but a great improvement was noticeable in the quality of the animals exhibited.

Dairy cattle, as might have been expected, came well to the front, the Ayrshires being the most extensively represented. The Holsteins seem to be growing in favour as butter producers and some splendid specimens were on hand from our own Province. Experience seems to be teaching that this breed, under favourable circumstances, is going to prove more valuable for dairy purposes than many supposed, some remarkable results having been proved by the use of the Babcock test.

Mr. Butters, a large breeder, states that he has 20 enquiries, as to this breed, to one he had in previous seasons. If it proves to be as valuable as a milker as it is now asserted to be, it will be of great importance; because, in the event of accident or unsatisfactory milking qualities a cow can be turned profitably into beef; a consideration worth our notice.

It is gratifying to remark that the Province of Quebec was not behind in many respects. Horses were splendidly represented by Mr. Ness, of Howick, and most of the prizes for Polled Angus cattle were awarded to Dr. Craik, of Montreal, while several other Quebec Exhibitors made a good stand. Sheep, hogs, and poultry were numerous, and exceptionally good.

The horticultural display, as to plants and flowers was not remarkable. Managers and exhibitors have some things to learn in respect to horticultural shows.

The arrangements of the tables or stands on which the exhibits are

made should receive more attention as to being clean and freshly painted some neutral tint; and it should be a disqualification to exhibit plants in pots which have not been washed. A want of neatness and cleanliness takes away a good deal of the pleasure to be derived from the beauty of a well grown specimen. When will those who have charge of the decoration of buildings for floral displays remember that no brilliant coloured material, such as flags and banners, should be introduced to detract, by comparison, from the brilliancy of the flowers and fruits, but that every effort should be made to make the eye rest upon them as the sole objects of attraction?

Fruit, or at least apples, were very fine. The size and coloring of many varieties were simply magnificent. It was said by many that no finer had ever been exhibited in Ottawa.

"Wealthy" was there in many cases and, as our all round apple, taking into consideration its—hardiness, prolific habit of bearing, the bright and smooth appearance of the fruit, its moderate size, keeping and other qualities, it may take the first rank as one of the best. Numerous "Duchess" were there, and for beauty certainly maintained their places amongst the Peeresses of Pomona's Court; Alas! that their perfection should be so evanescent.

"Ben Davis" made a creditable appearance and a useful and hardy little fellow he is. Then we had "Haas," "Scott's Winter," a variety named "Baxter": very fine; many of the new Russians are very promising. It is being made more apparent every season that the possibilities of the apple-trade between Canada and Great Britain, are not yet fully developed, and we have only to make our selection of varieties to cultivate, to suit the purpose of export, and the markets of the old world and our success will be further assured, the long keeping moderate sized, smooth, fine fleshed, and high coloured kinds will best fill these conditions.

No farmer who has land suitable, and will, also, be careful to select varieties suitable to his locality, and will take care of his trees according to the rules laid down, need be afraid to plant apples.

Some fine pears, plums, and outdoor grapes, were on exhibition. Vegetables, especially onions, were fine and well grown.

The management of the Exhibition was admirable; no brutalizing shows were admitted to the grounds, the only objectionable one being that balloon ascent and para hute descent. The performer had a narrow escape, having missed seizing one of the ropes. A good sign of the sentiments entertained by the farmers made its appearance in the fact that, at this exhibition, a Lacrosse match and some horse racing, failed to draw as large a crowd as did the parade of prize winning horses and other live stock on Wednesday, when there were nearly double as many persons on the ground as on previous days. Too much credit cannot be given to the Experiment-farm for the part they took in rendering the exhibition a success, their exhibit of fruit, grain, roots, &c., was most instructive and useful, and officers were there, who "know all about it" and were most obliging in giving information to all seekers after knowledge.

The working dairy was highly interesting and instructive, and the whole process of butter making, from the testing of the milk to the making up of the butter for market, was simplified and explained by a most intel-

ligent and courteous assistant, who spared no pains to make himself and the processes understood.

In fine, the Ottawa fair was highly successful, there was plenty of harmless fun for the boys and girls combining solid and valuable instruction; and those who attended it came away the better for the recreation it afforded and the useful knowledge that could be gained.

GEORGE MOORE.

I next paid a flying visit to the Experiment farm, where I was most courteously received, and saw a great deal, considering the short space of time I had at my disposal. Every body must be struck with the orderly and systematic appearance of the place, to begin with. It is true that this should be the case, but it does not always follow that, because such an establishment is a government institution, it is so.

I was fortunate enough to be there just in time to see the vineyard in fruit, round which I was kindly conducted by Professor Craig, the Horticulturist, who explained some excellent object lessons, as to outdoor grape culture, as for instance, the wonderful effect of Bordeaux mixture in the entire prevention of mildew, and anthracnose, also the superiority of the fan or trellis method of training, to produce the largest and best ripened crop, over the old European method of tying the vines to single stakes or poles. I noticed some hybridized seedlings which are expected to fruit next year, the object being to introduce the finer qualities of the grapes of other countries into our native species, which would be a most desirable achievement. The quality, time of ripening, quantity grown on each vine, and every peculiarity as to adaptability to the climate of Ottawa, are all carefully noted, and the report must prove of the utmost value to the grape grower, and notwithstanding the difficulty of climate we have to contend with, no doubt, many varieties which ripen early enough, can be profitably grown in many places in the Province of Quebec.

I was sorry not to have time to explore the apple orchards but I gathered that many of the Russian apples which had fruited were found to be very valuable acquisitions, of which more anon.

I was very much interested in the examination of a number of specimen hedges, as I believe we do not pay sufficient attention to this particular branch of farm work. From what I saw, I come to the conclusion that we have the best materials for such fences indigenous to the country, namely the Thorn (*Crataegus occidentalis*) and the common spruce. Farmers can rear them with so little trouble that, if they were encouraged to do so the expense, after a few years of keeping their fences in repair would be materially lessened.

Of course the reports of the experiment-farm, which are sent freely and willingly to all applicants, give full details of the grand work of instruction being carried into effect, but impressions left upon the mind of a visitor will go further, and be more effective for good. It will pay any farmer to make a long journey to visit the experiment-farm. GEORGE MOORE.

H. B., Plainfield, Vt., writes: "Will you please tell me the names of the plums and apples which you think would be likely to do best in this State?" (1)

(1) This will serve for the higher situations of the Province of Quebec.—Ed.

Replying to H. B.'s short question in full, would require a good deal of space. Vermont is not a large state, but it is long for its size; and its northern extremity is also, with the exception of the vicinity of Lake Champlain, elevated to a considerable height above the sea; which causes it to have extremely cold winters. In fact there is much greater change in going east from Lake Champlain through the northern counties than there is between the northwestern and the extreme southern counties of the state. As the winter temperature is the principal factor affecting the growth of tree fruits, it will be readily seen that the fruit-tree problem is a complicated one. Along the Massachusetts line, and northward, up the Connecticut river, and also along Lake Champlain, as far as Burlington, about the same class of tree-fruits can be grown as in northern Massachusetts. But in all the mountain region, and especially in the Northeastern counties, the winter cold is so intense that none of the standard varieties of tree fruits of lower New England are grown successfully.

When, in 1866, we came to live in Orleans county, on Lake Memphremagog, we had not the slightest idea of this state of things, as regards the growing of tree-fruits. In Maine, (our native state), on the same parallel, nearly all the standard pears and apples may be grown. But that territory is only slightly elevated above the sea level; while most of northeastern Vermont is from one to two thousand feet higher. This makes a great difference in the winter climate.

There is a considerable difference between the hardiness of the old standard varieties. The Baldwin apple, for instance, is successfully grown for only a few miles,—say fifty or sixty,—north of the southwestern corner of Maine and the adjoining portions of New Hampshire; while along Lake Champlain its successful culture scarcely extends so far north as Burlington. Plums are grown pretty successfully as far up as Burlington; and also some of the hardier pears; and on the islands even up to the Canada line. Here and there we hear of nooks in the mountain valleys where orcharding is somewhat successful; but as a rule that section has few orchards, and they grow fewer as we go north.

Millions of fruit trees, said to be hardy and productive by the tree peddlers, have been sold and planted in the northern and mountain sections of the State; but there is comparatively a small amount of fruit grown there, even at the present time. Of pears, cherries and plums (aside from the native plums), scarcely any have been found to succeed, when planted on any considerable scale.

It has been our fortune to make a trial of orcharding in the very coldest part of the State, Orleans county; and it has been only after innumerable failures, and after trying everything in this line which offered any promise of success, that we have been able to establish the growing of fruit trees on a successful basis. Not one of the old standard varieties of plums, pears and cherries can be grown successfully; and but one standard native apple, the Bethel, is of any value to plant in Orleans county. To this we

have added two or three native seedlings, the best of which is Scott's Winter; and one Minnesota apple, the Wealthy. The Peach apple, from Canada, is also a success.

A few Russian apples, imported some fifty years ago from England to Massachusetts, proved on trial to be entirely hardy against cold; but none of these is a good keeper. No plums except wild ones endure the climate, though some, like Moore's Arctic, may live to bear a few crops in a favored spot. A good many Canadian apples have been tried, but the only ones that have given wide satisfaction have been the Fameuse and the Peach apple. In most localities the former has been so injured by scab as to be nearly valueless, while the Peach is not a good keeper.

Within the past twenty-five years a great many varieties of Russian apples have been imported. They are usually large, handsome, and of good quality; but not until quite recently have any really good keeping sorts been found amongst them, and these are not yet very widely known. In a few years they will be largely propagated, and then all northern Vermont can be abundantly supplied with home grown tree-fruits.

With the later importations of Russian apples came a good assortment, also, of plums and cherries. These have, within the last two or three years, begun to fruit quite freely, and are found to be very satisfactory in growth, hardiness, quality and quantity of fruit. No doubt they will soon be widely propagated and sold by trustworthy nurserymen; but at present there is no considerable stock in the country; and until this is the case it would do little good to give names and descriptions. Of those which we have in our own grounds, the Besse-miankar or Seedless pear, and the early Red plum seem very satisfactory. The latter is not properly described by its name, as it is nearer purple than red. It is more than medium in size, almost as large again as Lombard, and better in quality. It seems to be a profuse bearer, even while the trees are quite small. There is now very little doubt that in a few years apple, plum, cherry and pear growing will become general in every part of Northern New England. There is nothing to hinder this but a lack of young trees, which your energetic nurserymen will soon supply.

In northern Maine there is a far larger area to be supplied with reliable tree fruits, to say nothing of the provinces. Varieties mentioned above, with some native seedlings, are however succeeding there, and the later importations from Russia are being largely propagated, and widely distributed from the experimental stations of the Dominion, especially that of Ottawa, under the charge of Mr. John Craig. DR. HOSKINS.

Vt Farmer's Ad.

## FLAVOR IN BUTTER.

What is it?

ED. HOARD'S DAIRYMAN.—What is meant by the word "flavor" in butter? Is it the taste that suits the eater's fancy? A year or so ago I was churning my cream, soon after it thickened up, stopping in granules, thoroughly washing, so much that the salt started no butter-milk in working, the butter salted in granules in churn, took out in work, worked and print-

ed at once. Commission merchant complained of the butter being flat flavored. I changed, soured more, letting cream be thick 8 or 10 hours, washed very little, salted heavier, still salting in granules and in churn, and working and printing at once. Commission man was satisfied with the butter, usually gave me highest creamery quotations.

I sent butter made this latter way to another commission house; he said it was "coarse with salt and not high flavored." How shall I handle milk, cream and butter to develop the highest flavor? I am feeding about 10 pounds of grain per cow per day, 3½ pounds corn meal, 2½ Buffalo gluten, 2 pounds each cotton seed meal, wheat and bran. Have a Baby separator. I can't help thinking that "flavor," "fine" butter and similar butter depends on the taste of the eater. Am I not right? especially if the butter is good. G. E. N.

Aston, N. Y.

Our correspondent is partially right in his assumption that flavor is the taste in the critic's mouth. It is that and more. Flavor is also indicated by the sense of smell. Of course, tastes differ and there is no rigid standard. However, there is a pretty fair agreement in all the great American city markets, as to what constitutes fine flavors in butter. It is a wide and elusive subject, however, and one hard to treat. We will enumerate a few conditions which affect flavor. 1. Cream churned while nearly sweet will have a slow, almost neutral, action on the palate. It is not quick like butter made from cream which has been more thoroughly ripened. Consequently when our friend ripened his cream longer, he suited better the taste of the first critic. It would not be strange, making as dry a butter as he says he does, if the salt had remained undissolved, and this caused the buyer to call it "coarse with salt." Butter must have a proper proportion of water to well dissolve the salt. 2. Cream from cows 4 to 6 months in gestation (strikers) becomes flat and flavorless. Hence it is the practice in well regulated dairies, to have a few cows coming fresh every month, so as to keep up the flavor. Heavy feeding of cotton seed meal will produce the same neutral flavor. Hay cut too ripe, and other roughage that is woody and without the desirable green juices, will make flavorless butter, especially if the cows are a few months in gestation. We should divide the question in three parts. 1. Lack of flavor. 2. Bad flavors. 3. Fine quick flavor. Sweet cream cows too long in gestation, and over ripe roughage will produce the first. Diseased condition of the cow, bad, unwholesome condition of the stables, before and while the milk is drawn, and of the milk room and store room, while and after the butter is made, will produce the second. Cows fresh in milk, with sweet, green cut forage and proper grain feeds, with well ripened cream (using a starter) will produce the last. Of course, there are hundreds of other facts, which make for or against, but these are in the main, basic facts, which affect flavor in butter.

