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Science.

ROTHAMSTED EXPERIMENTS.

(Continued)

The experiments with sheep.

It has been pointed out that, compared with pigs, there is with ruminants a much smaller amount of increase obtained, in proportion both to their weight within a given time and to a given amount of food passed through the body, and that there is also a much larger amount of necessarily effete matter in their food; and that, therefore, the result of calculations of feeding experiments with them in regard to the question of the sources in the food of the fat stored up in the body are less conclusive. It will, nevertheless, be of interest to adduce some direct experimental evidence on the point.

Some time after the discussion at Hamburg, in 1876, two sets of experiments made at Rothamsted with sheep, in which the concentrated foods were barley or malt, and in which, therefore the amount and proportion of nitrogenous substance consumed were low, were selected for calculation.

The first series comprised five pens with four or five sheep in each. The experiments had been made in the spring of 1879, and extended over a final fattening period of ten weeks. In each pen barley or malt was given in fixed quantity per head per day, and in each pen, also, mangels were given in addition ad libitum.

The second series also comprised five pens, but with twelve sheep in each. The experiments were made in the winter of 1883-84, and they extended over a final fattening period of twenty weeks. The animals were at an earlier stage of progress at the commencement, and not quite so mature at the conclusion, as those of the other series. In each pen barley or malt was given in fixed quantity per head, in each clover chaff also in fixed quantity, and in each roots were given ad libitum, Swedish turnips during the first sixteen weeks, and a mixture of one-fourth swedes and three-fourths mangels during the last four weeks of the twenty.

The results of these two series of experiments with sheep, calculated to show their bearing on the question of the sources of the fat stored up by the animals, are given in Table 72:

It will be seen that the form of the table is, so far as the facts will allow, the same as has been adopted in the case of the various experiments with pigs. A general description of the food of each series is given over the columns relating to the series, and at the head of each separate column is given a description of the limited food supplied to each pen.

The results are calculated for 100 increase in live weight. Referring to the upper division of the table, there are first shown the amounts of nitrogenous substance (digestible) in the fixed food, the amounts in the increase, and the

TABLE 72.—Sources of the fat of the animal body. Experiments at Rothamsted with sheep (Assumed that 100 digestible nitrogenous substance in food may yield 51.4 fat.)

	Fixed food: Barley or malt mangels ad libitum.					Fixed food: Barley or malt, and clover chaff; roots (swedes and mangels) ad libitum.				
	1.	2.	3.	4.	5.	1.	2.	3.	4.	5.
	Barley.	Malt and malt dust.	Barley, steeped.	Malt and malt dust, steeped.	Malt and malt dust, extra quantity.	Barley and clover chaff.	Malt and clover chaff.	Barley and clover chaff.	Malt and clover chaff.	Barley two-thirds, malt one-third, and clover chaff.
<i>Per 100 increase in live weight.</i>										
Nitrogenous substance:										
In fixed food (digestible).....	25	23.3	19.9	25	27.9	52.4	51.1	55.8	55.9	58.7
In increase.....	6.5	6.5	6.5	6.5	6.5	7.5	7.5	7.5	7.5	7.5
Available for fat formation.....	18.5	16.8	13.4	18.5	21.4	44.9	43.6	48.3	48.4	51.1
Fat:										
In increase.....	74	74	74	74	74	69	69	69	69	69
In total food (digestible).....	10.3	8.8	9.6	10.3	10.2	13.1	12.9	13	13.3	13.8
Newly formed.....	63.7	65.2	64.4	63.7	63.8	55.9	56.1	56	55.7	55.2
Derivable from nitrogenous substance.....	9.5	8.6	6.9	9.5	11	13.1	22.4	24.8	24.9	26.3
From other sources.....	54.2	56.6	57.5	54.2	52.8	32.8	33.7	31.2	30.8	28.9
<i>Fat derivable from the nitrogenous substance of the roots according to the percentage of it capable of fat formation.</i>										
Fat from nitrogenous substance of roots:										
If 50 per cent capable of fat formation.....	22.9	20.8	21.4	26.6	23.3	14.1	14	14	14.2	14.8
If 60 per cent capable of fat formation.....	26.6	25	29.3	31.9	28	16.9	16.8	16.9	17	17.8
If 70 per cent capable of fat formation.....	31.1	29.1	34.1	37.2	32.6	19.7	19.6	19.7	19.9	20.7
If 80 per cent capable of fat formation.....	35.5	33.3	39	42.6	37.3	22.6	22.4	22.5	22.7	23.7
If 90 per cent capable of fat formation.....	40	37.4	43.9	47.9	41.9	25.4	25.2	25.3	25.6	26.6
If 100 per cent capable of fat formation.....	44.4	41.6	48.8	53.2	46.6	28.2	28	28.1	28.4	29.6

difference—the amounts available for fat formation. Next are given the amounts of fat in the increase, in the total food (digestible), and the difference—the newly-formed fat; the amounts derivable from the available nitrogenous substance in the fixed food and the difference—the amount required to be produced from other sources. Then, in the lower division of the table are given, for each pen, the amounts of fat derivable from the nitrogenous substance of the roots, on the alternative assumptions that 50, 60, 70, 80, 90 per cent, or the whole, of that which they contain will be digestible and available for fat formation.

It should be further explained that 80 per cent of the nitrogenous substance of barley or of malt is reckoned as digestible and available for the purposes of the system. Wolff's estimates were, in 1874, 80 per cent; in 1888, 77.3 per cent; and in 1890, 77 per cent. In malt dust 80 per cent is assumed to be digestible, against Wolff's estimate of 80 per cent in 1874 and 82 per cent in 1888 and 1890. In clover chaff two-thirds or 66.7 per cent of the nitrogenous substance is reckoned as digestible, against a range in Wolff's tables, according to quality, from 51.4 to 69.9 per cent. In the case of Swedish turnips and mangels Wolff assumes the whole of the nitrogenous substance to be digestible and available, drawing no distinction in this respect between the amounts existing as albuminoids, as amides or other nitrogenous compounds. To this point I shall have to refer in more detail presently.

Then, as to the fat of the foods: the percentage of it reckoned as digestible is that given in Wolff's tables of 1874. In the case of barley he then reckoned only 65 per cent of the total to be digestible, but more recently he has supposed the whole of it to be so. For clover chaff his figures are the same at all three periods, as they are also for mangels.

Let us now turn to the calculated results as given in the table, and first to those relating to the first series of five pens, in which the fixed food was either barley or malt, and the ad libitum food consisted of mangels only. As already said, the period of experiment comprised only the last ten weeks of fattening. Hence, it commenced at a somewhat advanced stage of progress, and the animals were, at the conclusion, probably fully as fat as, if not fatter than the sheep which had been analyzed as "fat." Taking into account the weight and condition of the animals at the beginning and at the end the percentages of carcass and of inside fat in the live weight, it is calculated that the increase over this short finishing period, would contain 74 per cent of fat and only 6.5 per cent of nitrogenous substance.

On these assumptions, the figures show that after deducting the estimated amount of nitrogenous substance in 100 of increase from the amount supplied in the fixed food, there remained in the different cases, 18.5, 16.8, 13.4, 18.5, and 21.4 parts of nitrogenous substance available from the fixed foods for the formation of fat.

Next as to the fat: deducting the amount of the digestible fat supplied in the total food from the fat in the increase, there remain in the respective cases 63.7, 65.2, 61.4, 63.7, and 63.8 parts, which must have been newly formed. There is next shown the amount of this which may have been derived from the available nitrogenous substance of the fixed food, and it is seen that there remain 54.2, 56.6, 57.5, 54.2, and 52.5 parts out of the total of 74, in the 100 of increase, that must have been derived from other sources, in fact, either from the nitrogenous substance of the roots, or from the carbohydrates of the fixed food and the roots.

The next question is, whether the nitrogenous substance of the roots could have yielded the amounts of fat indicated to have been produced from other sources than the fat of the total food, and that derivable from the available nitrogenous substance of the fixed foods. Comparing the figures in the bottom line of the lower division of the table with those in the bottom line of the upper division it is seen that even on the impossible assumption that the whole of the nitrogen of the mangels existed in compounds of the same fat-forming value as the albuminoids, in neither of the five cases would the amount so available completely supply the amount required.

The amount of true albuminoid nitrogen varies very much in different descriptions of roots, and in the same description according to season, maturity, etc. Thus, at Rothamsted, we have found it in mangels as low as 20.5 per cent of the total nitrogen under unfavorable conditions of growth and ripening, and as high as 44.2 under favorable conditions. We generally assume in calculation that 40 per cent of the nitrogen of mangels will, on the average, exist as albuminoids, and Wolff's average figure, as given in 1888, is 36.1 per cent. The amount existing as amides will probably, in most cases, vary from 40 to 50 per cent or more, while there is frequently a considerable quantity as nitrates, the more the less ripe the roots, and we have sometimes found the amount to be more than 10 per cent of the total nitrogen of the roots.

It is clear, therefore, that even supposing as little as 50 per cent of the nitrogen of the roots to be available for, and capable of fat formation as assumed in the top line of the lower division of the table, that amount would generally include other than albuminoid compounds. Nevertheless, Wolff, in his table, assumes the whole of the nitrogen of roots to be digestible and available for the purposes of the system, since it has been shown that amides are transformed in the body and yield urea, leaving, therefore, by-products of transformation available for expenditure in respiration, and so protecting the true albuminoids or the carbohydrates.

(To be continued.)

APPLES AS FOOD FOR STOCK

Cheap fruit - Digestibility - Analysis - Succulent fodder - Increased palatability of other foods.

The abundant apple crop of the past season has so affected the market price of this fruit that only that of first class quality can be disposed of at remunerative figures, indeed, in many markets none but the best is at all saleable. Farmers and orchardists in many districts, therefore, find themselves this

year with a large quantity of second and third class fruit, in addition to the usual amount of windfalls and wormy apples, all of which must be used upon the farm or allowed to rot on the ground.

It is on account of the above stated facts, no doubt, that we have received so many enquiries during the past month respecting the value of apples as a cattle food, and it is to give information on this interesting and important subject a wide circulation that this article is penned for the readers of the "Journal of Agriculture."

To obtain a clear and intelligent knowledge of the value of any fodder, the first step is to study its composition and digestibility by the light of chemistry. Several years ago, in order to place ourselves in possession of reliable data that would assist us in giving advice towards a more rational method of fertilizing orchards than had been in vogue, we analysed in the Farm laboratories four well known varieties of apples. Wealthy, Fameuse, Northern Spy and Duchess of Oldenburg. The details of this investigation are to be found in the annual report of the Experimental Farms for 1891. For our present purpose it will not be necessary to quote these in full; to arrive at a conclusion respecting the feeding value of this fruit, the following averages will suffice:

APPLES	
Water....	86.98
Organic matter....	12.74
Ash or Mineral Matter....	28

100.00

This "organic matter" (which comprises the food constituents) is made up as given in the subjoined table.

COMPOSITION OF ORGANIC MATTER OF APPLES

Albuminoids (nitrogenous substances)....	27
Fat....	19
Carbo-hydrates (sugar, pectin, etc)....	11.45
Fibre....	83

The above data show that apples must be classed with the succulent fodders and, as the annexed figures also obtained in our laboratories go to prove, are in a large measure comparable to roots in their feeding value:

	Carrots.	Furnips	Mangels
Water.....	90.49	90.31	91.29
Organic matter....	8.62	8.96	7.72
Ash.....	.89	.70	.99
	100.00	100.00	100.00
Albuminoids....	.75	1.03	.94
Fat.....	.03	.05	.03
Carbo-hydrates....	6.93	6.58	5.99
Fibre.....	.93	1.30	.76

The chief differences to be observed between apples and the above roots may, therefore, be summarized in the following paragraphs:

1. That apples contain a large percentage of organic matter or total food constituents.
2. That this is due to the carbo-hydrates (heat producing elements) the amount of which is about double that in the roots quoted.
3. That the percentage of albuminoids (flesh formers), in apples is much less than in roots, in most instances not more than one-third the amount.
4. That the percentage of oil or fat is greater in apples than in roots, the ratio being about four to one.

We may conclude, therefore: (1) That apples have a distinct value as food.

Practical experience has corroborated this deduction of science.

(2) That taking into consideration the larger amount of carbohydrates and the smaller percentage of albuminoids, we shall not be far from the truth in assigning to apples a feeding value approximately equal to that of roots. From the latter, however, sugar beets must be excepted, since they have a special value of their own, due to the presence of a large amount of sugar.

One word may here be said as to the digestibility of apples. No records of any direct trials to establish coefficients of digestibility are known to the writer, but such facts as have been established all point to a high degree of digestibility. No practical error would be introduced by assuming that at least 90 p. c. of the food constituents is digested.

All dairymen recognize the importance of a succulent fodder (as part of the ration) for keeping up the milk flow, and there are data from reliable men on record to show that apples exert a beneficial effect in this respect. No difference has been observed between sweet and sour apples in feeding value; the probability, however, is that the former, from the sugar they contain, would be more valuable. (1)

Apples cannot be used exclusively. For cattle they must be supplemented with grain and hay. For pigs, horses and poultry also they can only be used with safety and economy as part of the ration. A practical and fairly accurate way would be to consider apples as being well able to furnish the succulent portion of the ration.

Begin their use in small quantities of from one to two quarts per cow per day. The amount may be gradually increased until it reaches half a bushel. The apples should be first chopped or pulped, to prevent danger from choking, and used with the meal.

Though the food value of apples, as expressed by their composition, is not high, it seems quite reasonable and probable to suppose that they possess an additional value by virtue of the fruit acids and flavouring substances they contain. It may well be imagined that these would have the tendency to increase the palatability of the other foods and assist in its digestion.

We know that to allow the fallen and wormy apples to rot in the orchard means assisting in the propagation of injurious insects that will infest the fruit the coming season; but we now learn that such a practice is extremely wasteful. By using judgment on the lines indicated, this surplus fruit may be used to excellent purpose and a profitable return obtained. This is not only indicated by the chemical data on the subject, but is substantiated by the experience of advanced dairymen.

FRANK T. SHUTT.

The Dairy.

STILTON CHEESE AND HOW TO MAKE IT.

Characteristics - Rennetting - Care in Draining - Coat Formation - Curing - A Prime cheese.