## USES OF FORAGE CROPS IN A DRY SEASON.

EDS. COUNTRY GENTLEMAN.—We are just now experiencing one of the most disastrous and severe droughts ever known in Dutchess county, and the end apparently is not yet. In parts of the county there has been no rain

except an occasional sprinkle, barely enough to lay dust, since the heavy rain the last of May, and the result is shown in small corn, all dried up, not half a crop, while meadows areas bare as when first mown, and the pastures gave out weeks ago. Peaches are small and inferior, and apples are fast falling to the ground, and are also small and knotty.

Beyond question this has been a most trying summer to the dairymen and has demonstrated most forcibly the necessity of providing green forage crops for every month of the summer, as no man can tell when the inevitable dry spell will come, and in dairying one must be prepared for such emergencies. We have been feeding our dairy of sixty-five cows since the middle of June, commencing first on fresh cut clover, and as soon as oats and peas were large enough, we fed them as long as they lasted. We find that the clover did very well in keeping up the flow of milk, but there was a perceptible increase in flow and quality when the feed was changed to oats and peas, and the flow was maintained as long as this feed lasted. Owing to dry weather and an insufficient quantity of oats and peas, our supply was exhausted Aug. 1 and as it was early for corn fodder, we left several acres of low meadow grass and cut fresh each day, and with a grain ration this did very well, and from now on our sole dependence is on corn fodder. It is evident to my mind that oats and peas make the best feed for milk for July, but the hot dry weather of July is too severe for late sowed, and there is no safety in sowing them here for use later than July. Has any one ever used rye for ensilage, or oats and peas?

If practicable, in my opinion, the safest way for the dairyman who must make a certain quantity of milk each day, would be to commence feeding on rye early in summer, and when rye is too far advanced feed clover, putting the rye left over in the silo for later feeding. Then, after clover, feed oats and when they are far enough advanced, put the quantity remaining in the silo on top of the rye and feed from that until corn comes. In this way one may have green food or good rich ensilage for the cows during the entire summer, and the supply of milk can be kept up. Will some one who has followed the above plan please report the result, as I wish to try it that way another year, provided the ensilage part of the plan is practicable?

There is one thing certain, that a dairyman cannot afford to pasture his tillable land, as with good cultivation he can make that land produce four times as much value for him, acre for acre in corn or other crops for soiling as in pasture, and the extra cost of cutting and hauling for stock is repaid four fold in the saving of grain in dry time, the increased quantity of milk obtained and the increase in valuable products grown from the soil that would be required for pasture.

T. E. CROSS.

The dairy cows of the United Kingdom may be briefly described as follows: *The Dairy Short-Horn*—Color, roan, white, red, red and white, roan and white, weight 1,300 lbs.; average yield of milk, per annum, 6,000 lbs.; average quality of milk-fat per cent, 3.7, solids not fat 9.0. *The Devon*—Color, red, weight, 1,100 lbs., milk, 4,850 lbs.; quality, fat 4.2 per cent, solids not fat 8.85 per cent. *The Red Poll*—Color, red; without horns; weight, 1,100 lbs.; milk, 4,950 lbs.; quality, fat 4.10 per cent, not fat 9.10

per cent. *The Ayrshire*—Color, red and white, brown and white, black and white; weight, 1,000 lbs.; milk 5,500 lbs.; quality fat 3.8 per cent; not fat 8.95 per cent. *The Kerry*—Color, black; weight, 700 lbs.; milk, 4,200 lb.; quality, fat 3.72 per cent, not fat 9.03 per cent. *The Jersey*—Color, fawn, golden, silver grey, mulberry; weight, 880 lbs.; milk, 4,400 lbs.; quality, fat 4.64 per cent, not fat 9.32 per cent. *The Guernsey*—Color, orange and white; weight, 1,000 lbs.; milk, 5,150 lbs.; quality, fat 4.55 per cent, not fat 9.25 per cent. *The Dairy Shorthorn*, the *Devon* and the *Red Poll* are also superior beef producers.—By Prof. Long.

## LOOK OVER THE STABLES.

Now is just the time to look after the cow stable for next winter. Give them a good thorough disinfection by mixing forty parts of water to one of sulphuric acid. Make the manger sound and sweet and then keep it so next winter. If there have been any lice on the cattle in previous years a good coat of whitewash on all the partitions and walls is excellent. Some use the following coal oil emulsion for killing lice on cattle: into one gallon of soft water stir a half gallon of soft soap or a half pound of good hard soap. When well dissolved and while boiling add two gallons of coal oil and stir thoroughly until the whole is well mixed. Then add another gallon of hot water. If put in a jug and well corked it will keep well. When about to use it dilute it with four parts of water and apply thoroughly with a sponge.—Hoard.

## Can't Swallow the Big Records.— Thirty Thousand Pounds of Milk and One Thousand Pounds of Butter too Much for Him.

ED. HOARD'S DAIRYMAN.—I have just read an article, on page 274, HOARD'S DAIRYMAN of June 15th, Development of the Dairy Cow, by C. L. P., of Coudersport Pa., in which he makes some amusing statements, as Mark Twain puts it.

He says that a Holstein cow owned by a man at Cuba, N. Y., gave in one year 30,100 pounds of milk. After reading the article and meditating on the statement, I hunted up my stab pencil and, although I have grown rusty on figures, I found by figuring a little, that this cow gave an average of 82 and a fraction pounds of milk for 365 days, or about 10 gallons every day. Now, had the writer stopped right there and then, I should have thought that he had only made a mistake in his figures, but he goes right on and brings out another cow of different breed with her 20,000 pounds of milk yearly.

Now, it may sound harsh to such over enthusiastic writers, but the plain English is I don't believe any such stuff, and farther more, I don't believe that that cow ever lived that gave any such amount of honest milk, nor do I believe that the cow has yet been born that made 1,000 pounds of 80 o/o fat butter in one year of 365 days.

It is an easy matter for a few men who are interested in booming any particular breed, to get together and pretend to test a cow, or to tether her for a few days or weeks, when she is at her best, and then take it for granted that she will do thus and so in one year, basing their calculations on what the

cow did for a few days, or a few weeks. These large yields of milk and butter have always been obtained in private tests. Where was this famous Holstein cow with her record of 30,000 pounds of milk, or the 1,000 pound Ayrshire cow, referred to by C. L. P., during the World's Fair test? They wanted just such cows in that test, but they failed to materialize. It does seem to me that it is rather early in the day, when the ink has scarcely got dry on the reports of the Fair test, for men to make such extravagant statements. Ten years hence such statements may be in order, and I do not pretend to say that by that time we may not develop a 30,000 pound milk cow and a 1,000 pound butter cow, but for the present, Mr. Editor, please excuse us.

Logan Co., Ohio. M. E. KING.

## The Dairy.

### SITUATION OF OUR CHEESE INDUSTRY.

As the season of 1894 is nearly closed, a short review will not be out of place, to know where are our greatest faults, and then how to remedy them.

As this Province had splendid results at the World's Fair, Chicago, it was thought by many, that it was all a special effort, that we should fall back into the old rut again when the ripple of excitement died away.

We have got testimonials from two of the World's Fair judges, that the cheese and butter at Sherbrooke and Quebec exhibitions, were equal, if not superior to that shown at the World's Fair.

Mr. Perleo of New-York who was judge at Sherbrooke, and M. A. A. Ayer, of Montreal, who was judge at Quebec, have both confirmed the above statement. It shows that our Inspectors are doing their duty nobly. We have not been content with the fine display at Chicago but rather that "Excelsior" should be our motto.

Now this is the bright side of the question, there are some dark spots which I will mention.

First. Too many small flat cheese. In fact it cannot hardly be otherwise in many sections where I visited this year they had not milk enough to make a large cheese. Mr. J. D. Leclair who has just recently returned from Europe in connection with the Dairy Industry, says there is a difference of 1 to 2 shillings per 112 lbs. in cheese say from 8 to 9 inches high with those from 10 to 12 inches high and half size are fully 5 shillings below; this means about nearly  $\frac{1}{2}$  cent per lb. on medium sized cheese and one cent on small or half cheese. I know well it is a very hard matter to press a tall cheese in a gang press, but why not disband them when done by replacing them with upright presses. I am well aware of the fact that a gang press is a little saving of labor, but if it will not do what is wanted of it, why persist in using it? In Ontario and the South Western portions of this province the gang presses have been nearly all discarded. I hope many readers of this article will consider well before buying a gang press in future.

Secondly, the boxes are very bad. Another fault which M. Leclair lays special stress upon. Many makers make their own boxes and they are a shame and disgrace. Some of them are not half nailed, often covers are  $\frac{1}{2}$  an inch to one inch too large, the

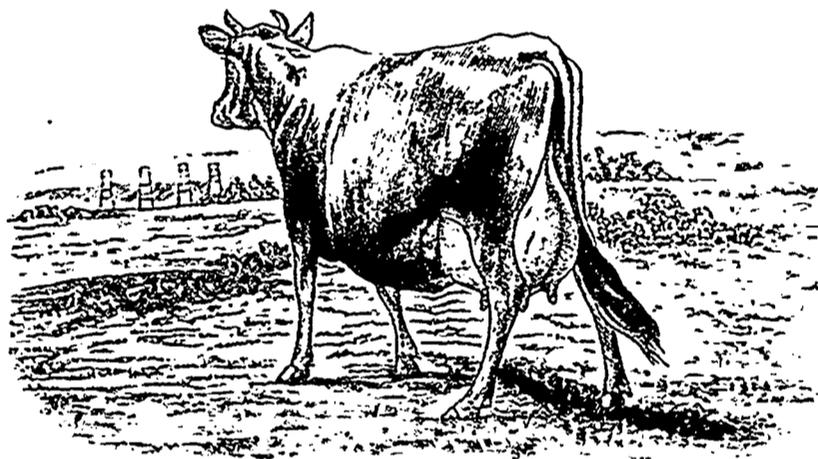
boxes do not fit the cheese. When a cheese fits the box all around the box will stand lots of hardship, but when the cheese are loose the boxes usually fly to pieces at once. My attention was drawn to this fact at the Quebec Exhibition. There were certainly 5 per cent of the boxes broken and it is more than likely that the very best were sent there.

I can heartily concur in what Prof. J. W. Robertson, of Ottawa, said recently in regard to our cheese, the quality in general was good but it was style we were lacking: in such things as the size of the cheese, the dressing of the bandage, and boxes, were our greatest faults. Now I hope the readers of the Journal will not think I am too liable to grumble. I hope these few lines may serve to awaken some of our rather drowsy makers to greater efforts.

Yours respectfully,  
PETER MACFARLANE,  
General Inspector.

### How Canadians regard filled cheese and Dairy frauds.

If the dairymen and farmers of the United States were awake to their own real interest, they would note a little more than they do what Canada is doing to protect her reputation as a



SAYDA 3rd, 17317.

maker of fine dairy goods. As a class the United States dairymen have been indifferent to their own reputation beyond all excuse. Canada has taken away our English market for cheese, once so profitable to us. How was this done? (1.) Certain factorymen and communities became tricksters and dishonest; they went to making filled cheese and sent the stuff to our English customers. What stupidity! The first thing we knew, the Liverpool Produce Exchange sends a communication to our Government and to various Boards of Trade, protesting against such cheating. At once, down went our reputation that had cost us years to establish. Just because a few factorymen, mainly in Illinois, wanted to make the money of dishonesty, the rest of the dairymen of the United States must suffer to the extent of millions in the loss of their market. (2.) Our farmers and dairymen refused to stand up and make themselves heard in demanding laws, both state and national, against fraud and cheating in human food. (3.) Canada saw her opportunity, and at once set to work to make honest cheese and a fine cheese, and thereby to capture the English market. She has done it, and we can now suck our thumbs and ask: What has our folly profited us? (4.) Canada enacts laws that mean something on this question, as witness the following, passed by the Dominion Parliament, against filled cheese:

AN ACT to prevent the manufacture of and sale of filled or imitation cheese and to provide for the branding of dairy products.

Her Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:

#### SHORT TITLE.

1. This act may be cited as "The Dairy Products Act, 1893."

#### IMITATION CHEESE PROHIBITED.

2. No person shall manufacture or shall knowingly buy, sell, or expose or have in his possession for sale, any cheese manufactured from or by the use of skimmed milk to which there has been added any fat which is foreign to such milk.

Every person who by himself or by any other person to his knowledge violates the provisions of this Section, shall, for each offence, upon conviction therefore before any justice of the Peace, be liable to a fine not exceeding five hundred dollars and not less than twenty-five dollars, together with the cost of prosecution, and in default of payment of such fine and cost, shall be liable to imprisonment with or without hard labor, for a term not exceeding six months, unless such fine and the cost of enforcing it are sooner paid.—*Ex.*

I am sure Mr. Elliott will not wish to claim as a discovery of his own the value of deep-rooted plants as constituents of a good meadow. Mr. Caruthers and the late Mr. Faunce De Laune specially called attention to the value of *tall fescue* in this connection, and Sir John Lawes was equally emphatic in recommending *lucerne* to be sown with "permanent" seeds on every soil where it could have a chance of success.