The process of making a Stilton cheese has more similarity to that of the manufacture of some of the Conti-

(1) The bitter elder apple contains much more sugar, after being mellowed in heaps, than the sweetest of dessert fruit. conversion of starch into sugar? - Ed.

mental cheeses than any other British make.

Despite this fact, it is a British cheese, and the county of Leicestershire, can justly claim the honor of being its home. Indeed, many people consider that it is impossible to make the real article outside the county named. This, however is an error as with suitable buildings and utensils, with perfect cleanliness and with sufficient skill on the part of the maker, prime Stilton, can be made in any district. The cost of producing a Stilton however, is greater than that of a Cheddar or Cheshire. This is owing to the greater cost of the buildings, the greater amount of labour, the longer time taken in curing, and lastly, to the fact that less ripe cheese is obtained from a given amount of milk by the Stilton method, than by the methods just mentioned.

The Stilton is popularly supposed to be a cream cheese, but at the present time it is almost always made of whole milk, without the addition of cream, and yet the quality produced leaves nothing to be desired. Nevertheless the milk intended for making Stilton should be at least of average quality, and that produced by cows grazing on rich old pastures is the most suitable. The giving of large quantities of cake to the cows is not to be recommended, as this usually produces a milk that causes trouble during the making of the cheese.

In the method of manufacture about to be described two separately made curds are used. This method is the one by which the best Stiltons are made.

One reason why this is so, is found in the fact that separately made curds, do not unite so closely as curds made at one operation. This consequence is, that a great amount of air space is got in the body of the cheese, and therefore fulfillment of one of the conditions, essential to the development of the mould, which it is the pride of the Stilton maker to obtain. For much of the following valuable information, I am indebted to one of the most practical, and at the same time most successful, Stilton cheese manufacturers in Melton Mowbray (England) the centre of this industry. I fervently trust that this information may be so practically applied that we may see Canadian Stiltons, competing for favor, with those of the Mother country.

Before commencing operations the maker should have in remembrance the leading characteristics of an ideal Stilton. They are as follows: A drab colored rough wrinkled skin, a texture salty and mellow, but not soapy (indeed, as the old Stilton maker's maxim says, "beware of chalk, and beware of soap", which implies medium textures, and avoidance of hardness on the one hand, or soapiness on the other), a marbling throughout the body of the cheese due to the growth of a blue mould (*Penicillium glaucum*), and the possession of an unique flavour.

The following is a list of requisites for the manufacture of Stilton: (a) Building. The building or dairy must be divided into at least three separate apartments, or better still, into four. These are: (1) A setting room and a draining room. One room may be made to serve the double purpose of setting and draining, or a separate room may be used for each purpose. (2) A drying or coating room (3) A storing or curing room. Besides these a cellar is a great advantage, as the cheeses can be taken there when they are ripe, or even before they are ripe, the wea-

ther being too hot, and the ordinary rooms out of condition. For Stilton making it is "imperative" that all the rooms should be high and well ventilated, and that they should be so constructed as to allow of cooling them in very hot weather. Further they must have apparatus for heating purposes as during spring and autumn artificial heat is a necessity. (This being the case in England, how much more necessary here in Canada?) (b) Utensils. Briefly enumerated. These are: A renneting vat made of tin; a curd hadle or scoop of about half a gallon capacity; straining cloths; a curd sink made of glazed earthenware; a draining sink lined with tin; perforated metal moulds or hoops; boards (9 in. by 9 in.); draining shelves; turning and bandaging table; knife bandage, etc.

**MANUFACTURE.**—Milk. The milk for Stilton making should be perfectly fresh, and not slightly acid, as is the case in the making of some British cheese. This necessitates the renneting of the milk as soon as received into the dairy, and that which has never lost its animal heat is the most suitable.

**RENNETING.**—The rennet is added when the temperature of the milk has fallen to 84 deg. Fahr., and the amount required is 1½ drachms to every 60 lbs of milk. Most makers consider that prepared rennets are inferior to the home-made article. Yet it is known that the use of home-made rennets, is not essential to the making of the best Stiltons, as these are constantly made from prepared rennets. It seems probable that in using the latter, the makers accustomed to using the home-made, make no allowance for the greater strength of the other, and consequently add too much. This results in an inferior cheese but the fault is due to the maker and not to the rennet. After adding the rennet to the milk, thorough mixing of the two should be brought about by stirring. Let this be continued for 10 minutes, by which time mixing will be complete, and there will be no danger of any cream rising. Now allow the contents of the vat to set for 1¼ hours, according to the state of the curd. This although a somewhat prolonged coagulation, is not unusual in the making of sweet curd cheeses.

**CURD DRAINING AND DEVELOPMENT OF ACIDITY.**—When ready the curd is ladled out of the vat into straining cloths placed in the curd sink. These cloths are about a yard square, and hold from three to four gallons each. In the act of lading, the curd is cut into thin slices, whereby the drainage of the whey is facilitated.

The curd is allowed to stand for half an hour in its own whey, or longer if it is soft. The whey is then let off, and the curd tied up by bringing together the three corners of the straining cloth, and using the fourth as a binder; and here in the curd sink, it drains till evening. To aid the draining tighten the cloths every hour during the first eight hours. This tightening requires to be done with care, so that no curd is crushed in the operation. In the evening the curd is cut up into squares of about 4 inches, and laid in the draining sink with a light cotton cloth thrown over it. Here it remains overnight, and during this time is slowly oxidised. The evening's milk is treated in the same manner as that of the morning, being allowed to drain through the night whilst in the curd sink. In the morning cut up the evening's curd, and then allow the two curds to deve-

lope the requisite amount of acidity. If acidity does not develop rapidly enough, tear up the curds to aid, or place them upon racks, and keep them warm with hot water.

**SALTING.**—When the curds are ready, viz: when they have developed a sufficient amount of acidity, and are of a certain mellowness, they are broken up by hand into coarse-grained pieces. It is always difficult to decide when the curds are ready, and experience is the only teacher. The following however are some of the signs, that guide the maker as to the fitness of the curds; the first curd made should be clear, flaky, decidedly acid, and free from sliminess or sponginess; the second should be in about the same condition, but not so acid. It takes usually 36 and 24 hours respectively before the curds show the above signs. After these are broken they are mixed together, and a rather coarse salt, is added at the rate of about 1½ per cent, by weight of the curd. If the curd is wet add more salt, if dry add less. It is usual to obtain 18 lbs of curd from 12 gallons of milk.

**LOOPING.**—The curd after a thorough mixing with the salt, is put into hoops holding 20 lbs to 24 lbs each. If the cheese is for the English market, let it be made full sized as such are easier to seal than the smaller ones. The temperature of the curd at the time of hooping should be about 60 degrees Fahr.

Before beginning to fill the hoops, place them on a board covered with a piece of calico. In filling, the curd should be firmly pressed at the bottom, and lightly at the sides, and the larger pieces should be put into the loosely filled centre. By taking these precautions a cheese is obtained that presents a good surface.

**CHEESE DRAINING.**—When the hoops are filled, they are carried, together with the board and cloth on which they stand, to the draining shelves. The temperature of the room in which the shelves are placed should be 65 degrees Fahr. The hoop and cheese should be turned after standing two hours, an operation performed by inverting them upon a board and cloth similar to those on which they stand. The turning should be repeated before leaving for the day, and it must be performed at least once each day for the next nine days. Neglect in turning at this stage causes unequal ripening of the cheese, and the ends become uneven. If the curd does not settle properly, it should be skewered through the perforations in the hoop, and a little salt should be rubbed in each end.

**SCRAPING AND BANDAGING.**—In about nine days the cheese is taken out of the hoop, and if ready it is scraped with a knife. It is known to be ready for scraping when the cheese leaves the side of the hoop, when it is creamy on the outside, and when it has a smell similar to a ripe pear. The scraping makes a smooth even surface, fills up cracks, and aids in the production of the much desired wrinkling of the coat of the cheese. This last result is brought about by the consolidating effect of the scraping on the surface of the cheese, and the comparatively loose and free state in which the central portion remains. In consequence of this difference the external portion of the cheese settles less than the internal portion, and consequently a wrinkling of the coat of the cheese follows.

After the cheese has been scraped, a bandage is tightly pinned round it, a cap placed on the upper end, and the cheese is put back into the hoop. Next day remove the hoop and bandage, again scrape the cheese, and then tightly pin on a clean bandage round the top. Allow the bandage to hang loosely down, invert the cheese, and loosely fold the bandage over it. The cheese is then put on the draining shelves without the hoop, and there it remains until the coat begins to appear, which usually happens about the eleventh day counting from the day of hooping.

**FORMATION OF THE COAT.**—About the eleventh day the external surface begins to wrinkle, and show signs of white mould, also dry patches appear on the bandage. These are the first signs of the coat and on their appearance, the cheese is ready to go to the drying or coating room. This room should be cool and damp, have a temperature of from 55 to 60 degrees, and if possible it should have a gentle, cool, moist draught passing through it. By thus keeping the air of the coating-room cooler and moister than that of the draining room, the loss of moisture is minimised, and consequently avoid lowering the quality of the cheese, and at the same time we prevent fermentation becoming too rapid. If the coating-room is too dry, and the cheese shows signs of becoming hard, cover it with a moist cloth. The cheese on going to the coating-room has no bandages on it, but there is the small cloth on the board on which it rests, and this requires changing each day, when the cheese itself is turned. Turning goes on for two weeks, and by the end of that time, the coat should be firmly fixed.

**CURING.**—When the coat is firmly fixed, the cheese is ready to go to the storing or curing room, which may be an airy cellar, or a cool upper room kept at a temperature of 55 to 60 degrees Fahr. If the temperature is too high, you have excessive evaporation, and as a consequence a hard dry cheese: if too low the ripening of the cheese is retarded. The shelves of the curing room must be kept quite clean, and free from mites, and the cheese turned daily. It takes a Stilton four to six months to ripen, but some people try to shorten the period by skewering. This, however is rather a doubtful proceeding, and yet it is permissible if the cheese is close and there is a lack of mould growth. When such a plan is followed, care must be taken that the apertures made in the cheese are closed up so that the flies and mites, will not be able to enter. The skewers should be put into the cheeses from each end and, not at the sides, and their ends should pass each other.

Before concluding it may be as well to briefly sum up the points of difference in the making of a Stilton, and in that of the better known, and much more widely made Cheddar: In Stilton making the rennet is added to a perfectly fresh milk, in cheddar making, to slightly acid milk: also less rennet is used in making the former. It is owing to these two factors that the coagulations in Stilton making is more prolonged than in the case of Cheddar. Again, in Stilton making the development of acidity is not pushed by scalding as is the case with Cheddar, and instead of 8 hours, it takes usually 24 and 36 hours. It may, however be noted that in Cheddar making acidity is allowed to develop in both milk and curd, whereas in Stilton making it is only allowed to develop in the curd. Less

salt is added to the curd of a Stilton, than to that of a Cheddar, but this is more apparent than real, for when the curd of a Stilton is ready to salt, it is much moister than that of the Cheddar. Lastly, the curd in Stilton making is put to drain in a much softer condition, than in Cheddar making, but no pressure is applied to the former, whereas one ton and upwards is required for the latter.

Finally, one is justified in saying that a well made Stilton stands without rival amongst the better known varieties of cheeses. Also experience has taught that by the system just detailed it is possible to produce an article of prime quality.

W. R. GILBERT.

## CHEDDAR CHEESE MAKING.

**Rennet-test—Cutting curd—Stirring—Piling or blocking—Grinding—Salt.**

I would recommend all patrons, 1st to thoroughly wash and scald all pails and cans used as soon as they return from the factory in the morning, and not leave whey standing in cans all day on the stands in the hot sun, as some patrons are in the habit of doing; 2nd, to be particularly careful in the straining, airing and cooling of the milk immediately after being drawn from the cow, not only in the evening but in the morning as well. In very close hot weather, it would be better to run it through an aerator the second time to get rid of all animal odours before the milk is cooled below the temperature of the air; for, as long as milk is warmer than the surrounding atmosphere, it will give off all foreign odours, but as soon as it is cooler, it will take in all bad odours; that is why it is so necessary to always get in a nice clean place free from all bad smells to cool and air milk.

Be very careful in receiving the milk; examine all cans carefully to see if properly cleaned, rejecting all sour tainted or not properly strained milk. After heating to the required temperature, which should be at 84° Fahrenheit to 86° in May, 86° to 88° in October or November, always take a rennet test to enable you to see how your milk will work. The test is made by taking 5 ounces or a common tea cup full of milk at 86°, put a small black substance in the milk, then take a drachm or a common teaspoonful of rennet, drop the rennet in the milk and stir round for about 8 seconds: as soon as the milk stops moving round, which can be seen by the black substance, it is thick, which should be in about 10 to 12 seconds more or 18 to 20 seconds from the time of dropping in the rennet, it is then ready to set. Put in enough rennet, diluted with good clean cold water, to thicken (fit to cut) in from 20 minutes in May, to 45 to 50 minutes in October or November, cut when the curd is firm enough to break clean before the finger by using the horizontal knife, first lengthwise of the vat, then with the vertical knife, cut crosswise of the vat again lengthwise, and if your curd is not fine enough, cut crosswise once more with the vertical knife. It is well to cut pretty fine, so as to allow the curd to cook and firm evenly through and through which it will not do if left too coarse. Immediately after cutting, begin to stir very gently for 15 minutes, rubbing down the sides of the vat in the mean time before ap-

plying the steam, which should be done very slowly at first, increasing the steam as the curd gets firmer till you have reached the required temperature in about thirty minutes, which is generally about 98° in the spring to 100° or even 102° in the fall, according to the richness of the milk and the difficulty you have in firming the curd. In some localities, it is necessary to cook even higher than that. After heating, stir briskly for five minutes with a small hand rake, then run off about half the whey, and keep stirring almost continuously so as to firm the curd well before it takes on acid. At the very first show of acid, run off the whey to the surface of the curd and keep stirring till the curd is firm and dry enough. In three hours time, from putting in the rennet, it should be ready to run off whey with  $\frac{1}{2}$  inch acid, in May, to  $\frac{1}{2}$  inch in the fall, according to season and richness of milk or even more than that in some localities. Keep constantly stirring curd, as the whey is running off, till it is firm and dry enough, which may be told by chewing it. It should squeak well between the teeth, and, on squeezing in the hand, it should all fall apart on opening the hand. It is very important never to allow the curd to mat or go together from the time of cutting till you are ready to block or pile up, so as to cook and firm evenly, otherwise the cheese will be uneven in color and body, being whiter and softer wherever there was a lump: for once matted, it is impossible to get it to dry evenly.

When firm enough, pile up the curd on both sides of the vat; in about half an hour, or as soon as the curd hangs well together, cut and turn over, then every 15 or 20 minutes turn over, piling higher and higher, each time, till three or four blocks high, then cut in two again and turn all cold ends inside so as to warm and have it all mature and break down evenly, taking care to keep up temperature of curd to not lower than 96° till about half an hour before grinding. Then, allow it to cool to about 92° or 94° at grinding which should be in three or four hours from blocking or longer if necessary to kill gas or till all pin holes have disappeared; grind when the curd has that nice soft silky feeling, and you can split it from end to end without breaking. In about an hour from grinding or as soon as the white whey begins to show at the bottom of the vat, salt at a temperature of about 90° in spring and fall and 88° in summer at the rate of two pounds of salt to 1000 lbs milk, in May, gradually increasing the quantity as the season advances to  $3\frac{1}{2}$  lbs in November, stir well to thoroughly mix in the salt, then pile up high in one side of the vat and stir or turn over the curd every five minutes for 20 minutes to thoroughly melt the salt and allow the curd to mellow down and take on that soft and silky feeling again: hoop at a temperature of 88° in the spring and fall and 85° in the summer, pressing very quietly at first and often and tighter and tighter till in an hour to an hour and a half, when the cheeses should be ready to turn in the press being careful to dress them off very neatly with bandaging lapping over about an inch, putting on good new cap cloths. Use plenty of clean hot water to make cloths stick well and to rinse your followers and outside cloths at each time you take them off a cheese. Thus you will always keep them clean and sweet, for a sour follower or cap-cloth will make your cheese

crack and get rough at the ends. Press often and as tight as possible before retiring for the night, then again in the morning, and all day, leaving in the press just as late as possible. It would be better to leave in press two days, then put in a good maturing room with temperature as near 70° or 72° as possible. In hot weather, sprinkle the floor often with cold water to keep the room as moist and cool as possible. Turn the cheese over every day, rubbing well to keep from moulding, till shipping, which should never be in less than 10 or 12 days from taking out of the press. Be very careful in weighing, giving good heavy up weight. Use good strong well made boxes, trim boxes level with the cheese, and brand the weights, always in a clean legible manner at the lap of the box. Every factory should have a brand of its own and always use it; then, if you make a good cheese, consumers will like it and know where to look for another of the same make.

"No name attached." (1)

Class Essay Section 1 No. 362.

### BUTTER MAKING.

#### The stable—Cleanliness—Cream—Ripening.

Any dairyman can make butter, but very few can make it of the finest quality. To do so the greatest care must be given to all the details; good, healthy cows must be kept, to whom food that will not taint the butter and pure water must be given.

The stable, in which the milking is done, should be white washed and frequently cleansed by a free sprinkling lime. Great care should be taken in milking that no impurities from the hands or the udder get into the milk. The milk should be strained immediately after milking, and when carried to the creamery strained again. The deep setting system I consider the best. Let the milk stand twelve hours in summer and twenty four in winter. Keep the cream in a large covered can with the cover put on loosely, and every time fresh cream is added stir the whole thoroughly with a stick that will search to the bottom of the can. Be sure to wash the stick every time after stirring, that it may be clean and ready for use. The cream should be kept in a temperature of 60°, in which if there is milk from thirty cows it will take three days to ripen or look like the butter; it is then ready to be churned. In summer the temperature should be 60° in winter 68°. When the butter has come like very small peas it should be rinsed down, the buttermilk drawn off, a pailful of cold water thrown in and drawn off, then several pailfuls of water and a handful of salt should be added. After allowing to stand a few minutes the butter must be taken up, put on a butter board, and the finest dairy salt sprinkled over it. I use "Windsor" from the Toronto Salt Works. Then work the butter till you think the grain is right. At this point practice is the only guide. The careful observance of these instructions will always insure the highest price for the butter.

Mrs MARVIN BARK,  
Bowmanville,  
Ontario.

From the essays sent in. Exhibition 1895.

(1) But one of the best written of the 32 essays sent in for competition.—Ed.

### CO-OPERATIVE BUTTER MAKING.

#### Cleanliness—Care of cows—Water and ice—The Babcock—Milk—Sterilising—Ripening cream—Churning—Making up—Colour.

From the essays sent in: Exhibition 1895.

Very little change has been made in the actual process of butter-making since the days of our great grandmothers. The great and wonderful change has been in the invention of instruments and machinery which reduce the process to almost an exact science; instead of groping in the dark and ascribing every want of success to witchcraft or to an evil eye, the dairy industry of the Dominion has been wonderfully stimulated and advanced by the enlightened policy of the Government, through the influence of dairy schools, model farms, dairy conventions, etc., while the volumes written by experts on scientific dairying and dairying for profit have all helped to advance the good work, in leading as they do to the only way (as a rule) that dairying can be made successful and profitable viz: by combination and co-operation.

This principle is past questioning so far as the making of cheese is concerned, and if butter is to be an article of export, the sooner we make up our minds to adopt the same principle, the better.

Good butter can be, and is made in private dairies, as is also good cheese, but, it is impossible to get the uniformity necessary to sustain a reputation in a foreign market, otherwise than on the above mentioned lines. In so short a paper it will only be possible to give the merest outline of the essentials in successful co-operative butter-making. Were I to name a single word in the English language, which would express the most important factors I should say: cleanliness.

The first requisite for the making of fine butter is good clean sweet milk. To obtain this, the cows must be clean and healthy, fed on clean sweet herbage, with abundance of clean cold water to drink, housed in clean stables, with clean sweet bedding in their stalls, milked with clean hands into bright clean tin pails, aerated and strained into clean cans that have been thoroughly scalded, moved as soon as possible into a clean milk house away from any offensive odours, and, where practicable, set in clean cold running water. When all this has been well done, the patron is in a position to furnish one of nature's finest products in its best form to make into fine butter in a clean creamery.

One great essential in a creamery is a bountiful supply of pure cold water, at about 45° Fahr. in summer, preferably by gravitation another is thorough drainage to enable the butter-maker to keep his premises clean and sweet.

Every facility must be furnished to hold and care for all the bye-products, having them used or removed as soon as possible, so as to cause no bad odours around the premises. A liberal supply of ice of the best quality obtainable, is an indispensable requisite. Given, then, good clean sweet milk, a clean creamery, with all the necessary plant, instruments and utensils, the next requirement is a good butter-maker; presumably one who understands the running and care of machinery and the ordinary routine of a good factory; but, unless he is scrupulously clean in his person and habits, and has a natural

horror of dirt, he will fail in producing that delicate delicious article, which every one likes and is willing to pay for viz: fine butter. The routine of butter-making in well equipped factories, differs very little; the experience of several years leads me to offer the following on some of the points, which not only secures the making of fine butter, but the satisfaction of the patrons and also the success of all who co-operate in the enterprise.

On receiving milk, care should be taken to see that the scales are properly adjusted to the weigh can; justice requires that every patron should get credit for every pound of milk he brings; no temptation to make a big record should lead a man to take what is sometimes called "good weight."

On no account should a butter-maker receive milk which is not in a condition to do justice to the rest of the patrons, or which will endanger the quality of the product, or his own good name; farmers with tact and prudence will soon lead to improvement which is really the best interest of all. No creamery should try to run on the "pooling plan"; every patron should get what belongs to him, no more, no less. The Babcock test, fairly used, will give even handed justice, and in course of time perfect satisfaction. Three years experience in the constant use of the Babcock test, summer and winter, has proved that fresh samples and composite samples do not materially differ in general results; whether fresh or composite, the samples ought to be taken in a uniform manner and so as to secure a fair sample of the milk.

It is well to court the fullest publicity in the testing of patrons' milk, no better educator can be found, and as its justice and correctness is realized there will be a marked improvement in the quantity per cow, and in the care of the milk. Every drop of sulphuric acid used in testing should be carefully saved in a glass or stone jar with closed cover; when the fat is skimmed from it, a teaspoonful in a pail of water applied with a brush on the wood-work and floors will be found one of the best disinfectants and will banish the flies.

In creameries, where there are no facilities for sterilizing the skim milk, the separating should be done in summer at the lowest possible temperature consistent with clean skimming, say from 72° to 80° F. so as to return the skimmed milk in the best possible condition for calves and pigs.

It would be found that, in skimming milk which contains from three and a half to four per cent of butter fat, at a low temperature, a smooth cream of about 15 p. c., will give the best results; besides, it is much easier to temper and ripen than if taken thinner at a higher temperature.

Every care must be taken in handling the cream that it shall be just right within twenty-four hours. General rules can not be definitely applied here, judgment and experience are necessary, but, with plenty of cold water and ice, careful attention and manipulation, getting the cream down to about 62° F. holding it there until it gets that fine velvety condition with just the tartness of ripe, delicious fruit so relished by all who have a keen sense of taste. It will then be easy to cool down during the night to the desired temperature for churning.

Never use ice in the cream when it can possibly be avoided, the best of it contains impurities.

The dawn of the day is the best time for churning, here let the butter-maker make haste slowly, the greatest losses are in defective churning; during summer, 50c is much better than 50c profit to start the churn; the butter will take a trifle longer to come, but careful testing has shown that a much more exhaustive churning is secured. Given 150 gallons cream in a 400 gallons churn 45 minutes is quick enough, and if every thing is right, seldom if ever will it exceed 1 hour to get a clean separation.

No good butter-maker will allow his butter to gather past the granular state. Every careful maker will at least twice a week test his skim and butter milk for his own guidance and satisfaction.

In colouring it is always best to err on the under side, rather have butter a trifle paler than June color than over it. After the butter-milk has been carefully drawn off, by using about as much water in the first washing as there was cream in the churn, fewer washings will be found necessary.

When the butter is washed clean, leave it in the last water until ready to work it, adding ice if necessary. If there is more than one working, take a part out of the churn leaving the rest in the water as no better place or condition for it can be found than in the cold water until ready to work. If a Fargo worker is used, the salt can be so thoroughly incorporated with the butter in the granular state, that one working will very frequently be sufficient.

Never overwork butter, it spoils the grain, makes it salvy and greasy, whenever it is free from pin holes it is worked enough: stop!

Some good makers, especially Danes, claim that they can handle butter in the churn and from the worker with impunity with clean hands, it may be so with some men, but, the safest, best and cleanest way is never to let the hands touch it in any operation from start to finish. Use only salt of the best quality, poor salt is too costly at any price; one ounce per pound is about right for most markets.

It will pay all the parties concerned to use only packages of the best quality procurable, which should always be thoroughly washed and cleansed before using. Parchment paper linings of good quality will more than save their cost in arresting shrinkage in weight.

As farmers are not speculators and as butter does not improve with keeping, it will generally be found most satisfactory to sell or consign as often and as soon as possible after making, to a man or firm who has a clean record for fair dealing and honesty.

(Signed) A. MACALLUM.

## A LESSON HARD FOR DAIRYMEN TO LEARN

"Eds Country Gentleman"—In a recent number of the Michigan Farmer, I read a communication from E. F. Brown, giving the result of a test made and record kept of the production of one cow in a dairy, which clearly, teaches a most valuable lesson, that was entirely overlooked in the report.

During eight weeks following Feb. 9, this cow gave 1608 pounds milk, or 28 5-7 pounds per day on an average. But there was a variation from 193 to 215 pounds per week, and a history of the way in which she was fed and

treated during the time, and it is in this we are to find the lesson.

For instance, during the first week, Feb. 9 to 16, she gave 201 pounds and the next week 214 pounds, or a gain of 13 pounds. Now the first week was warm and pleasant and she was turned out every day 20 minutes to drink; but the next week was a regular blizzard and she was not turned out at all, but watered in the stable twice a day, and gained almost two pounds per day, while the rest of the herd, turned out as usual, shrunk 10 to 12 pounds each. She therefore showed an absolute gain of about 25 pounds per week, or over 3½ pounds per day, or over 12 per cent. Now this milk was made in winter and was worth at least \$1 per 100 pounds; and if so, it paid 25 cents per week just for the care and comfort. Twenty-five cents per week means, for 26 weeks, the usual period of stabling cows, \$6.50, and this for an absence of 20 minutes' exposure each day and for added care and comfort—and yet how many cranks we have who claim that the cow "must" go out every day for a breath of fresh air, and usually they mean run out from two to four hours. If a man has, say 15 cows, the loss for the 20 minutes' exposure each would be \$97.50, or a good deal more than it would cost to hire a man to care for them.

But there was another factor which entered into this gain, which should not be overlooked. A part of this gain was due to the fact that in the second week she was watered twice a day instead of once.

The average dairyman does not seem to realize the importance of giving his cows all the water they want and when they want it. He does not remember that more than 87 per cent. of the milk is water, and that without this water, no matter how well the cow is fed, she can't make the milk. Nor does he realize how difficult it is—in fact that it is impossible—for the cow to drink at one time enough water to do her for a full day and have her do her best.

An average 1000 pounds cow in full milk must have from five to seven pails of water every 24 hours, and compelled to take this enormous quantity all at one time she is badly handicapped.

Every man on watering twice a day will notice a change from once watering, and when watering three times he will see an increase over twice; and those who put in a stable watering device, and give cows constant access to water, are always surprised at the gain.

Mr. J. B. Shattuck of Cherry Creek, Chautauqua Co., N. Y., reported at a farmers' institute at Ellington that 28 cows in his stable, watered twice a day, gained 28 quarts of milk (which made over five pounds of butter) daily, by adopting a stable watering device which gave them water when they liked.

Mr. P. J. Schuyler of Onondaga County reported that 13 cows in his stable gained 57 pounds of milk a day, by having a stable watering device, over being watered once a day out of doors—gaining from 414 to 471 pounds per day, or a gain of nearly 14 per cent.

In my own stables, the gain has been as great, and I have always noticed a large falling off, if for any reason I was obliged to go back to the old system of watering for a short time.

I am sure that the average low yield of milk per cow is more due to a scanty supply of water than to under-feeding,

and that the greatest field for improvement in the dairy to-day is in the line of making stables warm, and adopting some system of stable watering. A gain of from 10 to 15 per cent. in the milk yield would soon pay for the best system, and what is more, when the expense was paid the increase would not stop.