Important as it may be to cover the ground of a new pasture and crowd out annual weeds for the first two or three years while the grasses and clovers are getting established, it would hardly be considered, south of the Tweed, a very wise proceeding to do so by the sowing of nearly 10 lb. weight of perennial weed seeds per acre. While we have such plants as lucerne, sainfoin, cow-grass, (1) and jar-row at our disposal (in addition to the standard grasses and clovers which constitute the bulk of every good meadow), I hardly think we shall be prepared to resort to the use of burnet, plantain, chicory, and kidney vetch.

Many of those valuable plants are as deep-rooted as these comparatively worthless ones, and I have myself published one well-authenticated case of a lucerne root having been traced to a depth of 11 ft.

In all due deference to Mr. Elliott, I am confident that, given a proper seeding and a suitable seed-bed, the treading of care-fed cattle will do the rest.

That portion of any farm which is laid down to grass require quite as liberal treatment as any other part, and it is a great mistake to suppose that two or three crops of hay can be taken from newly-laid-down land with impunity unless a liberal return in manure of some kind is made.

### WHITE FIELD BEANS AS A FARM CROP.

WILLIAM J. THOMAS, MICHIGAN.

There is no crop that yield a greater profit at so little expense than field beans, and there is no crop for which there is a more constant or better demand. Sheep and cattle eat the vines fully as well, and do better, pound for pound, than on hay. There are few crops from which the returns come so quickly, ninety days from the time of planting to the sale of the crop being no uncommon thing. There is no crop that can be kept over the winter with greater safety. Rats and mice do not trouble them, and the shrinkage is slight. There are few crops that exhaust the soil so little, as may readily be seen from the rank growth of the crop following them, wheat or rye producing nearly or equal to summer fallowing. There are few crops raised in which the ground is left so clean, being a cultivated crop, and the vines not growing tall enough to hide the weeds in the hills, (2) the few that cannot be cultivated out are easily pulled.

White beans will grow on almost all kinds of soil, but good wheat land is preferable. Beans may be grown on very light land, that perhaps would grow nothing else save rye or buckwheat; still the yield would be small. They appreciate good soil and care as well as any crop. Land that will average twenty bushels of wheat per acre can be depended on for the same

(1) i. e. *perennial red-clover*.  
(2) Beans should be sown in rows 24 inches apart, and plenty of seed allowed.  
Ed.

## The Farm.

### On laying Down Inferior Soils to Permanent Pasture.

In reference to a long letter which Mr. Robert H. Elliott, Clifton Park, Kelso, contributed to the *Times* last week, Mr. Martin, J. Sutton writes to that paper as follows:—

Mr. Elliott's letter on laying down inferior soils to permanent pastures is very interesting, but I think he is over-sanguine in suggesting the conclusions at which he has, somewhat late in the day, arrived will, even when applied to temporary pastures, have (in his own words) "a most important effect in enabling us to meet the severe foreign competition to which British agriculture is now subjected."

It would appear that he has succeeded in forming a turf of grasses and clovers, plus weeds, on some fields in a shorter time than he has been able on others to form a sward from grasses and clovers alone. For, on the same principle as dirt was defined by Lord Palmerston as matter in a wrong place, so, tolerable as such plants as burnet, chicory, rib grass, and kidney vetch may be on land where nothing better will grow, they are certainly weeds in a pasture.

amount of beans. Some townships in Michigan are largely devoted to bean culture, the quantity of beans raised being double that of any other crop. Some idea of the magnitude of the crop can be obtained from the fact that there are eight steam bean threshers within a radius of a few miles around the little village where I reside, and all are kept employed several months every fall.

In preparing the soil it is best to plow the ground as early in the spring as practicable, to get it in good condition for planting. Many of the weeds are killed in the harrowing, and the soil holds the moisture better for the early plowing. Fall plowing would not be any advantage on clay soil, on account of the extra work to loosen the soil in the spring. (1) Barnyard manure is the only kind of fertilizer used in this section, and this is better when applied to the previous crop. Whether commercial fertilizers could be used at a profit or not in growing the crop, I have never seen tested. The time for planting white beans is from the middle of May to the middle of June. Those planted as soon as the danger from frost is over usually mature before severe drouth sets in. Those planted the latter part of June do not generally set until the drouth is broken, and mature in September. A good crop of beans is some time secured when they are planted the first of July. As a rule, in latitude 43° North the last of May is about the best time to plant, for then the danger from frost is over. Planted at this time they mature about the last of August, before there is any danger of the crop being injured either by frost or fall rains. It also gives plenty of time to prepare the ground for winter wheat or rye.

Twenty years ago bean culture was all done by hand. Now it is all changed, and by the use of a bean planter, which is drawn by two horses, one man can plant from ten to eighteen acre a day. The machine plants from three to ten beans in a hill. A man can gauge the machine all the way from a peck to bushel per acre. (2) The machine plants from one foot to five feet apart in the row, as desired. The rows can be planted thirty, thirty-two or thirty-four inches apart. (3) The beans are dropped in a perfect hill. Every hill is visible before it is covered, and it can be seen at once whether the machine is dropping correctly or not. If the ground is properly fitted, every hill is covered to a uniform depth, which is of great importance, as a difference of two or three days in coming up may make a week's difference in ripening, and it is very desirable that the crop shall ripen evenly. The beans come up through a ridge which admits of their being cultivated as soon as they are out of the ground, as the rows show plainly.

Beans being very rapid growers, the raiser does well to cultivate them three times. The first time I cultivate twice in a row, after that once. Where the ground is rough and hilly, the Planet Jr. one-horse cultivator is used. On level or nearly level ground a two-horse wheel cultivator is used. With the latter the driver rides, and about twice as much can be done as with the one horse walking cultivator. Beans should not be cultivated immediately after a heavy rain, and some do not cultivate while the dew is on, but I do not pay much attention to this. It will

(1) Stuff' On clay soil, fall ploughing exposes the land to the action of the frost, and is most beneficial.—Ed.

(2) Two bushels at least should be sown. Ed.

(3) Much too far apart.—Ed.

not do, however, to cultivate them when the ground becomes very dry, especially if the plants are in blossom. It is a much mooted question whether cultivation is advisable or not after they are in blossom, but I have done so with profit. I always set the cultivator to run to the edge of the leaves, which does not disturb the vines or roots very much. The crop planted in drills admits of cultivation only one way. During the growing season the crop has no insect enemy unless it be the cutworm, and the crop come on so late and grow so rapidly, that it is soon out of the reach of the worm. A long drouth is the thing most to be dreaded in the culture of field beans. —American Ag.

FARM WASTES.

If farmers are going to make a good, comfortable living these hard times they must do more brain work, be more economical, and waste less. The object of this paper is to point out a few things that are more or less wasted on almost every farm, that could and should be turned into cash. I believe on some farms the value of what is wasted would be enough to pay a good rent for the farm. Time is one of the most precious things a person can have, and should mean money to the farmer at least. Yet, it is often wasted, even among the hardest working people, although perhaps not so much through lack of industrious habits as through a lack of system. The head should go ahead and plan the work, and the hands follow and carry out the plans. Another waste of time is the way some farmers try to kill weeds, which apparently consists of sowing a lot of weed seeds with their grain, and allowing a lot more to get in the manure, and still another large lot which does not get to the barn they allow to ripen in the field. The rest of the process consists mostly of hoeing and summer-fallowing.

Another thing which is sadly wasted by Ontario farmers is manure. It is generally thrown on a large pile in the barnyard, where it stays without shelter until it is wanted on the land. Some farmers who like dry yards provide water courses, so the rain soaks right through and runs off, instead of standing in holes and corners, making it unpleasant getting around, to say nothing of being dangerous to the health of the stock. However, in that case, rain is like bad company—not satisfied with going itself, it takes others with it; so the rain carries the most valuable parts of the manure with it. How difficult it seems for some farmers to get out of old ruts, and yet, if we are going to succeed, we must keep abreast of the times and make good use of other people's brains.

Although fencing is one of the most expensive things to keep up on a farm, some farmers seem to think they could not get along without having their farms fenced off in small fields. Besides being a waste of land, cross fences often prove a nursery for weeds, and, what is more, they are very expensive to build and keep in repair. If farmers would use portable fences, all the inside fence they would need generally would be a lane through the centre of the farm and enough portable fence for their pasturo. It is not to be supposed that this plan would suit all circumstances, but whatever you do, don't keep more fences than are absolutely necessary.

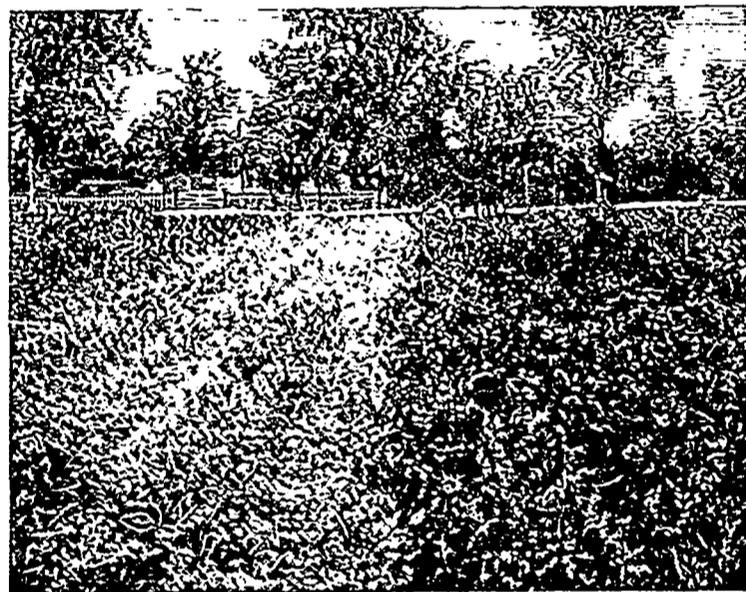
Feeding scrub stock, and feeding any kind of stock just enough to carry them through, are two very wasteful

practices, and they are also very common. Stock is especially allowed to get thin in the fall, when a little extra feed and care, given at the right time, would keep them far healthier and bring them out in good condition in the spring, with less feed through the winter. It is cheaper and more satisfactory every way to keep them up in good flesh than to get them up after they have once become thin.

Another way some farmers use to waste their living is by neglecting to take proper care of their implements. It is a well known fact that implements do not last nearly so long when left out in all kinds of weather, as when kept dry and otherwise well cared for. Yet, how often one sees wagons standing in the lane all winter, and plows, seed-drills and other implements without shelter from the first time they are used in a season to freezing up time. A great deal of feed and other stuff is wasted through a want of promptness and decision. For instance, the roots are not sown until late, and again, are not hoed until they are too big and crowded. Some needed repair is left a little too long, and a smash-up which costs three times as much is the result.

the epicure. The potato is the leading crop grown in Vermont, leading all the cereals by many thousand bushels annually, and returning to the pockets of our farmers many well earned dollars.

The importance of a thorough understanding of potato culture will be admitted by every intelligent cultivator. What particular part of the farm is the soil best adapted to growing the potato? What variety of seed is best adapted to your soil? What element of fertilizing does your land most need to grow a prolific crop of potatoes? What fungicides will effectually destroy the beetle and also preserve the growing vines from rust, blight and premature decay? These are the questions that you must comprehend if you would succeed in growing potatoes at a profit every year. We will admit, however, that some years Nature does more than others to solve these difficulties for the farmer. This past season being a very dry one, potatoes were less affected with blight and rot in many localities, hence less difference in the yield of patches treated chemically, and those not so treated. The fungicide remedy is not a plant food that gives extra



NOT SPRAYED.

SPRAYED.

From photograph of EXPERIMENT STATION POTATO FIELD, made Sept. 10, showing results of three applications of Bordeaux Mixture.

Thus we might go on and enumerate a lot more wastes, but if the farmers won't study them out for themselves, it would do very little good. It seems to me there would be about as much sense for a man to pour water into the hung hole of a barrel and let it run out of a lot of holes in the bottom, and then ask why the barrel don't get full, as to ask why farming don't pay, when there are so many leak holes in the bottom.

(Farmer's Advocate, F. J. S.

THE POTATO AND ITS DISEASES.

If you were to call upon the Vermont farmer at this season of the year, you would most likely find him in the potato field busy at work digging and assorting the tubers that daily find their way to all our tables. The potato, as an article of diet, has found a market in every quarter of the globe, and supplies a larger want than, perhaps, any other product of agriculture. A very large class in this and other countries subsist very largely, the year round, on potatoes, and the fact that it is the poor man's best friend, economically speaking, makes it none the less appreciated by

growth by fertilizing, but simply a check to premature decay. We present our readers herewith a photographic reproduction of a potato field on the Vermont Experiment Station farm, which was taken September 10, 1892, showing several rows of potato vines growing thriftily, and a number of paralized rows, the vines of which are entirely withered and dead. The whole field represented was plowed the same way, planted the same day, and given the same cultivation and care, except that the rows which show to be still growing were sprayed three times with "Bordeaux mixture." It is a very evident fact that the tubers cannot possibly grow after the vines wither and die. It is equally true that if you can by artificial means prolong the season of vitality in the vines that the tubers will continue to grow.

Many of our largest potato growers have practiced this method of spraying their vines with Bordeaux mixture the past two years with very gratifying results. The Vermont Experiment station, during the growing seasons of '92 and '93 sent out several bulletins on the subject of "Potato Blight," and caused to be published through the press of the State the formula and method of ap-

plying the Bordeaux mixture. This called the attention of the farmers to the relief which might be obtained from the much dreaded blight. Some made preparations to use the mixture. Others thought it was a scientific fad not practical for the ordinary farmer to adopt, while many more never read about it at all. In fact, the writer must confess with something not akin to pride, that he has recently talked with many native born Vermont farmers who really did not know there was such a thing as an Experiment Station in Vermont. Many well-meaning, intelligent farmers have got the idea thoroughly instilled into their minds that science will not work on the farm. That the only way for a farmer to succeed is to follow in the same old trail their fathers made, take all the hard knocks, and work at least sixteen hours a day continually.

This is good wholesome doctrine as a foundation to build on, but the superstructure may be lightened, yet strengthened, by an intelligent use of practical modern methods. The Experiment stations in connection with the Agricultural colleges throughout the states, have done grand work for the farmer, fruit-grower and stock-man, and especially our own station at Burlington, as attested by all who have personal knowledge of what has actually been accomplished there in behalf of the farmer.

A wise philosopher and statesman has well said that the man who makes two blades of grass grow where one grow before confers a greater blessing on mankind than he who marries the grass (grace) widow, or something of that sort. That is just what science has done for the farmer. It has assisted him to grow two bushels of potatoes where one grow before. In this case where the White Star potato was planted, May, 15, '92, sprayed July 30, August 15 and 25, the yield was 325 bushels of large smooth potatoes per acre as compared with 100 bushels per acre in the same field where not sprayed, and again with the Burbank, planted May 9, '93, sprayed July 14, August 1 and 15, yielded 332 bushels per acre as against 219 bushels where not sprayed. The Bordeaux is simply a mixture of five pounds of blue vitriol dissolved in water and strained five pounds of fresh lime dissolved and strained, then mixed and diluted with fifty gallons of water and applied with a spraying can or a force pump to cover all the upper surfaces of the leaves. Paris green may be added to mixture, when needed, to kill the beetle. A remedy so cheap and simple that all can use it. The object of spraying is to arrest the progress of blight which on late potatoes "appears on the leaf as a purplish black spot which rapidly increases in size until it spreads over the whole leaf. The disease is caused by a delicate fungous growth upon the leaves. The spores or germs are washed from the diseased leaves into the soil and cause the well known "rot of the tuber." Such is, in brief the description given by Prof. Jones in one of his bulletins.

In conclusion, we will say that this blight and rot is the great evil to overcome in potato culture at present. Other forms of disease may appear later, but if the farmers of Vermont will study the case in a thoughtful practical way and adopt such remedies and suggestions as have been thoroughly demonstrated at our Experiment station or from other reliable authority, a great step in advance will have been gained. C. W. S.

Vt. F. Advocate.

Frequent references in these columns have made our readers familiar with the valuable feeding experiments which for some years have been carried out under the auspices of the Norfolk Chamber of Agriculture. It will be remembered that in successive years sheep were tested on a variety of foods, and that a summary of these experiments up to the end of the year 1891 brought out in a clear and significant manner the fact that, of all the different foods pitted against each other in the three years' experiments, a mixture half and half of decorticated cotton cake and barley in every instance came out the best, and in the great majority of instances much the best. In the winter of 1892-3 it was determined by Mr. Garrett Taylor, on whose Whittingham farm the experiments of the Norfolk Chamber are always carried out, to test the value of dried grains as food for sheep. These grains experiments he arranged to have carried out by the same staff as was employed for the Chamber of Agriculture experiments, and side by side with them. There were four pens, and the results came out very favourably to the dried grains, which were given as follows:—Pen 1, dried grains, in addition to 4 lb of hay and roots *ad lib*. Pen 2, dried grains and linseed cake in equal proportions, with same hay and roots as Pen 1. Pen 3, dried grains and decorticated cotton cake in equal proportions, with same hay and roots as Pens 1 and 2. Pen 4, dried grains in equal proportion, with a half-and-half mixture of decorticated cake and maize, and the same hay and roots as Pens 1, 2, and 3. Under the public experiments one pen was fed on hay only, besides cut roots, and another on decorticated cake and barley, in addition to hay and roots. The results were that the cotton cake and barley mixture only beat the grains used alone by about as much as the cake and barley beat on other occasions such foods as linseed cake and peas, &c. In the winter of 1893-4 the Norfolk Chamber themselves conducted sheep-feeding experiments with dried grains as well as other foods, and the results were that those pens of sheep which had the dried grains (one of them having them mixed half-and-half with decorticated cotton cake) gave equal results, and gave each more mutton than any one of the other pens—even more than the previously invincible decorticated cake and barley mixture. Moreover, the pen which had decorticated cotton cake and dried grains not only gave the most mutton, but gave it at much the least cost. We received from Messrs. F. I. Cooke and Co., 41, Eastcheap, London, E. C., a collection of pamphlets on the feeding of dried grains to stock. One of the circulars closes as follows:—"Surely there can be no further doubt of the high value of dried brewers' grains for grazing sheep, and consequently for other animals; whilst it may be worth repeating that there is much reason, both practically and theoretically, to believe that no more economical food can be bought for breeding and growing sheep than grains alone, particularly, perhaps, ewes and lambs, or lambs after weaning in the summer months, than dried grains."

Ag. Gazette.

#### WHEN TO CUT GRAIN CROPS.

A writer in the *Field*, in discussing the period, in relation to maturity, at which it is most advantageous to cut corn, says that, according to common opinion, if intended for market, it is

best to let the crop become fully ripe before cutting it; but that, if intended for seed, the grain will be best if the crop be cut before all the sap is out of it. As far as wheat is concerned, we should say that precisely the converse is true. (1) Millers like wheat cut before it is dead ripe, because the skin is thinner than when it has stood longer, and it is said that the proportion of gluten is greater. On the other hand, it stands to reason that seed corn should be fully ripened, so that the germ will be well developed, and the starch upon which it will feed also. It appears reasonable to suppose that the development of the germ takes something from the flour-yielding quantity of the grain, and that this is one reason why millers like wheat cut before it is dead ripe. But, as the writer in our contemporary observes, there is a great lack of exact knowledge upon this point, and there is a capital opportunity for investigation on the part of societies and individuals who are fond of making experiments. The writer mentions a trial made in cutting barley when not quite ripe, the result being that it was of a better colour, and realised more money than some out of the field left till it was dead ripe. This was quite an exceptional case, for there is no question whatever as to barley improving in quality by being allowed to become dead ripe. (2) The experience of every farmer proves it. Here, again, theory coincides with experience. Not only does the grain become plumper by being allowed to mature to the utmost, while any stripiness or darkness in the skin gets bleached, but the germ also matures, and, for malting, a healthy germ is, of course, important. Still, even with barley, some careful chemical tests, to show the changes in the constituents of the grain which take place as ripening proceeds, would be interesting. But the writer under notice misses the most important consideration of all when he gives the *pros* and *cons* of this question. By cutting corn, and especially oats, before it is dead ripe, farmers secure themselves against the risk of heavy loss from shodding. If they do not begin to cut when the corn is a little under-ripe, they cannot finish before some of it is over-ripe, and then the chances are that they will lose a great deal of grain. Except for barley, then, the advantages are greatly in favour of cutting a little too soon rather than too late. We believe that any experienced farmer will say that, while he has rarely had reason to regret having been too quick in cutting a wheat or oat crop, he has often suffered from being too slow. (3)

#### ERADICATING THE CANADA THISTLE.

Prof. Thomas Shaw, of the Ontario Agricultural College gives in the *Breeder's Gazette* the following account of effective work in this direction which we copy as of probable interest to several recent inquirers on this subject:

In the summer of 1889 we had two fields, Nos. 1 and 16, that were miserably smitten with the Canada thistle. In large portions of both fields the thistles were so numerous that it distributed itself over all the surface: I am quite sure they would have given one to every foot square. Field No. 1 was in pasture that summer. We plowed it deeply in the month of August with the single furrow plow, and sowed it

- (1) So should we.—Ed.  
(2) For malting purposes, of course.—Ed.  
(3) Very good indeed.—Ed.

thickly with rye early in September. The following season the rye was cut with the binder when in the blossoming stage and put into the silo. This was in the month of June. As soon as the rye had been removed, the ground was again deeply plowed with the one furrow plow. The skimmer was used so that all vegetation should be completely buried. The ground was at once rolled and harrowed after the plow to keep in the moisture. It was then put into shallow drills by the use of the double-mould-board plow. These drills were made twenty-two inches apart. Two teams were kept constantly making drills. A third team mellowed the ground before the drillers and also rolled the drills at once or as soon as possible after the seed was sown. One horse with a turnip drill was kept sowing rape seed along the line of drills. The drill used put in two rows at a time and the driller of the seed kept close up to the teams forming the drills. In this way the germination of the seed was insured though the weather was dry. (1) As soon as the rape was about an inch high horse cultivation commenced. This was kept up until the rape was so far grown that the tops had almost met in the space between the drills. The cultivator went over the whole field three or four times. The crop of rape was gone over twice with the hand hoe to remove any thistles which might be growing in the line of the row or indeed any other noxious weeds in the same. This hand labor cost \$1 per acre, valuing the time thus spent at ten cents per hour. The rape was pastured with lambs. The next year the field was sown with spring grains, as peas, barley and spring wheat, in plots from one-half to two acres in size. These were of course experimental plots. In the month of June, 1891, this field was gone over with the spud, side to side, and all foul weeds removed with twelve hours' labor of one man.

The other field, which contained twenty six acres, was also sown with rye, but in this case the field was pastured. In June, 1890, it was plowed the same as field No. 1 and treated in every respect the same. The following year this field was also sown with experimental grain plots. It was gone over in the month of June with the spud and all foul weeds taken out of it with twenty-three hours' work of one man. We therefore in the one case got a crop of rye for the silo and a crop of rape which pastured twelve to fifteen head of lambs per acre for two and one half months, and in the other case rye pasture until June and an equally good crop of rape; that is to say, we got two good crops in one year and left the land in good condition for the following crop. As to the number of weeds left, I could not give a more accurate statement without an actual count, which we did not make.

It is fair to mention here, also, that circumstances favored this experiment. The weather was dry when their autumn plowing was done and also subsequently. It was also dry when the rape was being cultivated. In a wet season equally good results would not follow without considerably more hand labor.

#### LOOK AT THE POTATOES.

On page 100 of the April issue of *The Farmer*, after referring to the work of M. Girard, in France, advice was given as to the best way of plant-

- (1) The good old Scotch plan of never allowing the land to dry before the seed is wn.—Ed.

ing in this country. The subject was again referred to on page 23 of the May issue and the plan of plowing the seed into every third furrow recommended as on the whole the safest for a country like this, where the risk of loss from drought is much greater than of getting sick through excessive rainfall on a stiff bottomed soil. Will readers take a look at their potato crop now and see whether there is any suggestion in its present condition for the work of next year. This has been in most districts a specially dry summer. In such a season deep plowing, especially if done in the previous fall ought to be a great help to the maintenance of healthy growth. Air is as needful as moisture, and stiff clays are almost impervious to air. (1) Another point to be noted is that moisture can be retained and the seed planted deeper, thus doing away with the assumed necessity of setting up the drills with the plow. Soil naturally close and retentive will always have the tendency to throw the tubers toward the surface, where they will get greened, thereby making them unsuitable for human use if not for seed. Let the cultivation be deep and thorough before planting, with enough of shallow surface cultivation afterwards and there is not the slightest necessity for drilling up afterwards. (2) In such a season as this the more the drills are set up by the plow the more are they certain to get injury from drouth. On a dead flat there may be cases in which excessive rainfall in the growing period will do harm, but for one such case there will be ten in which the loss of crop from too much drilling up will do more or less harm. If the drills are rather wide apart, as recommended in April, a little bit of setting up may do no harm, and if the season is on the wet side the same may be the case. But *The Farmer* would stand by flat cultivation every time. It may be good policy, after a deep stirring of the land, to drill it up roughly before freezing in 3-foot drills in which, when hardened by frost, manure either rough or well rotted may be spread. If in those furrows seed is planted, and the drills split so as to cover them, taking care if the spring is dry to lose none of the moisture by dawdling over the business, such a plan may turn out a very good one. If the weather is warm just after planting, a host of weeds will germinate and the harrow should be run over the plot lengthwise of the drill whenever the weeds are in their first leaf. The harrowing may be repeated weekly till after the potatoes show, and an immense amount of weed destruction will follow. After the plants show in the row, shallow horse-hoeing may be continued as long as there is space between the rapidly growing rows, but no setting up with the plow. If the land is partially cultivated in the fall and the seed put in every third furrow the same results will follow as by the other mode, so far as the potatoes are concerned, but there can never be the same chance of killing early weeds with the harrow

On one point more. For early planting only whole potatoes of moderate size should be planted, say 18 inches apart. Later on, as the earth gets warmed up it will be quite safe to cut into good sized sets. But if at this stage there are signs of a dry spell setting in, then lay aside the knife and plant whole every time or your seed may perish of dry rot. Now take a look at

(1) And yet the water of drainage does penetrate through them, which would not be the case were they impervious to the air. Ed.  
(2) It is almost impossible to make farmers see this.—Ed.

your potato crop and see if it harmonises with the doctrines here propounded."