In what I have said, no mention has been made of the very great saving in the labor of caring for the cows, nor of the great satisfaction of knowing that our best friends were having all the water needed, and just when they want it, to do their level best.

In reading dairy literature, I am surprised that so few mention this subject at all, and so few who do seem to have any adequate idea of its importance.

J. S. WOODWARD.  
Niagara County, N. J.

## DO YOUR COWS PAY THEIR BOARD

The following article under this title, by Prof. G. W. Shaw, chemist of the Oregon Experiment Station, is especially commended to the attention of every dairyman—and we know there are some still living!—that does not clearly apprehend exactly what the Babcock test is and what it will do for him; and the suggestions it offers are not without interest, even to more enlightened members of the fraternity.—Eds.

With the present condition of prices of farm products, it behoves every farmer to cull out his herd, and keep only such animals as are paying a profit. If they are merely paying their board, let them go. There is no reason to-day why farmers should not know accurately what profit their cows are returning to them. The advent of the Babcock milk test within the last few years marks an epoch in the dairy world. There is no longer any necessity for the farmer to be in ignorance of the exact capacity of each and every animal in his herd. The operation of the "test" is so simple that any farmer, exercising a reasonable amount of care and thought, should be able to execute it with ease.

The apparatus consists of: "First," a set of thick glass bottles, the necks of which are graduated into ten main divisions, each division corresponding to 1 per cent. of butter fat—each of these is divided into five smaller divisions, which, therefore, read to 0.2 per cent. "Second", a pipette for measuring the milk, which should be of a capacity of 17.6 c. c. In purchasing apparatus, one should be sure to get a pipette holding the above-named amount, as others have been put upon the market with "the false claim" that they will agree with the butter yield from the churn. "Third", a graduated cylinder for measuring the acid, which should hold 17.5 c. c. "Fourth", a whirling machine. The only chemical needed is commercial sulphuric acid, having a specific gravity of 1.82. It is very important that the acid should be of approximately this strength; otherwise the test cannot be relied upon. This acid should always be kept in a well-closed bottle, as it absorbs moisture from the air, and may deteriorate sufficiently to be spoiled for the work. The stopper for the acid bottle should be of rubber or glass. While the above-named instruments are all that are usually named in the descriptions, and sold with the instrument, the addition of a wash bottle is so handy that I

deem it well to mention it. The wash bottle is to hold the hot water for filling the bottles after whirling. The bottle is used by blowing through the upper tube, which will cause a stream of water to flow out the lower.

In making the test, great care should be exercised in securing a fair sample, by having the milk well mixed before the sample is taken. Now measure out 17.6 c. c. of the milk by placing the small end of the pipette in the milk and sucking at the other end until the milk rises above the mark; then remove the pipette from the mouth and quickly place the fore-finger over the upper end of the pipette. Hold the pipette perpendicularly and with the mark level with the eye, and remove the pressure of the finger slightly, till the upper surface of the milk just coincides with the mark on the pipette; as soon as this occurs, immediately renew the pressure. Now allow the milk to flow from the pipette into one of the test bottles, holding the bottle in a slightly inclined position. After allowing the pipette to drain for a few moments, blow into the upper end, to remove the last drop of milk. After the milk has been placed in the test bottle, the acid measure should be filled to the mark with the sulphuric acid and carefully poured into the test bottle with the milk, holding the bottle in such a manner that the acid may flow down the side. The acid and milk should now be thoroughly mixed by grasping the neck of the test bottle in the hand and giving the bottle a rotary motion. The bottles are then placed in the whirling machine, and the machine revolved for four minutes. The bottles can now be filled with hot water by means of the bottle to about the mark 8 on the neck. They may be filled without removing them from the machine. Replace the cover, and whirl the bottles for one minute more. To measure the fat, remove the bottle from the socket of the machine, holding it in a perpendicular position, and observe the highest and lowest limits of the fat column. The difference between these figures represents the per cent. of butter fat in the milk. If these directions are carefully followed, there should be no difficulty in applying the Babcock test. Careless methods of work will not give the desired results, nor can a single test give you a reliable measure of your cow's worth. For an accurate test, the entire yield of a given cow should first be well mixed and then the sample immediately taken. Do not make the test too soon after a cow is fresh to test her value. A heifer was tested before she dropped her calf and the test showed 2 per cent. A few days after the calf was born it tested 3.6. At the end of four weeks it tested 5.4. It is generally supposed that the fairest test is made at the end of three months from calving.

We often see advertised various kinds of apparatus for milk testing, such as, "Perfection (?) Milk Tests," "Creamometers," etc., but these are in no sense reliable for the ordinary farmer to use. These are advertised at a very low price, but are practically worthless. They give cream tests, and no such test can be relied upon, for some cows will raise a good quantity of cream, but of inferior quality.

Certain cows show by the cream test only a small quantity of cream at the end of 12 hours, but at the end of 36 hours show more cream than any other in the herd. Such milk has invariably tested low by the Babcock test, and the reason is found in the fact that

there is not enough butter fat in it to make the necessary difference in specific gravity between cream and skim-milk to raise the cream in less than 36 hours.

Unless a cow tests 4 per cent. or more, she must give a large quantity of milk or she will be profitless. But simply because a cow gives but a low fat test, do not condemn her until you know what quantity of milk she yields. Suppose that Peggy's yield is 12 qts. and tests 3 per cent, and Mollie gives 6 qts. of 4½ per cent. milk. The first will make over ¾ of a pound of butter, or say 1½ pounds per day, if the milkings are alike, while Mollie's milk would give but a trifle over 1 pound. In this case the cow making the poorer test is the better cow. If Peggy gave 3 per cent. milk for 10 or 11 months, amounting to, say 6000 lb., and Mollie 4½ per cent. milk through 8 or 9 months only, and but 3000 pounds, the former would make 150 pounds fat and the latter only 135 pounds.

The writer has formed that the average fat content of the milk throughout the State is much nearer 2 per cent. than 4 per cent. From this it can be seen that farmers are feeding a large number of cows that are far from paying their board. No farmer can afford to keep a cow that will not return to him at least 150 pounds of fat per year. Test your cows and find out which are running you in debt, which are only paying their expenses, and which are paying you a profit. Dispose of the first two mentioned, as both are a detriment to your work.

**MILK AND BUTTER RESULTS AT THE LONDON DAIRY SHOW.**

It seems desirable to call attention to some remarkable results of the latest milking trials and butter tests. In the last number of the Journal of the British Dairy Farmers' Association, Mr. Ernest Mathews gave a list of the highest number of points obtained by each breed of cows competing in the milking trials from 1888 to 1895 inclusive. Among these the highest was 171.9 points, awarded to a cross-bred in 1893. Nothing near this appears in the record for the six other trials; but it is followed by 140.8 for a cross bred in 1892, 140.12 for a Shorthorn in 1894, 139.8 for a cross-bred in 1895, and 139.4 for a Shorthorn in 1888. The fifth place was taken by Mr. Merry's champion cow Daisy Belle, at the recent show, with 137.04 points. In the eight trials ending with those of 1896, the highest number of points has been gained four times by a Shorthorn, three times by a cross-bred, and once by a Jersey. The highest score for each breed during the eight years is compared below with the score of 1896:—

Breed.	Highest number of points for each breed in eight trials.	Number in 1896.
Shorthorn.....	140.12 in 1894.....	137.04
Jersey.....	117.20 " 1889.....	113.40
Guernsey.....	125.80 " 1892.....	93.07
Ayrshire.....	121.40 " 1894.....	120.56
Kerry or Dexter...	90.42 " 1896.....	90.42
Red Poll.....	116.40 " 1893.....	104.07
Cross-bred.....	171.90 " 1893.....	76.62

It will be seen that the breed record for the eight years has been beaten only in the Kerry and Dexter class, which has competed in only four trials during the period. But the latest trial was remarkable for the richness of

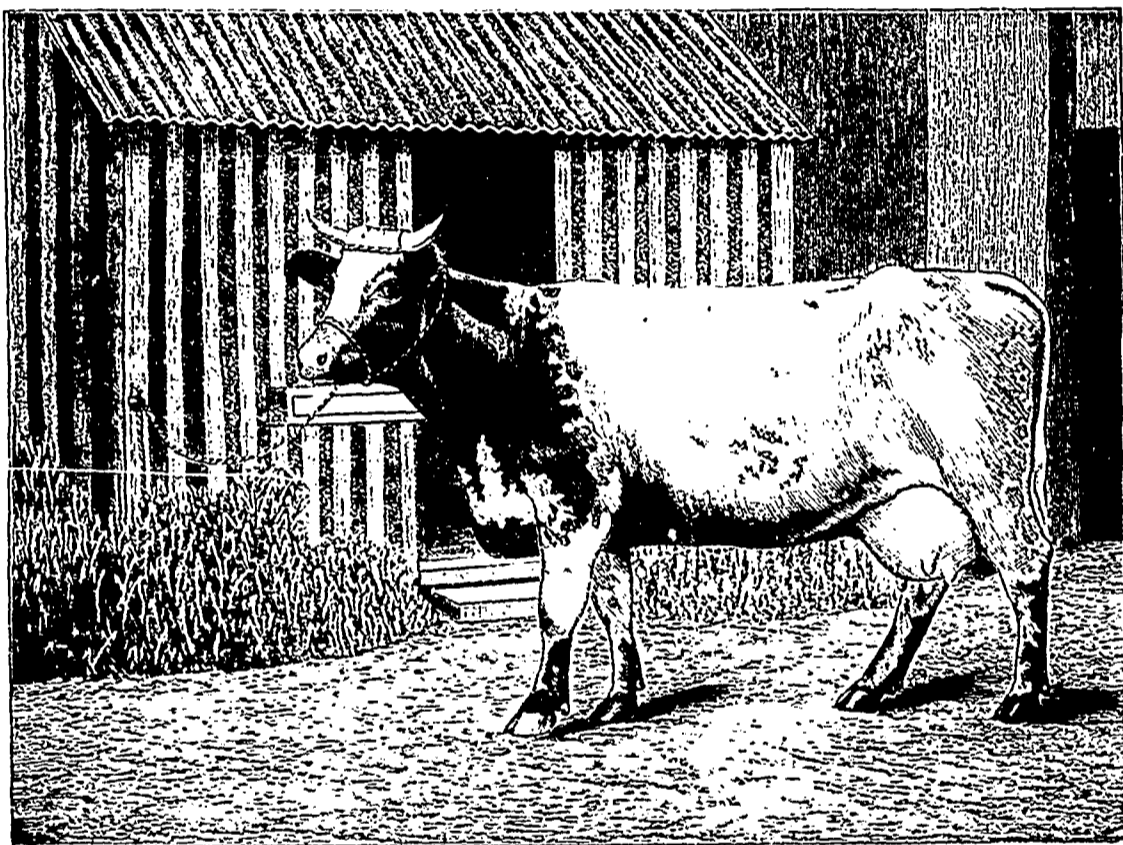
some of the cow's milk, and notably that of the prize-winning Shorthorns and one Dexter cow. The only very high record in yield of milk among the prize-winners was 71.3 lb., given by Mr. Merry's Magpie, a Dutch cow; but her milk was so poor (containing only 2.9 per cent. of fat) that she lost ten of the 140.1 points she would have obtained without the deduction made when milk has under 3 per cent. of fat, and was awarded 130.1 points, or 6.52 less than Mr Geo. Long's Nancy, first in the mixed class. This cow forty-six days after calving, gave an average of 63.9 lb. of milk per day, containing 3.8 lb. of fat and 9.1 per cent. of the other solids, and obtained the second greatest numbers of points in the trial. Mr. Merry's champion Shorthorn gave 56.2 lb. of milk, twenty-two days after calving, or 7 lb. 7 oz. less than Mr. Long's cross-bred, but the percentage of fat in the former cow's milk was 5.2, which is exceptionally high for a

percentage of 6.4 of fat. It is a pity that she was not entered for the butter test. We must turn to the butter tests to bring out clearly the most extraordinary results. In the Shorthorn test Daisy Belle was beaten by Mr. Shepherd's Dairy Model, which, after being fifty-two days in milk, gave 46 lb. 14½ oz. in a day, yielding the great weight of 3 lb. 2 oz. of butter. This result has been beaten at the Dairy Show only once, in the case of Mr. Brutton's first-prize Baron's Progress, in 1879, which gave 37.6 lb. of milk after being 113 days in milk, and 3 lb. 5 oz. of butter. Dairy Model's butter ratio was 15.01, and that of Baron's Progress was 11.3. The yield of butter was at the rate of 21 lb. 14 oz. per week in the case of Dairy Model, and at the rate of 23 lb. 3 oz. in that of Baron's Progress. But Daisy Belle also did remarkably well in the butter test, giving 3 lb. 1 oz. of butter in the day from 55 lb. 12½ oz. of milk, or at the rate of 21 lb. 7 oz.

cows had been only thirty and thirty-four days in milk respectively, and Regina Sultana 2nd would have been placed first if points had been allowed for time since calving in the butter test, as in the milking trials. Four other Jerseys gave 2 lb. 1¼ oz. to 2 lb. 6¼ oz. of butter per day. In the mixed breed test the only two good results were those of Mr. Holm's Ayrshire and Mr. George Long's cross-bred, the former having yielded 2 lb. 8 oz. of butter from 47 lb. 12½ oz. of milk, and the latter 2 lb. 5½ oz. from 61 lb. "But in the butter tests, as in the milking trials, the Shorthorns have borne away the palm this year."

**THE LONDON DAIRY SHOW 1896**

Well! If people will cast their eyes over the subjoined tests of all sorts of dairy cattle, even the most prejudiced of them must confess that the Shorthorn Dairy-cow is not such an inferior animal



SHORTHORN COW, "DAIRY MODEL." (1)

The property of Mr. Robert Shepherd, Sniperley Farm, Durham. Winner of First Prize in the Shorthorn Butter Test at the London Dairy Show.

cow of any large breed, and the other solids were 9.3 per cent. According to the table of details, Mr. Merry's third-prize Dorothy, a cross-bred in the mixed class, gave 47.1 lb. of even richer milk, as it is credited with 5.5 per cent. of fat and 9.6 of other solids, but the actual weights of fat and other solids came out lower than those of the Shorthorn. The second and third Shorthorns gave milk containing 4.1 and 4.5 per cent. of fat respectively, percentages higher than have been common among Shorthorns in previous years.