A "finely pulverised surface" is by no means necessary for wheat; on the contrary all our great wheat growers in England prefer "a nice clod," which is pulverised by the roller after the wheat is up. (1)

A potato-grower on a large scale in the Cambridgeshire Fens and South Lincolnshire has sent the *Times* some valuable details bearing upon potato culture. He has taken an active interest in the spraying of potatoes since its first introduction three years ago, using first a hand sprayer, next a French apparatus, and now a Strawnson's horse-power sprayer, which he finds much superior to the French machines. His experience is entirely in favor of the use of 'bouillie bordelaise,' which he finds he can apply at a cost of about twelve shillings per acre, dressing from fifteen to twenty acres a day. Last season he sprayed 150 acres with very satisfactory results. He grows potatoes every second year, taking wheat or barley crops afterwards. The potatoes get 10 cwt. per acre of artificial manures, and it is found that the use of the sprayer enhances both the quantity and the quality of the produce. Unless the weather should speedily change he anticipates a very blighty season, and those growers who resort to spraying will reap the benefit. It is quite possible that a heavy cropping variety of potato, and one which is at the same time found to be very palatable when cooked, may be specially liable to disease. By means of spraying with 'bouillie bordelaise' such a crop may almost certainly be saved and profitably marketed.—*Kentish Express*.

Wheat very naturally follows the pea crop. The wheat crop requires a large amount of nitrogen from the atmosphere while it is growing. Crops of wheat may be obtained after a pea crop nearly as good as those grown on the bare fallow. Wheat comes after a crop of peas, it is not necessary to plough the ground after the pea crop has been reaped, providing, first, that the land is fairly free from weeds, and, second, that it is not so hard and stiff as to prevent thorough pulverization of the surface with the cultivator and harrow. When a good clean seed bed can be made simply by cultivating, it is better not to plough such lands. It is better not to plough, since a finer pulverization on the surface can ordinarily be secured without ploughing them. And this would mean more dampness in the soil to promote the growth of the newly-sown crop, and it is better not to plough them because of the firmer character of the soil below the upper rootlets of the wheat. The small openings between the particles of soil are fewer than if the land had been ploughed: hence there is less chance for the retention of water in the soil, which means that there will be less liability to injury from the contraction and expansion of the same."

#### MANURE ON MEADOWS AND PASTURE.

EDS. COUNTRY GENTLEMAN—Our principal stock is sheep. The manure is allowed to accumulate in the sheds through the winter, and it contains considerable hay seed. We have found it highly profitable to put this manure upon our meadows. It also

(1) The following spring, as 100 of English wheat is fall-sown.—Ed.

greatly improves thin pastures. We haul it out in August and September. If well pulverized and scattered thinly, the earlier after the meadows are mown the better. Very strawy manure may also be put on at this time to advantage. It protects the grass roots from the intense heat, and helps to conserve the moisture after a shower of rain. We use the Miller manure spreader with great satisfaction, putting on the meadows not over ten loads to the acre. Manure from the sheep stables that has been tramped into tough flakes has to be torn up considerably with forks to make it scatter satisfactorily. But a better way to manage it is to throw into piles about 18 hours before scattering, and wet the dry flakes slightly. This starts fermentation. Care must be taken not to let it lie too long, for there will be great loss through the escape of ammonia. Where a spreader is not available, harrow thoroughly over the manure put upon meadows. We did this before getting a spreader, and I believe the harrowing was of considerable benefit through favoring the growth of the grass seed.

Manure put on this fall will interfere very little in the hay crop of next year. Meadows can be kept up in this way to such a profitable yield that they will not have to be reseeded by plowing. We spread manure from horse and cow stables as made through the winter upon sod to be plowed for corn in the spring. We use commercial fertilizer in sowing wheat, and are satisfied that it increases the wheat yield, insures a better catch of grass seed and increases the yields of hay for one or more seasons. The spreader is not practicable upon plowed ground. It may be of interest to mention that this year took the sixth crop of timothy from a 10 acre meadow. It gave a fair yield of clear timothy, but not as much as the ground is capable of producing, and it will be plowed and reseeded. H. P. MILLER.

Delaware County, O., Aug. 6.

Country Gent.

**Blight in Bean Stalks.**—(1) I am sending you some specimens of bean stalks which have been attacked by a blight prevalent here in some seasons and on some soils. I shall be much obliged to you if you can suggest any remedy for it.—R. C. C. L. [The bean plant is attacked by the bean aphid (*Aphis rumicis* L.), known under varying names, as "black bean fly," "collier," "black dolphin," &c. On the specimen sent can be seen the relatively large wingless female, of a brown or black colour, about one-tenth to one-twelfth of an inch long; the winged male, which has a smaller and blacker body and transparent, slightly yellowish wings; and the slaty-grey pupæ and young aphides. The extraordinary quickness with which these aphides multiply make the cure of this disease very difficult, but the tops, and all parts blackened by the insects, should be cut off, and taken carefully away in baskets and burnt. In gardens the aphides are often killed by drenching with strong soap-suds, which must be continued until there is no sign of any blackness. These flies do not, as a rule, attack the bean until July, (2) so that if the plants are forward enough to be past injury it is a decided advantage. Winter beans, for the same reason, are less liable to injury by these aphides.—J. B.] (3)

(1) This refers of course, to the horse-bean.—Ed.

(2) v. p. 163 of this volume.

(3) The winter, or Russian bean, does well in England.—Ed.

#### CANADA AND THE STATES ECLIPSED.

Shortly before seven a.m. on Thursday Vienna was visited by a terrific hailstorm. Deaths were caused in three cases by falling trees. Many horses took fright, and their bolting was the cause of a number of more or less serious casualties. A detachment of artillery with 32 guns, was overtaken by the storm. The horses became unmanageable and ran away in all directions. In a few minutes thirty soldiers lay helpless on the ground. Several were run over, one of them being killed. Three officers were also severely injured. In the town itself a large number of people, who could not find shelter in time were much hurt by the hail. The stones were on an average the size of hazel nuts, and came down in streams. Upwards of a hundred thousand windows were smashed. In one Government building alone, the Ministry of Commerce, over five hundred panes of glass were broken. The Palace itself had six hundred panes smashed. In the beautiful parks and gardens of Vienna the trees were almost entirely stripped of their foliage, and all the flowers have been destroyed. The hailstones were swept together in large white heaps, which lay by the footpaths as does snow in mid winter. In the more exposed parts of the city, as, for instance, near the Danube, the telegraph and telephone poles were blown down and lay entangled like huge cubwebs on the ground. The vegetable and flower gardens, as well as some of the vineyards in the neighbourhood have been completely destroyed. In the streets several horses were stunned by the force of the falling hailstones, which were fatal to thousands of birds. During the storm the temperature sank to 10 deg. Réaumur. Similar disasters also occurred in Pressburg and other places, devastating the vineyards.

#### HAY IN SCOTLAND AND ENGLAND.

We have just returned from the Royal Show at Cambridge, and a rare good time the farmers down there seem to be having. They are reaping magnificent hay crops, and ingathering it as they seldom have done. Generally hay in England is harvested much greener than in Scotland. With us the crop would not keep if it were put up as is done in England. The effect of the slight heating which takes place in the large stacks made in England is merely to sweeten the fodder. If it were so to heat with us, the hay would be rotten. Very often the uncertainty of the climate in Scotland causes the hay to be whitened and bleached before it can be stored in the stacks, and the whole effect is to take the greater portion of the sustenance out of the crop. The English system makes the hay much more palatable to the animals, and the effect cannot but be highly beneficial to stock."

SCOTLAND YET.

Farmer's Advocate.

#### HAY IN ENGLAND.

It is an open secret that much of the hay for which high prices were paid on the other side of the Atlantic last winter is still in store in Liver-

pool and Bristol, whence, sooner or later, it must be sold out at a loss. English farmers have this summer mown a greater area of grass land than usual, and it has yielded satisfactorily. The breadth runs to fully 8½ million acres, and the total yield is little if anything short of 13 million tons. The foreign hay trade must, therefore, be well endowed with the elements of vitality, if it can maintain its recently acquired position in face of this season's generous yield of home-made produce. Last year England's needs furnished the foreign hay-growers opportunity; this year England can certainly afford to be self-supporting. And we may rest assured that the bitter lesson which English farmers learned last winter will last at least a generation.

T. Bowick.

#### Country Gent.

In replying to the toast of the judges at the Tring Show, Mr. ERNEST MATHEWS, referring to the milk and butter tests, said the present was a day for specialists, and there were special breeds of cows. In his opinion there were milking cows, butter cows, and beef cows, all distinct animals, for he did not believe in a general business cow any more than in a general business horse. If they had a cow which made 1 lb. of butter from 17 lb. of milk, they could reckon it to be a butter cow, and if they had one which yielded 600 gallons of milk a year they could consider it a milking one; if, on the other hand, they had an animal which did not come up to either of those standards, they should send it to the butcher. If farmers looked to these points, he was sure the day would not be far distant when they would see the last of New Zealand butter, and milk and water from Holland.

Wire Worms are often found very thick in newly broken up pastures. For the first two years a dressing of salt at the rate of 600 or 800 lbs. to the acre will be beneficial. The dressings should be applied in cloudy and showery weather and on fine days the surface of the soil thoroughly cultivated. There is nothing like high cultivation for wire worms and constant hoeing is also a good remedy. Salt has no effect on the beast. Nothing but a heavy roller—Crosskill or Cambridge—will do. *Ed.*

### The Flock.

#### BREEDING FOR TWIN LAMBS.

S. BARRINGTON.

It is possible to increase the fecundity of sheep very much by breeding from ewes and employing rams that are noted for their twin and triplet-bearing propensities. The old idea that one good lamb from a ewe is better than a pair of twins is year by year finding fewer adherents, for it has been demonstrated thousands of times that a grade or full blood ewe of the mutton type can raise a pair of twins, each of which is fully equal in value to the lamb getting the entire nourishment of a ewe. More food is required for twin lambs, and it should be willingly provided, but this additional food need not be twice the quantity, as the first thought would suggest. In fact, taking the country through, not one farmer in ten sepa-

rates the single from the twin-bearing ewes, but feeds them from the same rack and feed trough. In the twin-bearing races nature has wisely provided them with large udders and a liberal secretion of lacteal fluid. By planning to have the lambs dropped just before turning out to grass, the extra amount of food required to maintain the ewe until this period would be scarcely perceptible. When at pasture the addition of a feed of grain, ground or whole, coupled with the grass feed, will provide an abundant supply of milk, and four-months lambs thus treated will tip the scales at a heavier weight than those of the same age dropped two months previous, though this ewe and lamb may have been fed twice the amount of grain given the pasture division of the flock. Those who breed for twins find it best to have the lambs dropped not earlier than a month previous to the period of turning out to grass. It will pay farmers who raise lambs to fully investigate this twin-lamb subject, and if they can to almost a certainty raise fifty lambs from not more than thirty ewes is it not better than to feed and care for twice that number to obtain fifty by the one lamb plan? If a neighbor has a flock that drops many twins, it will be good policy to obtain some of the ewe lambs for your own flock, and thus obtain class of stock without a heavy expense, and at the same time be able to practically test the plan under your own management. Such a plan will insure the most prolific breeders, and thus benefit the flock. *Ex.*

#### DORSETS IN WEST PENNSYLVANIA.

We visited the farm of Mr. Henderson, well known by reputation to many of your readers from the fame of his Holstein cattle and Dorset sheep. Mr. Henderson has about 350 Dorsets, I believe, and gives them just common good care. I saw a bunch of 75 ewes running on a hill pasture that was certainly very short. I know from experience that some of the fancy black-faced breeds would get thin on such feed, yet the Dorsets were in good flesh and really almost too much so for breeding condition. Two little lambs were playing about, and it was evident that a good many more might be expected soon. A very fine ram with the ewes—a ram that took a prize at the world's fair, and while he received no extra food or care whatever he was in fine condition, and attending strictly to business all the time. I mention this because as many of your readers are aware with most of the mutton breeds it is found necessary to keep a fine ram up all the time, he is fed grain and cared for very carefully.

Mr. Henderson, Jr., who went across the water to import the Dorsets, told me that he did not feel certain that it was Dorsets that he wanted so on his arrival in England he first went to Shrovesbury and among the Shropshire breeders. He admired the beautiful Shropshire and noted the care that they received, and that but few were kept together. Then he went down into Dorsetshire, and found 300 to 1,000 Dorsets in a flock, on the pastures as we keep them in America. He saw 1,500 yearling ewes in one flock feeding on the hills. It naturally seemed to him that those were the sheep best adapted to America, and several years of breeding them here has made it unquestionable.

Next I visited the State fair of West-Virginia, which oddly enough is held

in Ohio, across the river from Wheeling. Here I found a good show of sheep, Henderson's Dorsets taking the lead I thought. I bought a ram and a few ewes that were prize winners. It is notable that a Dorset ewe at Wheeling took sweepstakes for best ewe of any mutton breed.

Mr. Henderson feels confident that while our wool protective tariff is probably gone forever, yet the prosperity of mutton producers will be greater than ever in a short time. Every level headed shepherd with whom I have talked believes it. We are not all sacrificing our sheep, although of course the scrubs must go.

J. E. WING.

Woodside Farm, O., Sept. 14.