There is nothing remarkable in the richness of the milk of the Jersey prize-winners, as 4.5 to 5.5 per cent. of fat has often been beaten by the breed; but 46.7 lb. of milk yielded by Dr. Watney's Opale and 40.8 lb. of richer milk from Lord Rothschild's Beauty are creditable records. Two of the Dexters did remarkably well Mr Woodwiss's Red Rose gave 36.8 lb. of milk of moderate quality, 145 days after calving; while Mr. Robertson's Bridget McCluskey, fifty days after calving, gave 31.7 lb. of milk containing the extraordinary

per week, and showing a butter ratio of 15.21. Two other Shorthorns gave 2 lb. 12 oz. of butter each, and the whole of the seventeen tested averaged 2 lb. 1 oz. of butter a result never approached before. In the Jersey butter test Dr. Watney's first-prize Opale came out well with 47 lb. 10½ oz. of milk and 2 lb. 10½ oz. of butter, or 1 lb. of butter, or 1 lb. of butter to 17.7 lb. of milk. Lord Rothschild's Beauty was a close second with 40 lb. 12 oz. of milk, 2 lb. 10 oz. of butter, and a butter ratio of 15.52. But the most remarkable results in the Jersey test were those given by Lord Rothschild's third-prize Regina Sultana 2nd, which, 103 days after calving, gave 30 lb. 8 oz. of milk, yielding 2 lb. 9¼ oz. of butter, or 1 lb. of butter to 11.83 lb. of milk. This ratio was not approached in any other case but that of a Red Poll, which gave only 9 lb. 6 oz. of milk and 12¾ oz. of butter, and is therefore not worth considering. The first and second-prize

as some breeders represent her to be. Cows like Mr. Shepherd's Dairy Model," with her 47 pounds of milk a day, yielding 3 lbs 2 oz., of butter, or at the rate of a pound of butter to 15 pounds of milk; or as Mr. Mary's "Daisy Belle" that gave 56 lbs of milk, from which 3 lbs 1 oz., of butter were made at the rate of 18 1-5 lbs of milk to 1 of butter, cannot but be profitable cows for the dairy; and when their milking days are over, it will not cost much to fit them for the butcher.

**COLD STORAGE.**

THE DOMINION GOVERNMENT'S PLAN FOR CREAMERIES.

Grant for cold storage—Creamery butter Ice-house and Refrigerators — Plans for constructions—Cooling—Records of temperature—Bonuses.

Ottawa, Nov. 7.—The following outline of the scheme sanctioned by Mr. Fisher Minister of Agriculture, has been drawn

(1) The udder most incorrectly given. Ed.

SHORTHORN BUTTER TEST.

No. in catalogue	Name of cow.	Exhibitor.	Age.	Date of last calf.	Days in milk.	Milk yield.		Butter yield.	Ratio viz. lb. milk to lb. butter.	Colour and quality of butter.	Awards.
						lb. oz.	lb. oz.				
1	Cherry.....	T. Brown.....	y. m. d.	1896.							
2	Red Rose.....	J. Errington.....	5 3 0	Sept. 2	49	14 8	2 12	16.18	— —	Highly commended.	
3	Sapphire.....	G. Taylor.....	5 6 0	Oct. 7	14	56 3	2 4	24.97	— —	Highly commended.	
8	Rose.....	C. Birdsey.....	8 0 0	Aug. 29	53	71 12	1 11	42.53	— —		
9	Primrose.....	C. Birdsey.....	7 0 0	Sept. 7	44	59 1	1 8	38.20	— —		
10	Winifred.....	C. Birdsey.....	6 0 0	Sept. 22	29	56 9	1 6	39.80	— —	Highly commended.	
11	Sweetheart.....	J. P. Spencer.....	5 0 0	Sept. 27	24	13 4	1 9	26.90	— —		
12	Gaiety Girl.....	J. P. Spencer.....	5 0 0	Sept. 29	22	17 4	2 1	22.75	— —	Highly commended.	
13	Little Gem.....	J. P. Spencer.....	7 0 0	Aug. 30	52	63 9	2 11	23.39	— —	Highly commended.	
14	Bella.....	Rumbal and Son.....	5 0 0	Oct. 1	20	38 8	1 0	36.77	— —		
15	Fashion.....	Rumbal and Son.....	6 6 0	Oct. 2	19	50 3	1 7	34.91	— —		
16	Ruby.....	J. Evens.....	5 8 10	Sept. 10	41	16 12	1 12	26.26	— —		
17	Burton Dairymaid.....	J. Evens.....	5 8 10	Sept. 26	25	57 1	1 15	29.46	— —		
18	Daisy Belle.....	A. Merry.....	7 0 0	Sept. 29	22	55 12	3 1	18.20	— —	Second prize.	
21	Dairy Model.....	R. Shepherd.....	5 6 0	Aug. 30	52	16 14	3 2	15.01	— —	First prize.	
22	Dairy Queen.....	R. Shepherd.....	7 6 0	Aug. 27	55	2 8	1 14	27.76	— —		
23	Royal Duchess.....	Mrs Pratt.....	9 4 14	Sept. 14	37	50 1	1 15	25.64	— —		

JERSEY BUTTER TEST.

Number in catalogue.	Name of cow.	Exhibitor.	Age.	Date of last calf.	Days in milk.	Milk yield.		Butter yield.	Ratio viz. lb. milk to lb. butter.	Colour and quality of butter.	Awards.
						lb. oz.	lb. oz.				
24	Silver Crown 4th.....	Col. Hankey.....	y. m. d.	1896.							
25	St. Brelades Lady.....	Col. Hankey.....	6 3 13	May 2	172	26 12	1 12	20.86	Good		
26	Stargazer C.....	J. H. Corbett.....	6 3 12	Aug. 31	51	10 12	2 6	14.88	Fair.	Certificate of merit.	
27	Betsy.....	Capt. Fraser.....	9 9 12	June. 28	115	23 4	1 6	17.15	Good.		
28	Regina's Sultana 2nd.....	Lord Roth-child.....	3 6 7	July. 16	103	30 8	2 9	11.83	Pale. Good.	Bronze medal & £3.	
30	Beauty.....	Lord Rothschild.....	5 7 7	Sept. 17	34	10 12	2 10	15.52	Good.	Silver medal & £3.	
31	Golden Streamlet.....	J. Brutton.....	3 4 7	Oct. 4	17	26 3	1 8	16.92	Good.		
32	Grand-daughter.....	Mrs. Starkie.....	5 4 21	April 18	188	18 5	1 5	21.31	Good.		
34	Venus.....	Miss Standish.....	7 8 0	June 26	117	29 4	1 9	18.35	Good.		
35	Sunflower.....	Miss Standish.....	6 8 21	Sept. 17	34	19 0	1 3	15.39	Very good.		
36	Numberless.....	Dr. H. Watney.....	5 10 21	July. 7	106	37 0	1 10	22.13	Good.		
37	Brownie.....	Dr. H. Watney.....	10 0 21	Aug. 17	65	15 8	2 2	16.70	Good.	Certificate of merit.	
38	Opal.....	Dr. H. Watney.....	5 2 14	Sept. 21	30	17 10	2 10	17.70	Very good.	Gold medal & £3.	
39	Girl's Friendly.....	Capt. Brand.....	8 2 14	Sept. 6	45	32 4	1 8	20.84	Good.		
40	Joyful Girl.....	Capt. Brand.....	7 1 7	July. 3	110	23 2	0 10	34.4	Good.		
41	Badier's Polly.....	Capt. Brand.....	7 3 14	Oct. 1	20	36 10	1 14	19.22	Good.		
47	Lauristina.....	J. A. Smith Ryland.....	5 3 0	Aug. 3	80	22 13	0 15	23.20	Very good.		
48	Lauristina.....	C. A. Smith Ryland.....	5 3 0	Aug. 3	79	15 6	0 15	15.65	Good.		
52	Good old Mother.....	D. Mutton.....	7 5 7	Aug. 6	76	35 15	2 2	16.56	Good.	Certificate of merit.	
53	Joan 4th.....	D. Mutton.....	7 4 21	Aug. 11	71	39 10	2 1	19.06	Pale. Good.	Certificate of merit.	
54	Lady Fussy.....	W. Barron.....	3 5 21	June 17	126	27 12	1 4	21.65	Pale. Good.		
55	Finish.....	E. Carter.....	10 6 21	Mar. 15	220	36 5	1 12	20.22	Good.		
56	Frivolity.....	E. Carter.....	6 5 21	Mar. 18	230	6 12	1 10	16.46	Good.		
61	Syringa.....	W. McKenzie Bradley.....	8 9 7	Aug. 28	54	33 15	1 10	20.49	Good.		
62	Lady Lavinia 5th.....	W. McKenzie Bradley.....	6 8 7	May 5	169	30 12	1 11	17.89	Pale. Good.		
122	Larkspur 2nd.....	S. Baxendale.....	2 3 21	Sept. 5	46	30 11	1 11	18.14	Good.		
123	To-Day.....	S. Baxendale.....	2 4 0	Aug. 23	59	33 7	1 7	22.78	Pale. Good.		
136	Bayleaf 8th.....	Mrs. Starkie.....	2 8 21	July 26	87	23 0	1 4	18.40	Pale. Good.		
137	Melvina 5th.....	Mrs. Starkie.....	2 6 21	April 22	182	21 8	1 1	19.38	Good.		
145	Newport's Fancy.....	Duchess of Marlborough.....	2 5 7	Sept. 10	41	16 4	1 1	15.07	Pale. Good.		

MIXED BREED BUTTER TEST.

Breed.	No. in catalogue.	Name of cow.	Exhibitor.	Age.	Date of last calf.	Days in milk.	Milk yield.		Butter yield.	Ratio viz. lb. milk to lb. butter.	Awards.
							lb. oz.	lb. oz.			
Guernsey.....	66	Boute.....	A. H. Wingfield.....	y. m. d.	1896.						
Guernsey.....	67	Fan 11th.....	J. D. Toogood Parsons, jun.....	4 7 7	July. 4	109	37 14	1 3	20.00		
Guernsey.....	68	Golden Cloud.....	J. D. Toogood Parsons, jun.....	8 8 14	July. 18	95	31 12	1 7	23.19		
Guernsey.....	69	Claremont Golden Love.....	W. H. Fowler.....	9 4 1	July. 2	111	25 12	0 13	21.87		
Red Poll.....	72	Prop 2nd.....	Garrett Taylor.....	7 3 7	Sept. 8	43	13 9	1 13	30.55		
Red Poll.....	77	Russett 2nd.....	W. E. Long.....	8 6 7	July 23	90	36 8	1 8	23.44	Silver medal.	
Ayrshire.....	81	Primrose.....	J. Holm.....	8 0 0	Sept. 21	30	17 12	2 8	23.83		
Ayrshire.....	82	Bell.....	J. Holm.....	4 0 0	Sept. 14	37	18 5	1 13	19.11	Silver medal.	
Cross-bred.....	101	Marjorie.....	Rumbal and Son.....	7 0 0	Sept. 30	21	19 1	1 5	26.64		
Holstein.....	101	Rainham Belle.....	Rumbal and Son.....	7 0 0	June. 1	142	40 6	1 13	32.06		
Holstein.....	103	Connie.....	Rumbal and Son.....	7 0 0	Oct. 9	12	33 1	1 4	30.42		
Cross-bred.....	104	Nancy.....	G. Long.....	5 9 21	Sept. 5	46	61 0	2 5	25.51		
Cross-bred.....	111	Snowdrop.....	J. H. Long.....	8 0 0	Aug. 15	67	40 9	1 6	26.02	Silver medal.	
Red Poll.....	173	Russett 3rd.....	J. E. Long.....	2 6 14	June 17	127	9 6	0 12	28.54		

up by Mr. Robertson, Dairy Commissioner —

I am directed by the Minister of Agriculture to state that the sum of twenty thousand dollars was placed in the supplementary estimates by the government and voted by parliament at its last session "towards providing for cold storage and carriage of Canadian perishable food products, and to secure recognition of the quality of such products in the markets of Great Britain in an undeteriorated condition." Part of this sum is to be used in assisting the owners of creameries to provide suitable cold storage rooms.

In order to have creamery butter in a perfect state when it is delivered to the consumers in Great Britain, it should be protected in cold storage from the day after it is made. As the government has decided to arrange for what will be practically a chain of cold storage service from the producers in Canada to the consumers in Great Britain, it is necessary that the owners of the creameries, the manufacturers of butter and the farmers who furnish the milk or cream, should all co-operate to bring about the best results. Very few creameries are equipped with sufficient or efficient cold storage accommodation.

The cost of an ice-house and refrigerator room adequate to store the make of butter at a creamery for two or three weeks while awaiting shipment is estimated at from four hundred (\$400) to six hundred (\$600) per creamery. At most creameries there is already an ice-house, and at least a room that goes under the name of a cold storage room. The necessary alterations and improvements to those existing buildings would cost probably from one hundred (\$100) to two hundred dollars (\$200) per creamery.

Plans showing the style of construction to be adopted for the insulation

of the cold storage room and the method which is recommended for the storing of ice and the cooling of the room, will be furnished on application to the Agricultural and Dairy Commissioner, Ottawa.

These require that the inside of the wall of the cold storage room shall have two dead-air spaces, measuring together not less than three inches in thickness, with an inside finish of two thicknesses of one inch lumber, with building paper between. The dead-air spaces can be made most economically and effectually by the use of a thick, tough quality of building paper. The bottom of the outer dead-air space is to be filled with mineral wool, or sawdust, to a depth of at least six inches, to prevent the admission or exit of air. Where the air can enter or escape from the hollow space in a wall, it becomes a flue rather than a dead-air space, and is not efficient as part of a non-conducting wall.

The hollow and dead-air spaces on the sides of the cold storage room are to be continued on the ceiling and under the top thickness of lumber on the floor. The floor is to be at least two inches thick with two thickness of building paper between the top and underneath boards or planks of the flooring.

The cooling is to be effected by means of cylinders to be filled with ice, or ice and salt, as shown on the plan, or by some other efficient method, to the satisfaction of the Department of Agriculture. The temperature is to be maintained under thirty-eight degrees Fahr. continuously.

The butter-maker must keep a record of the temperature of the cold storage room, taken once a day. Forms for the keeping of the record will be supplied by the Department of Agriculture in duplicate for each month; and one copy when filled up, is to be sent at the end of the month to the Agricultural and Dairy Commissioner, Ottawa.

The quantity of butter to be manufactured at the creamery from April 1 to Dec. 1, shall not be less than 15,000 lbs.

To encourage the owners of creameries to provide the cold storage accommodation which is so desirable, the government will grant a bonus of fifty dollars per creamery to every creamery which provides and keeps in use a refrigerator room according to the plans and regulations, during the season of 1897; the government will pay a bonus of twenty-five dollars per creamery to every creamery which provides and keeps in use a refrigerator room according to the plans and regulations, during the season of 1898; and the government will pay a bonus of twenty-five dollars per creamery to every creamery which provides and keeps in use a refrigerator room according to the plans and regulations, during the season of 1899.

It will thus be seen that the owner of a creamery who provides the necessary refrigerator room and keeps it in use according to the regulations during the years 1897, 1898 and 1899, may receive a bonus of a hundred dollars per creamery.

The owners of the creameries, which already have ice-houses and cold storage rooms, will please send specifications of the same, together with a statement of the materials used in construction and a sketch or plan of them. Plans and specifications will then be



finished showing the alterations, additions or improvements which are required to meet the regulations of the Department of Agriculture.

### DEVONSHIRE CREAM—HOW TO MAKE IT.

#### Clotted cream—Cream-cheese—Early lambs.

"Eds. Country Gentleman"—In a recent interesting communication from Mr. Wood, written while spending pleasant days in England, the noted Devonshire cream is referred to in terms of high appreciation, which it is certainly true this toothsome preparation well deserves. But not knowing how it is prepared, Mr. Wood is unable to gratify the curiosity which his letter no doubt has awakened. This cream is prepared for the London market in this simple way: The night's milk is set in the usual manner in the common shallow pans (1) and, with the cream in shallow pans and, with the cream which rises on it, in the morning is set (still in the pan) on a stove or hearth to heat up to near scalding temperature, 2, when the cream becomes wrinkled and moves visibly, shrinking and spreading on the surface. When this point is reached, the pans are set back in the dairy for the cream to rise fully. This it does very quickly in a thick stiff crust on the milk. Doubtless this thick cream contains all the fibrin of the milk, which has been coagulated and combined with the cream.

This is then in a thick, somewhat adherent mass, which may be easily rolled up and lifted from the pans. This is sent to the London market, where everything new and strange, but good, finds immediate purchasers at high prices. The demand for this cream is very large, and some of the dairies expend their whole product in this way. Others make the fresh cream cheeses of it, and these are certainly a delicacy to be remembered by every visitor to that delightful Devonshire country, where the landscape is one continuous garden.

These delicious cream cheeses are thus made: The thick cream is carefully placed in small molds of wood or tin, about five inches long, three wide and two deep—mere frames set on a straw mat, to be drained of what milk the cream may still contain. The cream soon takes the form of the mould, marked by the straws which indent the mass, and the cheeses are sent to market, or used on the tables of the near-by purchasers in place of butter, or as a toothsome morsel with fruit in pastry.

No doubt such preparation of the rich cream of the Jersey cows, here in the dairies near to the large cities, would sell for fifty cents each, which would be about twice the value of the butter made from the cream. There would be a great market established for this product if it were only once offered. It is an axiom of business men that supply creates a demand for any good thing which recommends itself on sight; and the more supply of these cheeses, or the cream, at the fancy groceries, would, we may be sure, soon lead to a very large business. Take the early market lamb as an instance. Thirty years ago

(1) Often in brass pans ten inches deep. Ed.

(1) Far better in a water bath—"bain Marie."—Ed.

I stalled the whole New York market with ten lambs, and now thousands are sold daily in the season.

So it will be with any product that will appeal to the good taste and appetite of those purchasers who do not stand at the cost of anything, if it is good, or even new and strange, if it has the promise of goodness in it. Very soon it becomes the fashion; and this delicious cream and the cheese made from it are both so surely good that there is no risk whatever if some one who has the means and the ability should send in a supply to begin with, starting the trade. The experience of the fine butter-makers and the fruit-growers all goes to substantiate this expectation, and there are hundreds of other similar proofs of the truth of this fundamental principle of trade.

This kind of product is one especially convenient for the winter dairyman, who is relieved by the season from every difficulty in sending his products to market with safety, which might interfere with it in the heat of the summer, not to mention the absence, at that season, of the great multitude of consumers who fly to the country for recreation; and then it will be the turn of the summer dairyman to invite his neighboring boarding-houses into the secret of a new experience in the luxuries of the table. And every one who gets acquainted with these delicacies will want more of them when again at home.

H. STEWART.

### CANADIAN BUTTER.

#### Exports from Montreal—Inferior U. S. butter—Boxes.

Much as we dislike to make the admission, the startling fact has been apparent nearly all the season, that our Canadian cousins were getting more for their butter than the creameries on this side of the line. W. L. Cardyle, who is dairy assistant to Superintendent of Institutes, Gregg, up in Minnesota, writes in the "Northwestern Farmer" on this subject as follows:

"Canadian dairymen are rapidly capturing the English butter market in the same way they did the cheese market, and the first thing we Americans know, we shall have no outlet for our surplus butter. The exports from Montreal to Britain already this year amount to over 9,500 packages, which is over double the quantity shipped last year. Having just returned from a trip through Ontario and New-York state, I can very easily see what the outcome will be, in fact it is almost true already. Three weeks ago, when the creameries in eastern Ontario sold their butter for 15 cents per pound on Montreal markets, the best creamery butter in St. Lawrence county, New-York, sold 15½ cents, and the New-York butter was bought by Canadian buyers.

It was not that the St. Lawrence county butter was of inferior quality, but simply because there was no competition of buyers on the boards of trade. Canadian butter has been ruling from 1½ to 2½ cents above American butter all the season, and why? Not because it is of better quality, and not because they have better creameries or better cows, but because the Canadians have been bending all their energies to supply the British market with just the kind of butter, put up in just

the kind of packages they want and the Dominion Government has also had a system of cold storage for butter provided on the ocean steamers. We Americans have been pandered to the Chicago, New-York and Boston butter markets until we are practically out of the British market altogether. There can be no doubt that the foreign demand for Canadian dairy products has been the leading factor in holding their prices above ours. Many of the Canadian creameries are adopting what is known as the Australian butter package for packing their butter in. One large commission man in Montreal, the other day wrote a creamery in eastern Ontario, stating that he would supply the Australian packages free, and give highest price for butter, if they would pack their butter in them. The Australian package, is a square, or it may be an oblong box, made of spruce wood, holding 56 pounds net, of butter. It may be made of ¾ inch spruce, 11 inches deep, 12 inches wide and 12½ long, inside measurement. This is lined with heavy parchment paper and makes an exceedingly neat, tasteful and economical butter package. It takes much less room to store it, and is a much nicer package altogether to handle than the tub. We hope that some thing will be done before very long to increase the demand for our American butter in Britain, and when the time comes, we feel sure Minnesota dairymen will be ready to do their share to further the project.

The truth is, that little or no first-class butter goes from the United States to Europe. Our exporters find more money, or think they do, in sending over "seconds" and "thirds" and oleomargarine, and after several years of constant hammering, have finally succeeded in beating down the price of "extras" to a figure but little above the going price for common grades. There is but one way out of this rut, and that is for the manufacturers to do their own shipping, in their own names and under their own brands. They may fail to realize as much money the first year, but the ultimate success of such transactions we consider reasonably certain. This is but the enlargement of the advice given years ago, when the dairymen were counseled to abandon the country and village stores, and ship their butter to a larger market, where it would sell on its merits, and not for a practically uniform price for all grades, good, bad, and indifferent. That was good counsel then, but meantime, there has grown up in these larger markets, a body of middlemen akin to the country merchant, who are a menace to the dairy interests of the country.

#### Ties not wanted for cows.

Mr. Henry Ames, president of the Minnesota State Dairyman's Association, says that for every good reason anyone can advance why dairy cows should be tied or otherwise confined in stalls, he can bring forward equally strong reasons why hogs should be so confined. In other words there is no more occasion to stanchion or otherwise confine milking cows in stables, save in pens, than there is to put hogs in stanchions. Mr. Ames keeps his milking cows through the winter in loose pens eight or ten together in a pen, and says it is altogether the best method of confining them.

### CANADIAN CREAMERIES CONVENTION.

The annual meeting of the Canadian Creameries Association will be held at St. Mary's Jan. 13th, 14th, and 15th.

A full and attractive programme will be arranged and the best of speakers employed. The creamery men of Canada, are rapidly coming to the front. They see clearly that the only drawback to the prime character of their butter is not climate or latitude, but thorough dairy understanding. In Canada, as in all the rest of the world the prosperity of the dairy industry depends upon the quality of the product. The quality of the product will depend, invariably, upon the dairy intelligence of the farmers who produce the milk.

Money and enterprise will build creameries, but only intelligence can produce milk fit for fine butter and cheese.

In Canada, there seems to be a very wise and happy union between the government in the passage of rigid laws against adulteration and active efforts everywhere to promote the industry, and the farmers in their efforts to become thoroughly posted dairymen. The farmer is the bed rock of the whole question. As soon as he takes on the right understanding of his relation to the industry, everything else will fall into its right place. The quality of the creamery, the quality of the butter and the quality of the laws and commercial advantages all fall back on the intelligence of the man, who produces the cow and the milk. Poor milk, poor creameries, careless butter makers, and dishonest creamery owners were never known to exist long in a community of dairy farmers, who took pains to be intelligent on this subject.

The splendid effort of the Canadian people to grow in the knowledge of the dairy truth is bringing them a just reward in a rapid increase of the export demand for their butter.

### CANADIAN EXPORT OF BUTTER.

At a recent meeting of the Ontario Creameries' Association Board of Directors, some interesting facts were brought out in relation to the growth of the export trade in butter from the Dominion. Owing to the great improvement in quality, the export of 1895, was 100 per cent greater than in 1894, and it is over 300 per cent greater so far this year than for the corresponding months in 1895.

A resolution was passed asking the Canadian Government to provide better refrigerators on Canadian steamships so that the butter might arrive in England in better condition. The Board gave quite a thorough discussion to the idea of following the example of Denmark and employ some suitable person as their English agent, whose duty it shall be to watch the market and report upon all matters affecting the interest of the export trade.

### BUTTER AND CHEESE MEN.

#### Adopt Measures of Protection Against bad Rennet for Cheese and Greenwood Boxes for Butter.

Mr. A. A. Ayer submitted the following report:

"Your committee who were appointed to consider a remedy for the bad rennet which has been imposed upon factorymen, beg to report that in their

opinion the best remedy is to remove the cause of the trouble. The cause seems to have been confined to the bad rennet furnished by a single manufacturer. Remove this cause and destroy all this brand so that no more can be sold, and the disease will be cured. We have heard no complaints of this taint in our autumn made cheese, and may therefore presume that factorymen have entirely ceased to use this bad rennet.

"Your committee beg, however, to recommend that all parties who sell rennet should henceforth, use extra care as to quality, should apply all known tests thereto, and that factorymen should be specially warned against using cheap rennet, or cheap supplies of any kind in the manufacture of either butter or cheese. Special care should be used to keep rennet in the coolest and darkest place possible; a temperature of between 35 and 45 degrees is preferable, as heat injures the flavor and exposure to air decreases the strength. Rennet of a previous year's manufacture should never be used. When too large a quantity of

shall be the responsibility of the manufacturer of the cheese."

This motion was lost, and Mr. Ayer's report was adopted.

Mr. Duckett then moved: "That this meeting instruct the Executive Committee to place the facts before the Minister of Agriculture, and request him to take the necessary action to see that the whole of the brand of rennet complained of is destroyed; and also to express our opinion as to the advisability of the Department of Agriculture instructing factorymen that only first-class rennet should be purchased, and to call their particular attention to the necessity of keeping it in a cool place."

This was carried.

The report of the Committee regarding butter was also submitted by Mr. Ayer. It read:

"Your Committee have also been requested to report on the kind of wood required for butter-boxes, and the proper parchment paper to be used for the lining of the same. We have taken the liberty of going somewhat beyond the strict limit of our instructions. Only the best of spruce wood, perfectly

and nailed boxes damage the sale of the butter to considerable extent.

"The committee further beg to recommend that the standard of salt should be three per cent.—or 1-2 oz. of salt to 1 lb. of butter—never more than this; but for some special markets a less quantity may be used; that, in their opinion, the box is the coming package, and that all our creameries, even in the month of June, should avoid making high-colored butter. The demand is for straw-color—viz., pale, as compared with high-color. It is important to have the boxes packed full, and to contain a uniform weight of 57 lbs., so that the butter will turn out 56 lbs., on re-weight in Great Britain. Salt should not be used as a paste on the face of butter packed in boxes.

"Parchment Paper.—Only the very best quality, never less than 35 lbs. to the ream, and preferably 40 to 50 lbs., should be used. This paper should be used in two pieces, and not in three or four, as is sometimes the case. It should be of sufficient width to lap well over the butter on all sides. The one piece should go round three sides of the

secretary, and that copies be furnished to the Minister of Agriculture for the Dominion, and for the Province of Quebec and Ontario, and that 500 copies be printed for distribution among the members of the association."

"The Star."