#### HAVE SHORT-HORNS DETERIORATED. (1)

An editorial under this head, in a late issue of *Bell's Messenger*, will doubtless interest many readers. We copy it below:

This question has been propounded again and again periodically, and, indeed, very frequently for twenty years or more, and yet the breed, despite pessimist views, goes on pretty much the same as in days of yore, occasionally bringing to the front some very perfect specimens alike of bulls, cows and heifers, while taking the bulk of breeds there is still, perhaps, very much to be desired, as, indeed, there always was. In the seventies the question was mostly asked in regard to showyard cattle. Those grand-looking animals exhibited in the sixties by the Booths, Colonel Townley and Lady Pigot were missed, and those who regarded the mere surface and appearance of things at once rushed to the conclusion that Short-Horns were deteriorating. Those who did this forgot to take into consideration the very undesirable sacrifice made of useful characteristics when all the best animals of any herd are habitually trained for the showyard. When everything is considered, it must be accounted loss, not gain, when the best specimens of any breed are so pampered in their bringing up that the females lose fecundity. However gratifying to connoisseurs it may be, therefore, to find the best-shaped, most beautiful heifers come out like ripe plums with the bloom on, when they refuse to breed, and get barren at three years old, and find their way to the Smithfield and Birmingham Christmas Fat Stock Shows, the sacrifice made is always costly and ruinous. No herd suffered from this more than Warlaby, except, perhaps, those by Colonel Townley and Lady Pigot (2) before mentioned.

But after dairying in the eighties got to be of more importance than it had been heretofore, the complaint became general that the Short-Horn, which should be a general-purpose cow, had, by educational training carried on over a great many years, been allowed to degenerate into one only fit to breed animals for show, sale, or grazing purposes. In regard to a great many of the leading pedigree herds, the truth of this became only too apparent. Animals of strains accounted the most valuable could not suckle their calves after having produced them, and it was not unnatural that rent-paying farmers should shun

(1) An article of great merit.—*Ed.*

(2) Ah! what a brilliant beauty, of Spanish type, she was! When we dined with her at De Freville's, in 1853, we little thought of her turning to the breeding of shorthorns. *Ed.*

such, as they would the plague, and that in the end conclusions adverse to pedigree were arrived at. Short-Horns there were in large numbers in Yorkshire, Gloucester and Somerset as well as in the cheese-making districts of Cheshire and the Midlands, which would fill the pail better than almost any other animals, but they were not herd-book ones. (1) What so natural, then, that a prejudice should arise against the value of pedigree? Yet this was unjustifiable, for breeders of pedigree Short-Horns who have cultivated the lacteal secretions of their cows have proved incontestably that herd-book cows of the very choicest strains have been so trained for deep milking that their yields have actually exceeded those of any other pure breeds or cross-breeds. In the days of Whittaker, Bates, Berry, and Sir Charles Knightley, the Princesses, Duchesses, Old Daisies, and Fawleys were one and all expected to be deep milkers. The showmen are those who have despoiled them of merit in this respect. But it is a characteristic which may be regained. The owner of a herd, whether high-bred or otherwise, has only to weed out carefully all the bad milkers, and breed only from good ones, taking the precautionary measure also to have bulls in service from deep-milking families, and this property would be revived. Mr. C. S. Road recently alluded to this topic at the luncheon on the Norfolk show ground—not solely in relation to Short-Horns, it is true, for Mr. Road pointed out that the Red Polls as well have been bred for show and sale, to the sacrifice of milk production just as badly in some cases as the Short-Horns—but he pointed out that for both alike it is prominently desirable that dairy and grazing properties should be combined; and, indeed, we may say the same of the Devons, Herefords, Sussex, and Aberdeen cattle likewise. Nature intended them all for general purpose animals, and it is the folly of the man that has made them otherwise.

But to return to the question, "Have Short-Horns deteriorated?" Mr. Richard Gibson, in his Chicago Exhibition Live-Stock report, declares that they have in one particular at least. The young steers are not so good in the United States, he affirms, as they were twenty years since; and he attributes this very much to the prejudice in regard to color. American breeders will have nothing to do with any Short-Horns but those which are red, which prejudice has been growing for twenty years or more, and has for some time past extended to England also. British breeders have to cater for the foreign market, and when they find that the South Americans and the Australians, and, indeed, most foreign buyers, will not have white bulls, or even light roan ones, it is only natural that they should strive to produce what will sell best.

There is a great deal of sound sense in Mr. Gibson's paper, but he certainly appears to have exaggerated views on this question of color. We should say few British breeders will endorse his conclusion that red Short-Horns are almost always small, or that the families of that color yield worse steers than the roans and whites. Probably the latter are best for milk, but for grazing and constitutional vigor and hardihood many will be found to give preference to reds. Nor can Mr. Gibson's leading conclusion that steers are deteriorating be held to apply to Great Britain, whatever may be the fact in respect to the United

(1) Please observe that this is what we have been saying for 17 years.—*Ed.*

States. We opine that the old proverb, "A good horse may be of any color" may have application to Short-Horns, so far at any rate as to assert that a good beast may be red or white roan. His appreciation of mossy hair we heartily endorse. He says: "Look at the cattle Hosken sends from Corn wall, not one year, but year by year; their coats would make a seal turn through envy."

#### A DAIRY SHORTHORN BULL.

A subscriber at Roscoe, Assa., writes THE FARMER: "I wish to buy a pure bred Shorthorn bull of a milking strain. Can you tell me where I can get one in Manitoba or the Territories. We have 10 cows, pretty good milkers and I wish to increase the milking powers and at the same time increase the size and quality of the cattle and improve the steers. I have seen plenty of such cattle in Westmorland, Eng., and am convinced they are just the ones for the Northwest, I would like a two-year-old bull, if possible, or a three-year-old. What would likely be the relative prices for one-year, two-year and three-year-old respectively."

THE FARMER could not, with any degree of confidence, offer the advice this correspondent wants. The beefing Shorthorn gets all the honors here. To meet this difficulty a bull with milking ancestry was brought from Ottawa to the Brandon Experimental Farm and was found to be one of the worst affected with tuberculosis. Mr. Gregg, in his address at the Winnipeg Industrial, complained that he could not find in New England, any Shorthorn bull of pronounced dairy strain, and does not expect to find one unless he tries the north of England, where dairy form is at a premium. Massachusetts State Farm was lately on the search for strong constituted Shorthorn dairy cows in South Dakota. If there is a Shorthorn bull in this country that has anything like good dairy form and is the son of a milking mother, THE FARMER will be glad to hear about him. The Cruickshanks strain of breeding ignores milk as *adesei dorum*, though in a few cases the milking quality from a more or less remote ancestor does still assert itself. When importers draw for their supply from the north of England, instead of the north of Scotland, there will not be great difficulty in picking up Shorthorn bulls of the kind to suit this equirer. (1)

ANSWER.—The full particulars of the World's Fair 90 day's test would most likely be of little interest to readers here, and as a guide to prospective dairying in Assiniboia would be worse than useless. The Jerseys, for example, were the pick of thousands kept by wealthy fanciers, carefully trained and bred for generations for the one specific purpose, and valued by their owners at 30 times the price of a good western cow. They were looked after by a past master in the art of forcing, and some of the most costly fell victims to the high pressure system under which they were handled for milk production. On the other hand, men who had no bias maintained that the Shorthorn lot were in many instances (2) quite unworthy to represent the breed, very few of them

having had more than the plainest sort of treatment previous to the show, as the record of weight gained in the 90 days most conclusively proved. Five of them made a gain in live weight averaging 2 lbs., a day for the 90 days, Maud's Antarctic, which stood 57th in merit on a list of 74, made out of \$21 worth of feed 185 lbs. live weight, valued in the table at \$8.31, and 106 lbs. of butter valued at \$42.66; and Nora, the best Shorthorn, of \$24 worth of feed made 3,679 lbs. milk and 115 lbs. added weight. She was placed 16th on the list, and her butter yield was put at 160.78 lbs. worth over \$65. Materna, the best Guernsey, and 8th on the list, cost \$22.70 for feed, lost 13 lbs. of weight and made from 3.512 lbs. milk 185.16 lbs. butter worth \$74.75. Ida Marigold, the biggest and best Jersey of the lot, was 3rd, and put away more feed than any cow there. She ate \$27.13 worth of feed, made 3,445 lbs. milk, and 199.75 lbs. butter worth \$81.80, gaining in the time 81.8 lbs. of live weight. Brown Bessie, 1st on the list, made 3,634 lbs. milk, 216.67 lbs. butter worth \$83.77, and gained 81 lbs. in 90 days.

N. W. Farmer.

#### DEHORNING.

ED. HOARD'S DAIRYMAN.—I usually follow the pen of Josiah D. Smith with pleasure. What is said in DAIRYMAN, No. 7, page 108, first column, upon dehorning, is calculated to do much harm, and in my opinion, the picture is overdrawn. I have had several years' experience in the business. Have dehorned at different ages, from a few weeks to 16 years. Have used chemicals, a pocket knife, a saw, and clippers, upon more than forty animals. The convenience to myself and the kindness to my stock cannot be expressed upon paper. If that be true about the Jersey heifer, I think Gov. Hoard need not fear to take off his Jersey bull's horns, lest he dilute his ginger. I do hope the time will soon come when you will see that your Jersey bull without horns, has the same nervous temperament as with. He is simply shorn of his power to do harm. We have laws against carrying concealed weapons, but that does not alter the disposition of those who would like to carry them. A cow that is pugnacious with horns, may feel so without them, but her cruel horns are gone, and the herd soon learn it. I turn sixteen out at one time into a small yard, and like a lot of calves they crowd around two large water tubs.

I wish everyone who has practiced dehorning would give a brief report through your paper. For those who are prejudiced and know nothing about it from experience to decry it, is improper. The matter is of too much importance to be disposed of lightly.

If any one doubt the kindness with which my cows are treated, let him step into the barn and look at the well-bedded, sleek forty; see them turned into the yard to drink the steaming water as it runs from the creamery across the road. Then step into the creamery and see what they do for me in return.

GEO. W. HUMPHREY.

Plymouth Co., Mass.

We can hardly approve Mr. Humphrey's suggestion as to the publication of further reports of experience with dehorning. The real point of our objections to dehorning are entirely lost sight of. That a lot of ani-

mals without horns will bunch together with less danger and damage than a lot with horns, goes without saying, but until some one can bring forward some testimony from experience that the milking qualities of the progeny to the third and fourth generations are not impaired by this system of mutilation, we must beg to be excused from advocating or approving the practice. We shall all be wiser on this subject a few years hence

DR. HOARD'S DAIRYMAN.—The following clipping is taken from an issue of HOARD'S DAIRYMAN of several years ago:

#### EFFECTS OF DEHORNING.

The DAIRYMAN is concerned first of all in knowing where the exact truth lies concerning dairy practice, from the cow to the churn. Dehorning has suddenly become a practice with farmers all over the northwest. This includes many dairy farmers.

While our private opinion, at present, is that it is not a safe system to pursue with cows that are to be devoted to milk and butter production, or with thoroughbred bulls of specific dairy blood, we propose to know all we can concerning the effects of this practice.

I would respectfully ask if you have yet found an opinion as to the "effects" of Dehorning. Has "Farmer's Wife," who wrote a series of articles at that time, had her herd dehorned? She said she never would.

Harrison, Ill.

SUBSCRIBER.

The DAIRYMAN stands just where it did when the above extract was penned. It knows that mutilation of any kind is very apt to injure the breeding potency of all animals. Especially is this true of males. A high, strong spirit, self-confidence and a disposition towards self-assertion are essential to the power of potency—that power by which a male impresses on his offspring, through the female, the full character of his blood and breeding.

We understand this to be a physiological law. The advocates of dehorning ask us to forget and forego all knowledge of this law, and believe that nature will make an exception to it, because cows bunch together so much better, are so much more peaceable, and do not shrink in their milk when dehorned. The advantage of dehorning are apparent, and on the surface. The disadvantages, if there are any, will lie deeper.

Some people, thinking it very witty or wise, ask, "Does the breeding power of a bull lie in his horns?" They forget that mutilation, abuse, or any condition whereby a serious shock is visited on the nervous system, will affect the breeding potency of a male animal. A race of slaves does not beget a race of heroes, and the longer the serfdom endure the greater is the degeneracy in successive generations.

The breeding power does not lie in the horns, but it does lie in the nervous system, and we believe that if dehorning does to a male what it is claimed and desired it should do, it can but have a deleterious effect on his potency. The sole value of a male is his breeding power, as distinguished from the mere procreative power. We believe it to be wisdom to guard that power against all hurt. The burden of proof should lie with the advocates of dehorning to show that the practice does not injure this breeding power. This they never have done, and indeed cannot do it, until a number of years have elapsed. If damage

is done it will then be too late to rectify it, for a family of dairy cattle showing such a deficiency would be worthless. For this reason we prefer not to dehorn our own males.

#### IN FAVOR OF WINTER CALVES.

EDS. COUNTRY GENTLEMAN—Calves dropped during the fall and winter will, if provided with warm quarters, grow and drive much better than those dropped in spring and summer. Flies and heat, combined with short pasturage, are greatly against a rapid growth of any young animal. At six months of age, the summer calf is apt to be paunchy and rough. At the same age, the winter calf that has been carefully fed and cared for is sleek and fat. Each may start with equal condition of flesh and health, but the one dropped in winter will distance his competitor nine times out of ten.

This requires judicious treatment on the part of the feeder, however. Too much milk must not be fed while it is young. A Jersey calf cannot properly assimilate as much milk as the beef breeds. Two or three quarts at a time is sufficient. Dry hay, bright and sweet, should be kept where it can get it after it is two weeks old. Turn it over, or take out and put in fresh after a day or two, as only the very best of it will be eaten while the calf is so young.