## The Farm.

### VISIT TO THE EXPERIMENT FARM AT OTTAWA.

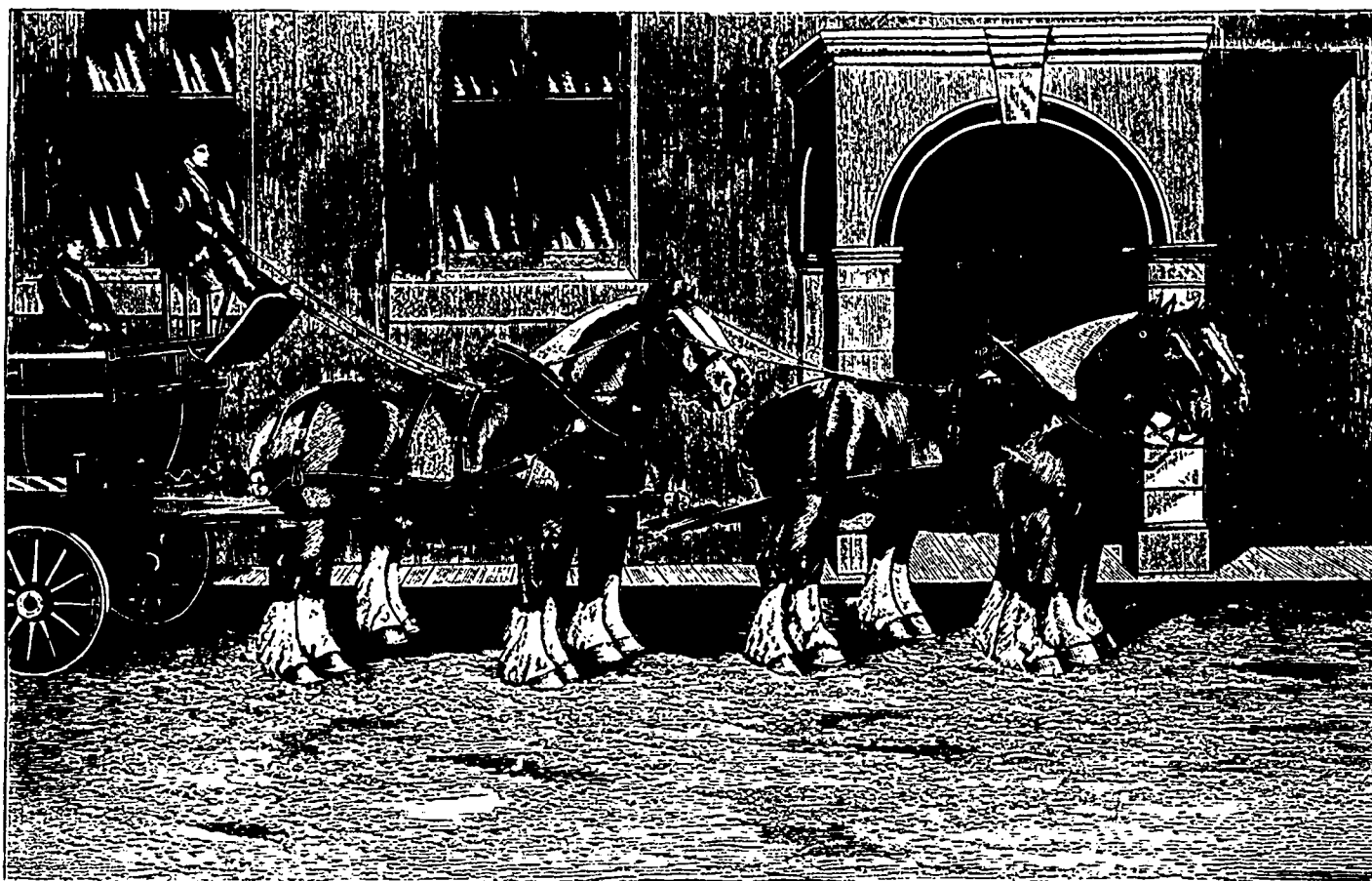
Farm-yard dung and artificials—Clover as a green-manure—Early-sowing—Lucerne—Hoed crops—Preservation of fodder-corn—Horticulture—Forest-trees, &c.

Quebec, August, 30th 1896.

To the Hon. Louis Beaulieu, Commissioner of Agriculture and Colonization, Quebec.

SIR,

In accordance with your instructions, on August 28th I paid a visit to the



SHIRE GELDINGS.

The property of Messrs. Watney and Co., London. Winners at the London Cart Horse Parade.

rennet is required to coagulate the milk, the fault is usually to be found in it having been exposed to the air or to great heat, or in improper treatment by the cheese-maker either of the rennet or the milk. Factorymen should never use rennet, not even for one day, that is not perfectly sweet to the taste or smell. The inspectors should be especially qualified to instruct makers on all the above points."

Those who spoke on the report included Mr. J. C. Warrington, Mr. Villancourt, Mr. A. C. Welland and Mr. McLagan. There was a difference of opinion as to the manner in which this question should be dealt with.

Mr. Warrington then moved: "That the Government appoint an inspector for rennet who shall certify the quality, the date when inspected, and the temperature at which it shall be kept; that any breach of these regulations

kindred, is fit for butter-boxes or tubs. Green wood tends to mould the butter and destroy the flavor. Dove-tailed boxes are the best, because nails or iron in any form tend to rust and disfigure the appearance of the boxes. Only wire nails should be used, even in the cover, and only a few should be used, or screws or other devices employed, so that the cover may be removed without disfiguring the package. It is an additional protection to have the boxes paraffined, but only pure paraffin wax should be used. It is important that the boxes should be kept perfectly clean. For this purpose the creamerymen should either ship their butter encased in bags, or else straw should be used the bottom of the farmer's wagons and railway freight cars, as well as between the packages. Convenience in opening, style and appearance, all help the sale, while dirty or ordinary sawn

box, leaving a good lap at the bottom and well over the top of the box, while the butter is being packed; the other piece should spread over the bottom of the box and up one side, so as to lap full over the top when the packing is complete. The same quality of parchment paper should be used for tubs and all kinds and sizes of packages. Most of the kinds and sizes of the paper used this year have been too light and thin. It is hoped that our creamerymen will avoid using light, thin parchment paper next season entirely. Mould in butter is usually caused by green wood, or poor parchment paper, or by the butter being kept too long in damp, poor ice houses."

The following resolution was then presented by Mr. Ayer and adopted: "Resolved, that the above recommendations regarding rennet and butter be published over the signature of our

Experiment-farm at Ottawa, where I met Messrs. Shutt, chemist, Fletcher, botanist, Gilbert, manager of the poultry department, and Pixter, farm-manager, from whom I received a mass of information which I herewith submit to your consideration.

FARMYARD-DUNG AND ARTIFICIALS.—Experiments with artificial manures and dung show:

1. That dung makes the land more productive than do artificials, and the crops are rendered much greater in yield;
  2. That phosphoric acid is almost useless here, unless it is accompanied by the other elements of fertility, or the land is already charged with them.
- It appears then, that these experiments prove that dung is the basis of productiveness, the artificials only sup-

plying the elements that may be wanting in it. This shows the importance of encouraging as much as possible the business of dairying, as one of the most efficacious means of maintaining the fertility of the soil and increasing its productiveness, thanks to the numerous cattle this business requires to be kept, and the quantities of dung they produce.

**GREEN MANURES.**—A very interesting experiment was made this year, showing the value of clover as a green-manure. A number of plots, half an acre each, were sown separately with wheat, barley, oats, and pease. Thin seedling was practised. On the half of each of the plots, "mammoth red clover" was sown at the rate of ten pounds to the acre. Every plot that had clover sown on it gave as much grain as, if not more than, the plots that bore no clover, and, in the fall, the clover will be counted as green-manure.

Mr. Fixter attaches a great deal of importance to this system, and strongly recommends farmers "always" to sow clover with their grain-crops. Mr. Buchanan one of the judges of Agricultural Merit has practised this plan, and has mentioned it as being successful. His notice of it will be found in the Journal, April number, 1896, p. 325.

Mr. Shutt weighed and analysed the stems, leaves, and roots of a year's crop of clover. He found that it gave, to the acre, 172.3 pounds of nitrogen, which at 10 cents a pound, would be equal to \$17.23.

By this will be seen how very valuable this crop is; especially when we consider that the greater part of the nitrogen is derived from the atmosphere.

Another advantage which this crop affords is that it hinders the loss of the nitrogen that is contained in the soil. M. Deléran as well as Lawes and Gilbert, at Rothamsted, have proved that when land is left bare after harvest, it loses a considerable part of the nitrogen it contained, by the rain washing it into the ditches; but clover, grown as we have described, not only enriches the soil by means of the free nitrogen of the air, but enables the land to retain the nitrogen it previously held. Moreover, it adds a good deal of humus to the land, the presence of which is indispensable to nitrification.

Mr. Shutt estimates the value of the manurial elements in a year's crop of clover as equal to the value of from 10 to 15 tons of farmyard dung.

After the grain-crop is carried, clover hinders the growth of weeds, which are always present in great numbers in those grain-crops that have had no clover sown with them.

All these good results can be obtained at a cost of, at most, 80c to \$1.00 an acre: the cost of the clover-seed.

Before sowing the clover, Mr. Shutt recommends spreading over the piece either wood-ashes, lime, or plaster.

At the Experiment-farm, the stubbles, where there are no grass-seeds, are always cleaned after harvest.

**EARLY SOWING.**—After experimenting on early, middling, and late sowing, it is taken as proved that early sowing yields much heavier crops than late sowing.

**OATS.**—Experiments show that the best kinds of oats are the following:

Banner,  
Golden-Beauty,  
American Beauty,  
Columbus,  
Johannette (black)

**LUCERNE.**—This does well here; last spring's sowing has already deeply penetrating roots. It must be cut before blooming, as afterwards it is too woody. Crimson-clover (*t. incarnatum*) has been tried here, sown at the rate of 24 lbs an acre, but it is not a favourite with Mr. Fixter. (1)

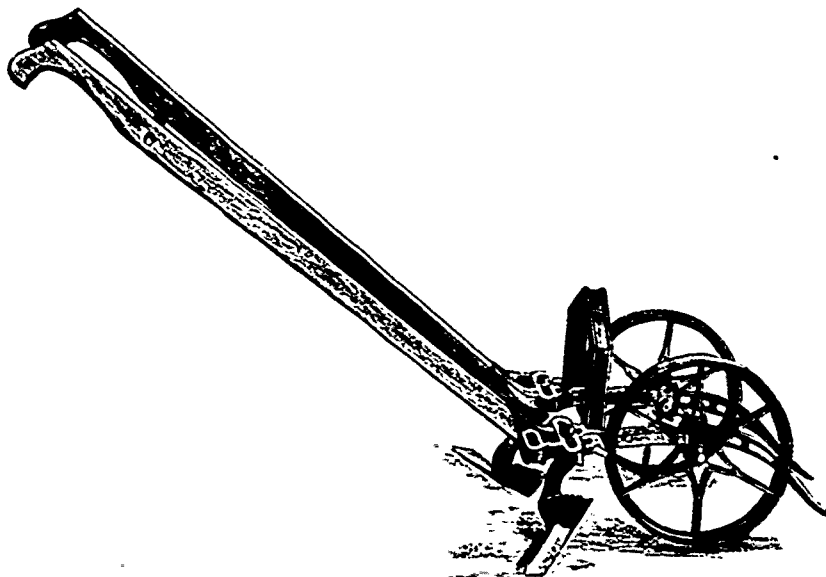
(1) We should like to know if it has been tried on a stubble, simply well harrowed, then sown, and rolled afterwards as a finish.—Ed. J. of A.

**PASTURES.**—For pastures, the foreman recommends 6 lbs. of alsike clover and 14 lbs. of orchard grass to the acre. The crop to be cut for hay the year after seeding, and then fed.

**HOED-CROPS.**—There are on the farm large fields of corn, carrots, and mangels. It is calculated that a ton of ensiled corn costs \$1.42, and a ton of mangels, in the cellar, \$1.75, this comprises both labour and the rent of the land.

Corn is sown in rows three feet apart, mangels 2 feet apart, singled to from 8 to 12 inches in the rows: carrots 2 feet apart, singled to from 4 to 6 inches.

According to the reports from several experiment-stations, green maize contains about 1 p. c., of digestible protein.



But it must not be forgotten that it contains a good deal of carbohydrates and other matters. A hundred pounds of fodder-corn, dried on the field where it grew, contains at least four times as much albuminoids as the same quantity ensiled.

Speaking of this, I told Mr. Shutt that many farmers dried their Canadian corn in shocks, with the ears on, and then placed the sheaves in the barn, one on the other, with the feet of the stalks outside and the heads together in the middle of the pile. Those who do this say that it does not heat when treated thus.

After having allowed it to get well "won", it is chaffed and mixed with clover or timothy hay and straw, at the rate of one-third of corn to two-thirds of the hay and straw. This mixed chaff they leave in the bays of the barn until it is given to the cattle who devour it greedily and do not waste a morsel of it. Mr. Shutt appeared to be interested in this account, but he thinks the corn treated thus would be likely to heat.

Should this way of dealing with fodder-corn turn out to be successful, its reputation should be spread abroad, especially among those farmers who object to going to the expense of a silo. Mr. Shutt is an earnest partisan of both fodder and silage-corn, but not to the neglect of growing roots. On the con-

trary, he advises that they should always form part of the ration of milch-cows.

Sun-flowers and horse-beans are ensiled with corn at the Experiment-farm. Only the heads of the sun-flowers are used.

In preparing the land for the hoed-crop, Mr. Fixter approves highly of the process of subsolling, because deep-ploughing is indispensable for such crops. The subsoil plough he uses resembles the one engraved in the September number of the Journal, 1895, pp. 175, 176. He finds it very useful, too, in getting up carrots. (1)

Hoeing crops in rows, Mr. Fixter advises to be done with a wheelhoe with two knives; the row passes, so to say, between the knives and the latter cut the weeds on each side of it.

(Something like the accompanying engraving?—Ed.)

With such a tool, an industrious workman can get over a couple of acres a day.

Potatoes are earthed up with the double mould board plough. Hoeing carrots and mangels should be begun as soon as the plants show themselves, and the more freely the hoe is used, particularly in droughts, the heavier will be the crop.

ries pay better than strawberries, as they require less labour.

The orchardist says we do not grow enough winter-apples.

**APIARY.**—Great attention is paid to this business, it being considered of vast importance. Mr. Fixter thinks it ought to be carried on much more largely in Quebec, as the improved apparatus render its pursuit very easy.

**FOREST-TREES.**—Many kinds of forest trees are grown, among others the black-walnut, which Mr. Fixter says should be planted in pastures. It will afford shade, and, afterwards, give most superb wood, to say nothing of its yearly product of fruit.

A small quantity of flax is grown. For the fibre, 80 pounds of seed are sown, for the grain, 40 lbs (1).

**THE PIGGERY.**—Experiments are continued on the fattening of pigs. They are chiefly fed on skim-milk, oats, barley, and pease. Mr. Fixter is in favour of using clover for hogs.

**CREAMERY.**—The maker has been experimenting on ferments, and he arrives at the conclusion that they are unnecessary if the maturation of the cream is conducted after a rational manner. He holds that it is better to work butter at twice, provided that, between the two workings, the butter is kept at a low temperature in a place free from all bad smells.

**DISHORNING COWS.**—Mr. Fixter is in favour of the operation; many cows on the farm have been dishorned.

**THE POULTRY-YARD.**—The hen-house is always kept in the most perfect order, and Mr. Gilbert has already described his proceedings in the Journal. In his opinion, the grand secret of success with poultry is to give them food in winter as nearly as possible like the food they pick up for themselves in summer.