About this time it is well to begin putting a little flaxseed jelly with the milk. The quantity, beginning with a tablespoonful, can be gradually increased until a pint or more is consumed at a time. The calf will surely thrive under this food if not too much milk is given at a time. Bowel trouble is sure to result if it is. A single time overfed will give scours, one of the worst diseases a calf is subject to. It is invariably caused by overfeeding. The milk fed to a young calf should be of a proper temperature each time and that is the same as new milk. Too hot milk is binding to the bowels, and too cold is loosening. Extremes should be avoided. (1)

It pays to give the best of care to the calves. Look after their wants in the way of warm stables and dry bedding. Newspapers tacked to the walls inside will keep out lots of cold in case there is nothing else procurable. Building paper is cheap, and the stables can be quickly made warmer by using it freely. Warmth and proper food will keep the winter calves thrifty. E. E. Rockwood.

Genesee County, Mich.

#### Swine.

#### FEEDING PIGS ON WHEAT. (2)

Mr. E. H. Lascolles, Lake Corrang, Hopetoun, gives in the Australian papers his experiences in feeding pigs on wheat. He says:—I am now in a position to give results from fattening 186 pigs on wheat. As they formed part of 358 stores purchased in the Warrnambool market by Mr. J. Archibald on my account, the remainder now being fattened, can only give proportion of feed used, and presumably the balance may not turn out so well, as amongst them would be the odd bad-doors. I have taken pains to

(1) 90° to 96° F. is about right.—Ed.

(2) Interesting enough, with wheat at 60 cents.—Ed.

(1) The Dairy-shorthorn is not a pedigreed animal. From Yorkshire to Northumberland, England is the best hunting ground for any one desirous of buying stock of this kind. Ed.

(2) There was not one true Dairy-shorthorn among them.—Ed.

see that the pig account has been debited with every item of expenditure, and I am so satisfied with results obtained that I have erected permanent and more convenient enclosures, with several sheltered pens in which to top off the forward pigs. In my present experiment pigs all ran together in a 10 acre well-watered enclosure.

Mr. J. C. Hutton, the well-known bacon-curer, who inspected and agreed to purchase all my consignments, gave me many valuable hints, and pointed out that with pigs running about the hams did not develop as they would do if penned up. Then, again, it has been a disadvantage for small and large pigs to feed together, naturally the former being very much "elbowed" out of the troughs. At first raw wheat was merely thrown on the bare ground, involving a certain amount of waste. After a week or two wheat was steeped in cold water put into wooden troughs. Now my manager considers it a great economy to crush the wheat, which for the future will be done, and the pigs graded as to size and kept in separate enclosures.

In addition to the wheat—which, although water-damaged, was charged at the full market price for sound, 1s. 5d. per bushel—the refuse of winnowers and haystacks was given in the first few weeks, but full values were debited.

Statement of account stands as follows:—

Expenditure.		Receipts.	
170 pigs purchased at Warrnambool on March 1st, and 138 on March 10th, averaging under 10s.		May 17th-94 pigs, 12,333 lb., 3d...	£154 3 3
I have taken the highest-priced of these to represent the 94 marketed on 17th May, and 92 on 23rd June, making them average 13s. 6d. per head....	£126 5 9	June 23rd — 92 pigs, 11,991 lb., 3d.....	149 17 9
Proportion of feed given to these 94 and 92 pigs for 11 and 16 weeks respectively, charging wheat at 1s. 6d. per bushel.....	58 16 0		334 1 0
Proportion man's time, with use of horse and dray, at £2 5s. per week.....	14 14 0	Less rail freight to Melbourne, £27 8s. 10d.; commission on sale £7 12s.....	35 0 10
Rail freight from Warrnambool.....	13 10 0		269 0 2
Sundry expenses, trucking &c incidental, expenses, interest proportion of death-rate, supervision, use of yards, &c., say.....	10 0 0	Profit.....	£42 8 11

This shows that even at 2s. a bushel it pays to feed pigs and that we can regard that price as a "bedrock" one on the farm, and which no grower should sell below.

I am so satisfied that I mean to enter largely into the breeding of pigs so as to do away with the present necessity of purchasing stores at so distant a market as Warrnambool.

I think most people will agree with me that £13 14s. 5d. is an excessive charge by the railway department for one truck from Hopetoun to Melbourne, a distance, *via* Geelong, of 279 miles, especially when the same identical truck loaded with sheep would only cost £9 3s. The additional weight of a truck of pigs would only be trifling so extra haulage should not be considered as worth a 50 per cent. increase

in freight. Even with an offer to re-load the trucks which came from Warrnambool with fats from Melbourne, I could only obtain a rebate of 10s. on the £13 14s. 5d., and I preferred to keep my grievance to accepting so inadequate a reduction

Science.

CAPABILITIES OF LAND FOR WHEAT GROWING.

J. J. Willis, Superintendent of Sir J. B. Lawes' Agricultural experiments, Rothamsted, England.

It is sometimes stated by American farmers that the English people need no longer fear the wheat competition of the United States—it is only in meat that antagonism will now consist, for the wheat lands of America are exhausted. When we look at the results obtained by Sir John Lawes and Sir Henry Gilbert in their experimental wheat fields during the past fifty years, such a statement as the above must seem strange. During the last twenty years it is probable that some 16,000,000 acres of prairie land have been brought into cultivation in America, the larger part of which was good as ploughing up old English grazing meadows.

The experiments in wheat growing at Rothamsted have been made upon what may be called fair average wheat land. Speaking in agricultural language, it may be said that the soil is a somewhat heavy loam, with a subsoil of raw, yellowish-red clay, but resting in its turn upon chalk, which provides good natural drainage. In point of composition the Rothamsted soil is not one-fourth as rich as the American prairie land yet after growing fifty wheat crops in succession on the same land there is but little sign of exhaustion, in fact the crop now growing promises to be one very much above the average yield. The records, therefore, of a field of fourteen acres, in which wheat has been grown without manure, and by different kinds of manure, year after year, for fifty successive seasons, without either a fallow or a fallow crop, and in which the produce without manure was in the first year fifteen bushels per acre, and in the last (1893), which was not favorable climatically, nine and three-fourths bushels, with an average of thirteen bushels per acre, equal to the average wheat crop of the whole world, and much higher than the average wheat crop of the United States, including these rich prairie soils, cannot fail to be of much interest at once to the practical farmer, to the economist, and to the man of science. The highest amount of produce obtained in the first year (1844) was twenty-four and one-fourth bushels per acre, and in the last year (1893) was twenty-two and one-fourth bushels the average on the heaviest manured plot being thirty-six and one-half bushels per acre, going up in a favorable season to fifty-six and one half bushels.

YIELD-WITHOUT MANURE.—It is probable that the most interest is attached to the plot which has received no manure whatever during the whole course of fifty years. After a five-course rotation since manuring—turnips, barley, peas, wheat, oats—the first experimental wheat crop was harvested in 1844. The highest yield obtained without manure was twenty-three and one-fourth bushel per acre in 1845, and the lowest was four and

three-fourth bushels in 1879. With such wide variations, due to seasons, it is very difficult to estimate the rate of decline due to exhaustion of soil fertility. Yet excluding the very bad seasons, the decline due to gradual exhaustion is reckoned by Lawes and Gilbert at from one-fourth to one-third of a bushel per acre per annum. It is estimated that over a period of thirty years the unmanured plot yielded an average of 18.6 pounds of nitrogen per acre per annum in the crop, and lost a minimum of 10.3 pounds in drainage, in all 28.9 pounds, while on the plot receiving mineral manures only it is estimated that the crop removed an average of 20.3 pounds of nitrogen, and that at least twelve pounds were lost by drainage, or in total 32.3 pounds. Further, it is estimated that the soils lost to the depth of twenty-seven inches about two-thirds of those amounts, leaving only ten pounds more or less to be otherwise accounted for. Of this, the rain, etc., would supply five pounds, or perhaps rather more, and the seed about two pounds, so that there is but little to be provided from all the other sources, proving clearly that there has been no fixation of free nitrogen from the atmosphere by the growing wheat crops.

The average annual produce of wheat, amounting to thirteen bushels of grain and 10.5 hundred weight of straw per acre, without manure of any kind, extending over a period of fifty years, is looked upon by many as an extraordinary yield, and as indicating a somewhat unusual quality of land. There is no doubt that it bears a higher proportion than might be expected to the produce obtained, even under rotation with periodical manuring. In a large majority of cases where land is badly farmed, with deficient tillage and aeration of soil, luxuriant weeds and defective manuring all have their share in the poor result. The experimental land, though kept extremely clean by hand-hoeing, which doubtless assists in the nitrification of all available organic nitrogen, is never plowed more deeply than in the ordinary practice of the farm; and there can be little doubt that a large proportion of those soils of the United States which are recognized as possessing average wheat producing qualities, would yield very similar results if kept equally clean and otherwise as well cultivated, while some would, under like conditions, produce much more, though many light, sandy soils contain but little inherent fertility, probably much less.

TUBERCULOSIS AND SUNLIGHT.

The key to the whole situation is to be found in a simple experiment made by Dr Koch. Two rabbits were inoculated with the bacillus germs. One was confined in a close, damp, dark cellar and developed and died of the disease in a very short time. The other was given its liberty in the sunshine and fresh air and never suffered from the disease. That is the whole story in a nutshell. The tubercle germ is everywhere. Consumptives have been throwing them off in the sputa for centuries at the rate of 2,000,000,000 to 4,000,000,000 germs daily for each consumptive to say nothing of the other agencies which multiply and spread them. There is no escape from them. Mankind and animals are constantly taking them into their system, and the white corpuscles of the blood are constantly eradicating them.—J. W. Shuster in *Jersey Bulletin*.

EFFECT OF HEAT AND COLD ON BACTERIA.

Heat kills the bacteria, cold numbs them. When my housekeeper has pheasants in charge which she wishes to keep sweet, but which threaten to give way, she partially cooks the birds, (1) kills the infant bacteria, and thus postpones the evil day. By boiling her milk she also extends its period of sweetness. While in the Alps, I made a few experiments on the influence of cold upon ants. Though the sun was strong, patches of snow still maintained themselves on the mountain slopes. The ants were found in the warm grass and on the warm rock adjacent. Transferred to the snow the rapidity of their paralysis was surprising. In a few seconds a vigorous ant, after a few languid struggles, would wholly lose its power of locomotion and lie practically dead upon the snow. Transferred to the warm rock it would revive, to be again smitten with death-like numbness when re-transferred to the snow. What is true of the ant is specially true of our bacteria. Their active life is suspended by cold, and with it their power of producing or continuing putrefaction. This is the whole philosophy of the preservation of meat by cold. The fishmonger for example, when he surrounds his very accessible wares by lumps of ice, stays the process of putrefaction by reducing to numbness and inaction the organisms which produce it, and in the absence of which his fish would remain sweet and sound.—*Tyndall*.

THE USE OF LIME AS A FERTILIZER.

HENRY STEWART.

Many persons in whose good judgment and sense every one has confidence, insist that lime is not a plant food, and is, therefore, useless as a fertilizer. Now a plant food is considered to be anything that, being contained in plants to a large extent, may be applied to the soil, to contribute to the supply of it for the crops. When we see that when such an element of plant substance is applied to the soil the following crop is greatly helped, we can hardly agree with the opinion that it is not a food for plants.

If we study the composition of plants, we find that lime is the most important part of the mineral elements of nearly every one. The ash of a plant is made up of these mineral elements, and, by examining the ash, we may discover what kinds and quantities of mineral matters the plants require. And it is to be remembered that in the growth of plants every element found in them is indispensable. But how much more must it be so—if such a thing were possible, for one element to be more indispensable than another—for lime, which exists in such a large proportion, to be anything but indispensable?

And this must be thought so as we consider that in the ash of hay one-eighth part is lime; in the ash of clover more than a third of it is lime; in the ash of potato tops nearly one-half is lime. The ashes of wood, which we think so valuable on account of the potash in them, have several times more lime than potash, the lime amounting to from thirty to seventy per cent. And there is not one plant grown that has not lime in its ashes.

(1) We hope she makes a hash, or *salmi* rather, of them afterwards.—Ed.

The same applies to potash and phosphoric acid, and reasonably, these are supposed to be food for plants, why, then, is not lime a plant food? Surely it must be so considered.

The best farmed localities in the world are those where the soil contains a large proportion of lime, being derived from the decomposition of limestone rocks. But it is not so much on account of the lime in the soil that the land is so well farmed and so productive, but mostly for the reason that lime being there abundant and cheap, the farmers burn the limestone and make lime, and apply it to the land. Lime, only, is a plant food, but limestone is not, and the soil may be well filled with limestone and yet be quite poor. This is common experience. Now lime is a very active chemical substance. This will be seen if some of it is put in some vinegar. This will foam up and boil over the cup, and a large quantity of gas will be evolved. In the end there will be no more acid in the vinegar. And this is one effect of lime on soil that is sour, such as swamp land, in which the excess of acid prevents the growth of any useful plants.

If we put some lime on a dead animal, or on any other organic matter, it will quickly decompose it and reduce it to its original elements, and this is one effect of lime when used in a compost, the matters thus decomposed then becoming good manure and useful food for plants. And this same effect is produced in the soil when quicklime is applied, as it usually is in the fall when the land is prepared for wheat and grass and clover seeding. But the chemist may take some sand or other mineral matter and mix lime with it, and then add water, and the lime will dissolve quite a considerable quantity of this mineral matter, forming silicate of lime; and by taking the silica from the potash, or the phosphates, or magnesia, or the alumina, etc., that the soil is made up of, the lime renders these elements of plant food soluble and available for the crops.

Now this is a small part of the natural history of lime, as it is used in good farming. And with such a history of lime, as it is used in good farming. And with such a history we must realize its value to the farmer quite independently of the fact whether it is actually a plant food or not. And as this is the season when the land is in the best condition for application of lime, as lime is most soluble in cold water, and the wheat crop is most convenient for it, it is a question for all of us if it is not advisable to so use it, and gather the fruits of its good effects on the soil. The freshly-burned lime only is used, and twenty to forty bushels per acre is the usual quantity. (1) It is left in heaps in the field, preferably of one bushel each, two rods apart, and in a few days it falls to a fine powder by the action of the moisture of the air, or a shower of rain, when it is easily spread quite evenly—so as to just whiten the surface—with a long handled shovel. But when lime is thus used for the wheat, it is not advisable to use superphosphate until the spring. It can then be used to advantage.

American Agriculturist.

Feeding Steers and Spayed Heifers.

At the Iowa Agricultural College Experiment Station some trials have been made as to the feeding of steers

(1) For Scotland 1 from 2.00 to 4.00 bushels used to be applied to the acre at the beginning of a 19 year lease.—Ed.

and spayed heifers. The results are summarised as follows:—The operation of spaying temporarily retarded growth. Three of the heifers were in calf at the time of spaying. The average cost of feed per pound of gain, live weight, for five spayed heifers, five open heifers, and five steers, bred alike and fed under the same conditions for eleven months, was 5.86 cents in case of the spayed heifers, 6.04 cents with the open heifers and 5.02 cents with the steers. The average daily gain per head for eleven months' feeding was 2.07 pounds by the spayed heifers, 1.99 pounds by the open heifers, and 2.44 pounds by the steers. These cattle were marketed and sold in Chicago for 4.75 dols. per cwt. for each of the heifer lots, and 5.75 dols. for the steers. Rating the food used at current prices, and adding all expenses except labour (offset by manure), the spayed heifers returned a net profit of 13.76 dols., the open heifers 0.51 dols., and the steers 64.39 dols. To each of these amounts should be added 39.36 dols., one-third of the profit realised from fifteen hogs fed in connection with the cattle. The spayed heifers dressed 62.8 per cent. of carcass to live weight, the open heifers 62.4 per cent., and the steers 63.2. The highest percentages made were 65.9 by an open heifer, and 65.1 by a steer. Both spayed and open heifers gave about 1 per cent. higher yield of rib and loin cuts than the steers. At the purchase price named and the selling price of meat current at the time of killing, the spayed heifers made the packers a gross profit of 64.84 dols., the open heifers 58.12 dols., and the steers 20.45 dols.—the returns that would have justified a purchase price of 62 cents per cwt. higher for the spayed heifers and 57 cents higher for the open heifers, than the amount herein mentioned, with the same margin of profit as made by the steers. The rib and loin cuts of the steers were valued one and a-half cents a pound above those of the heifers by Chicago meat dealers, while English authorities estimated the value of heifer rib and loin cuts two cents per pound above those of steers fattened in the same manner."

THE GROWTH OF BARLEY.

J. J. Willis, Superintendent of Sir J. B. Lawes' Agricultural Experiments, Rothamsted, England.

The Rothamsted field experiments on barley were commenced in 1852, and the land has been under barley ever since, so that the crop of 1893 was the forty-second in succession on the same land, and the forty-third is now growing. There are about thirty experimental plots. Two have been unmanured from the commencement. One has received barnyard manure every year, or, rather, one-half of it has, for after twenty years the plot was divided, one-half being still annually manured as before, and the other half left unmanured to test the effects of the unexhausted residue of the twenty years' previous applications of barnyard manure. The other plots have annually received artificial manure, for the most part the same, year after year from the commencement. In the following table is given the average number of bushels of dressed grain per acre in two periods of twenty years each, and for the whole period of forty years.

BARLEY GROWN FOR FORTY YEARS IN SUCCESSION ON THE SAME LAND SEASONS 1852-91. SELECTED PLOTS DRESSED GRAIN PER ACRE IN BUSHELS

Manures per Acre, per Annum.	First 20 Years. Bush.	Second 20 Years. Bush.	Total 40 Years. Bush.
Without Manure.....	20	13½	16½
Superphosphate 336 pounds.....	2½	17½	21½
Ammonium salts 200 pounds.....	3½	20½	29
Nitrate of soda 275 pounds.....	37	28½	32½
Amn salts 200 lbs. shell superphosphates 336 lbs.....	47	34½	42½
Nitrate soda 275 lbs. shell superphosphate 336 lbs.....	49½	42½	45½
Barnyard manure, 14 tons.....	18½	49	48½

Referring first to the produce without manure, the data shows that the Rothamsted soil, which consists of a heavy loam with a clay subsoil, resting upon chalk at a depth of from eight to twelve feet from the surface, is capable of producing by its own inherent fertility an average of sixteen and one-half bushels of barley per acre. It may be observed there is a decline in the yield of 33.7 per cent. over the second twenty ears, compared with the first twenty; it is found that this rate of decline is considerably greater than is the case with wheat, and the result is doubtless due to the greater dependence on the surface soil in the case of the barley, and hence exhaustion is sooner manifested.

The average produce over forty years, by superphosphate of lime alone is only twenty-one and three fourths bushels per acre per annum, showing, therefore, that there was an important deficiency of something, which was supplied in the case of each of the other experiments. The addition of ammonium salts or nitrate of soda to the superphosphate raises the produce to nearly forty-three and forty-six bushels respectively; while fourteen tons of barnyard manure have given forty-eight and five-eighths bushels. That small quantities of artificial manure should, over such a long period, give almost as much barley as fourteen tons of barnyard manure applied annually, is certainly a most striking fact. It may be useful, and will serve as some explanation of it, to point out briefly some of the most important points, both of distinction and of similarity, between the mixture of superphosphate and nitrogenous salts on the one hand, and of barnyard manure on the other.

In round numbers, there have been removed annually in grain and in straw about 2.75 tons of produce per acre. Deducting from this the moisture it contains, there remains rather more than 2.25 tons of dry or solid substance removed from the soil annually, and deducting from this again the mineral matter and nitrogen it contains, there remains about 2.20 tons of non-nitrogenous vegetable or combustible substance. In the barnyard dung very much more than this amount of vegetable matter has been returned to the land every year, but in the artificial manures none. Here, then, we have two parallel experiments extending over a period of forty years, in one of which much more carbonaceous organic matter than was contained in the crop has been annually returned to the land in the manure, and in the other none, and yet the produce is fairly equal in the two cases.

Now we may ask whether it is possible that such a soil as that at Rothamsted should stand such a drain as this for forty years, without showing a much more marked decline in the produce, if the barley plant de-

pended upon the soil for its supplies of organic vegetable matter, or if that contained in the dung was at all essential to the result. The conclusion appears to be obvious, that under the influence of the superphosphate of lime and ammonium salts or nitrate of soda, the growing barley was able to obtain its carbon, amounting to between ninety and ninety-five per cent. of its total dry or solid substance from the atmosphere, and not from the soil particles. The farmer will not fail to see the great importance of recognizing this fact when he is told that he may depend upon artificial manures to grow continuous grain crops. Artificial manures contain but little, and the best of them no carbonaceous organic matter. If, therefore, they were active only so long as the plant could obtain sufficient organic matter from the soil, each succeeding grain crop would cause such a reduction of the condition of the soil, which could only be restored by animal manure.

If, on the other hand, the organic matter is supplied by the atmosphere, the repetition of grain or corn crops by means of proper artificial manures may increase rather than diminish the condition of the land. If we deduct from the fourteen tons of dung, its water, its carbonaceous organic matter, and the extraneous mineral matter which it always contains, there remains scarcely half a ton of mineral and nitrogenous matter. A great deal of this mineral matter is of comparatively little value. Of nitrogen there is from three to four times as much as in the two hundred pounds of ammonium salts, or in the two hundred and seventy-five pounds of nitrate of soda. But as the dung and the artificial manures have given nearly equal crops, it is obvious that a given amount of nitrogen applied in the artificial manure is much more effective than the same amount supplied in dung.

There is an essential mineral ingredient of a barley crop which is supplied in dung, but not in the mixture of superphosphate and ammonium salts or nitrate of soda: this is potash. The crops grown by this artificial manure must, therefore, have obtained it from the soil itself. Of potash, the average crop of barley, grain and straw has removed from thirty to thirty-five pounds annually. From these facts it may be concluded that upon heavy soils having a good subsoil, full crops of barley may be grown by the use of an artificial manure containing superphosphate of lime, and nitrogen either in the form of nitrate of soda, ammonium salts or of Peruvian guano. If the soil lacks potash, (1) this may be supplied as kainit salt or muriate of potash.

(1) But heavy land, like the Rothamsted soil, has lots of potash; light sand, like the upper part of Senator Guévremont's farm, where sugar-beets are being tried, has very little.—Ed.

Sectional Steel Windmills.

Our Farmers are rapidly recognising the many advantages of using windmills for pumping and power purposes. Among the firms manufacturing windmills in the country is the Gould, Shapley & Muir Co. (Lmd.), Brantford, Ont., whose advertisement will be found in the first page. They manufacture the "Ideal Jr." Sectional Steel Wind Engine (the only sectional wheel made), which has given such satisfaction wherever tried. There are a number of them in use, and the number is greatly increasing, as those who purchase them find them very efficient—the pumping mills for pumping, and the power mills for running different kinds of machinery and pumping also. The firm is a very reliable one, and will gladly furnish all information that may be desired or application may be made to the Massey-Harris Co., 600 St. Paul St., Montreal, the agents for the province of Québec.

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This herd gained 3 firsts, a second and a fourth; and a third in Dairy Test, at Toronto, this year. Our 4 years old Stock Bull "Artis Aggie Prince" for sale; also some young stock of both sexes. G. W. CLEMENS, St. George, Ont.

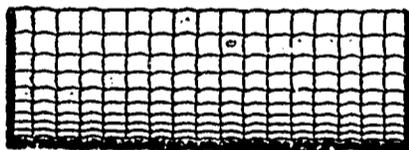
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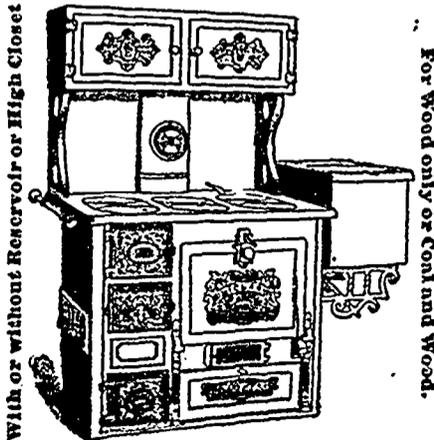
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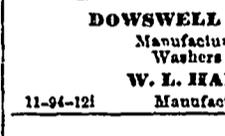
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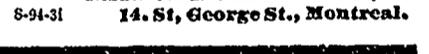
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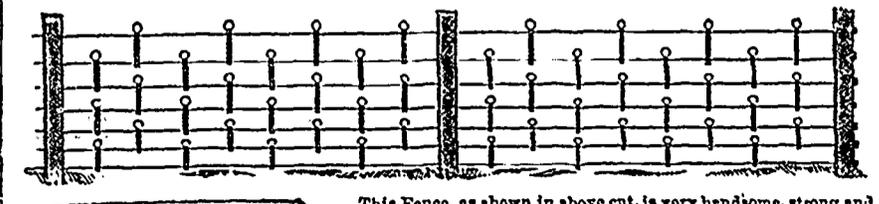


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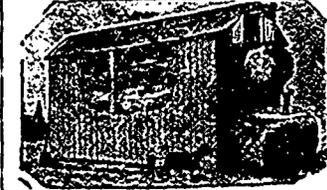
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Camden, Ont., Aug. 16, 1892. JACOB M. MOYER.

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DANIEL P. McDONALD.  
Westville, N.S., Sept. 8, 1893.

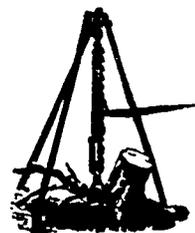
By using **Herbageum** for our milch cows in winter, butter can be brought in just about one-third of the time, besides which the butter is a better color.  
WADLEIGH & McMANUS.  
French Village, P.Q., May 25, 1889.

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MRS. MICHAEL FITZPATRICK.  
Osceola, Ont., May 30, 1892.

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Minden, Ont., Aug. 31, 1892. F. R. CURRY.

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JAMES MILLER.  
Ulverton, P. Q., May 28, 1889.

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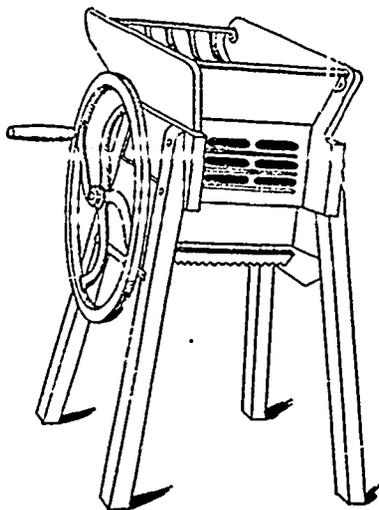


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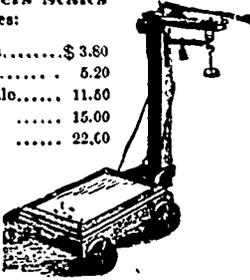
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