**COWHOUSE.**—When housed, the cows always have a lump of rock-salt in a small trough by the side of each manger.

Respectfully submitted,  
J. A. GIGAUET,  
Asst. Commissioner of Agriculture.

### CULTIVATION OF MANGELS.

Mangels make a paying crop in almost any sort of soil that is rich, but do best in heavy loam or rich clay land. To have a good crop you must work the land thoroughly well and use plenty of manure, say 20 to 25 tons per acre. The land should be manured and well plowed in the fall, when new dung can be used; but if manured in spring, it should be well rotted. Would recommend sowing after a crop of grain, because you can clean the land so easily then by harrowing after the grain has been taken off, and letting all the annual seeds sprout, and then these are plowed down with the manure and make no more trouble. Like all root crops, mangels should be sown in clean ground as it costs too much to keep the crop clean in weedy land, and

(1) In Flanders, etc., as much as 160 lbs., when the fibre is intended for lace.—Ed.

### HORTICULTURE AND ARBORICULTURE.

In this department, we find an apple-orchard, many varieties of tomatoes, cabbages, onions, and egg-plants. There has been lately despatched to England a lot of tomatoes in their natural state, to see if they will reach that country in good order. They were packed in various ways; one box was sent in a refrigerator, while another went as freight in the ordinary routine. This has been already mentioned in the "Journal d'Agriculture."

Pyrethrum-powder, mixed with lime, is used to kill the cabbage caterpillar.

Common salt is sometimes used for onions and cabbage crops. The former are grown in several distinct ways; one let grown in a hot bed and transplanted is preferred by the gardener, as giving the greatest yield of all.

According to the gardener, raspber-

(1) White Belgian carrots come out of well worked land without any trouble.—Ed.

if the season is wet, this cannot be done, and the weeds take the nourishment that the mangels should get. Sow in drills twenty-four inches apart and thin to about 7 to 9 inches apart, according to the variety. Do not let the weeds get ahead of you, and one has to be on the alert not to let them do so, and as soon as the rows can be seen, use a wheel hoe and side hoe them and keep it going as long as is necessary or till the crop is ready to thin. I should have said to cross plough the land intended for mangels in spring (1) as deep as the plough will go and harrow thoroughly until perfectly smooth, then throw up the drills and roll with the lightest roller you have, to break the small clods. Mangels should be sown 3 (2) inches deep, because if the seed is lightly covered and it comes a dry time it will not grow well. Another point is to sow early. The best crops are generally the earliest sown and there is little danger of frost after the 15th of May. I purpose drilling my mangel land this fall so as to have it dry quickly in spring. Will harrow the drills down and plough and cultivate the land and will drill it and put a little well rotted dung in the bottoms, then split the drills and sow the seed. Mangels should be thinned with the hoe as it is by far the cheapest way to do it as a man can thin from  $\frac{1}{2}$  to  $\frac{3}{4}$  an acre per day. (3) It is a very slow way and very expensive to thin with the hand, pulling them out with finger and thumb and it is easy to learn to use a hoe. People differ in the quantity of seed you should sow to the acre, but I generally sow about 5 lbs. I use a Model seed sower, but I intend to buy one to that I saw working last year that drops the seeds about 6 to 10 inches apart and artificials can be dropped with the seed. Some sow on the flat, but I prefer drills harrowed down with a saddle harrow and rolled, because if sown on the flat you cannot thin them with the hoe. (4) Mangels are a profitable crop and if well done you can rely on having a heavier crop than of corn, and I prefer them for young stock, though I give occasional feeds to the milk cows too. As I said before, mangels should be sown as soon as you can, after danger of frost is past. I sowed mine this year about the 5th of May, and find I shall have the best crop I ever had, and it would have been extra if we had not had so much dry weather and grass-hoppers this summer. I should have said to put the cultivator through them as often as possible so long you do not break the leaves. If I had not kept the soil thoroughly broken this dry year, the crop would have been small I am sure.

(Signed) D. McLACHLAN.  
Petite Côte.

### Notes by the Way.

"The Editor" would be very glad if any subscriber who has complaints to make about the non-reception of the Journal would address them to the

(1) In the fall.—Ed.

(2) One inch is quite enough.—Ed.

(3) No doubt about it, if he has been properly taught.—Ed.

(4) Oh, yes, you can, though we, too, prefer the drill for mangels, though not for sugar-beets or swedes, and if you try you will find it easy enough.—Ed.

Publishers, M.M. Senecal & Cie Saint-Vincent Street, as the whole of the business matters of the Journal is in their hands.

**FOOD IMPORTS INTO ENGLAND 1896.**—During the nine months ending September 30th, 436,669 oxen were imported, against 300,832 in 1895. The United States sent 308,159 of these, against 200,660 last year. The beasts from Canada were 71,670, against 70,712. Of sheep and lambs, the States sent 235,497, against 321,892 last year; Canada sent only 56,446, against 93,418. Dead meat, from all quarters, was imported to the value of \$92,000,000, against \$85,000,000 last year. The butter, in value, was \$57,000,000, against \$52,000,000 and cheese \$16,000,000 against \$16,250,000.

**NEW ZEALAND'S**, grain crops seem to be pretty good in yield; wheat turning out 28 bushels an acre, oats 33, and barley 30. The late Bishop of Dunedin told the writer (his brother) that, on his first visit to his diocese, in 1868, he saw large fields of barley that he estimated at 72 bushels an acre!

**WATER IN TURNIPS**, &c.—People often sneer at those who value turnips and other roots, taunting them with the analyst's decision, that the best of swedes and carrots contain at least 87 p. c. of water. Well, and how about pasture-grass? Is that so much richer in dry matter than swedes? Not so very much, seeing that young grasses, from average pastures, contain 80 p. c. of water, and clover, before blossom, 83 p. c. ! Of the value of even the white-turnip as food for cattle no practical man can have any doubt. The great point in favour of roots is their perfect digestibility, so that even the small quantity of dry matter they contain is all of use. A glance at the men employed in any brewery will show that beer is fattening, and beer contains a great deal more water than the turnip. How about soups?

**SHIRES AND CLYDESDALES.**—Rather a taking team of Shires in Mr. Watney's waggon—v. p.—No wonder the Clydesdales breeders sought stallions of that kind to cross with their mares, hoping thereby to add weight and power to their progeny. Two sales took place this autumn, one of Shires and the other of Clydesdales; the average prices obtained were as follows:

Mr. Whinwright's Shires, 46 head, \$755.50.

Lord Londonderry's Clydesdales, 52 head, \$205.00.

No wonder the Scotch papers cry out against the folly of the adherents of the Clydesdales "in allowing the stock of Lord Londonderry to be sold for such disappointing prices, seeing that the Marquis has been a true, loyal, and powerful supporter of the Scottish national breed of draught-horses." A famous breed is the Clydesdale, and, in our opinion, not to be surpassed as a farmer's horse. But is that any reason why their supporters should bid them up at a public sale to a fictitious value?

**THE WHEAT-CROP OF THE U. S.**—The estimate of the Department of Agriculture at Washington sets the yield per acre of wheat for 1896 at 11.9 bushels of 60 lbs. The crop of the same cereal in England is estimated to yield 33.50 bushels of 63 lbs. an

acre. So the U. S., yield of wheat to the acre is, as compared with that of the English, as 100 : 295, or very nearly three times as great!

**CARROTS AS A DIURETIC.**—Some years ago, Mr. Harvey, the well known hotel-keeper at Lachine—to whom we present our compliments—told us that he had always found carrots a perfect cure for any horse troubled with retention of urine. Since that time, we have tried carrots for that troublesome complaint in several cases, and have always succeeded in mitigating, if not of completely doing away with the ailment.

**SOIL ANALYSIS.**—We have more than once expressed our opinion in this periodical that very little good could be derived from the analysis of soils, seeing that, although the dose of each of the constituent parts of the soil might be very satisfactorily determined, it had not been possible to settle how much of the manurial constituents were in a soluble condition and, therefore, in a fit condition to supply plant-food to the crops.

It seems, however, that Dr Bernard Dyer, a well known agricultural chemist, has invented a process by which he asserts that it is easy to determine the amount of "available" phosphoric acid and potash in any soil, (1) and, from the result of the late Reading (Eng.) experiments on manures for the potato, we are inclined to think that there is a fair prospect of this "vexata questio" being settled at last; a question that has been under discussion since the days of Sir Humphrey Davy.

In the experiments at Reading, the unmanured plots gave most marvellous yields of potatoes, so great indeed, that they in many cases completely destroyed the value of the experiment in relation to the effect of certain artificial manures. In fact, neither superphosphate nor potash salts appeared to have had much, if any effect, in increasing the already high average yield of the unmanured plots; and the reason of this result is, clearly, due to the large proportion of soluble plant-food already present in the soil.

Now, the soil of the experiment-field was analysed by the College chemist, and found to contain, among other ingredients, 0.1 p. c. of nitrogen, 0.37 p. c. of phosphoric acid, 0.17 p. c. of potash, and 0.8 p. c. of lime; of which Dr Dyer found 0.54 p. c. of phosphoric acid and .024 p. c. of potash present in a soluble, and therefore available condition.

Hence, we are bound to conclude that in this case, the analysis of the soil showed beforehand the result that the experiment proved to be correct, namely that the addition of either phosphoric acid or potash salts to the soil in question was good material thrown away.

"The use of nitrate of soda, on the other hand, seems on the average to have produced good and useful results, and it would appear that the soil is less rich in available nitrogen than in available mineral plant food. The total percentage of nitrogen in the soil is, it will have been noticed, only 0.1. On this soil probably the best and most economical yield of potatoes would have been obtained by the simple use of nitrate of soda, without any other manure at all, a mode of manuring which, on ordinary farm land, would be exceedingly rash and undesirable as a treatment for potatoes. As a rule, it

(1) But not of nitrogen.—Ed.

is essential that nitrate of soda, or sulphate of ammonia, should be accompanied by phosphates and (on many soils) potash, when used for a potato crop; but on this rich land at Messrs. Sutton's trial grounds this is not the case, as indicated both by analysis of the soil and by the results in the field."

The determination of the available, as distinguished from the total, phosphoric acid and potash, was described, by Dr Dyer, in a lecture before the Chemical Society in 1894, and is simple enough: the solvent used is a dilute watery mixture of 1 p. c. of citric acid, a solution approximating in acidity to the average acidity of the root-sap of plants. This, if carried out, would put an end to the use of "mixed fertilisers", by which many a thousand dollars are wasted in the purchase of manurial matters that are not needed by the soil to which they are applied. It will be observed that Dr. Dyer especially points out that, potash for instance, is not required on all soils.

**DRAINING**—A very sensible, though short article on "land drainage, by Mr. Thomas McMillan, of Seaford, Ontario, appears in "Farming" for October. One very useful observation is the following: "No rigid rules can be followed in the draining of land; the nature of the soil and sub-soil, and the inclination of the surface must be taken into consideration. We must also find out, if possible, whether the wet is caused by surface-water or springs."

"Some writers, says Mr. McMillan, advocate the use of instruments for levelling purposes; but to the intending drainer I would say: the most practical method, that of actually seeing the water running, is the simplest and the best." We have drained; and most successfully too; several hundred acres of the "London-clay" formation, and never used a level of any kind, always having found it sufficient, in the absence of water in the drains, to pour a few pails into the drain, which is exactly the plan advocated by Mr. McMillan.

We cannot agree with the author of the article that the reason why certain three-foot drains were ineffective was that they were too deep. On the very heaviest clays in England, we always laid the drains, on an average, four feet deep. The stipulation of the government's advance of money for drainage purposes was that the general depth should be 4½ feet, and we have seen the work done at that depth answer perfectly on the "Oxford-clay," a soil so stiff that no one who has not seen it would believe that it was pervious to water: nothing like it on this side of the ocean.

Why use pipes 2½ inch bore, the smallest Mr. McMillan mentions, when, except in the case of springs, 1½ inch is amply sufficient? (1) Again; why lay the pipes "standing on the last laid one" when it is an acknowledged axiom in draining that no one should set his foot on the bottom of the drain. (2) If the semi-cylindrical "bottoming-tool" is properly used, followed by the "draw-scoop," and the pipe carried on a spike at the end of a 5 foot rod, it can be perfectly laid by a man standing on the land "a straddle" the drain, and

(1) And if the side drains are not too long—say not more than 20 or 25 rods—2½ inch bore will be wide enough for the mains.—Ed.

(2) Except, of course, in cases of the pick being required to extract stones.—Ed.

working backwards. The pipes should, of course be placed in a row alongside the drain. The "draw-scoop," a most useful article, must be the same size as the pipe.

"Never, if avoidable, have an open ditch as a main-drain," is good advice, and so is "in all cases when an open ditch is necessarily utilised as a main, put stone in for four or five feet, built with an opening as large or as larger than the pipe."

**DEVONSHIRE BUTTER.**—Made from "clotted" cream, this butter is delicious. Any one can make it, if they will attend to the simple instructions that follow: Set the milk in deep or shallow pans—the former are the handiest—; let it stand for just as long a time as you please, provided it does not sour in the "least degree;" 16 hours in summer, 24 in winter, will be about right; then, place the pans in a cold water bath on the stove, and very gradually raise the temperature of the milk until the cream on its top shows a wrinkled surface, and the form of the ring at the bottom of the pan is reproduced on it; the colour, too, should be rather deeper. Then, put the pans away for the milk to cool, and, when cool, take off the cream, put it into a basin or pan, whip it round with the naked hand or a wooden spoon, and in about two minutes there is the butter in grains. Wash in very cold water; you will see the coagulated albumen separate from the butter and, if the basin or pan is kept under a stream of water, float away over its rim. Make up the butter as usual.

The two nitrogenous compounds in milk, albumen and casein, differ in this: casein is not coagulated by heat, albumen is. At a temperature of 134° F. albumen begins to show flakes in the liquid in which it is heated, and, at 160° F., it becomes solid; so that, in making Devonshire butter, it is not necessary to carry the heat higher than that; still, as the heat is never equal all over the pan, and as stirring to equalise it is not admissible here, we should be tempted to warm up to 170° F. If, for experiment sake, a thermometer is used, it should be inserted before beginning to heat the milk, but a very little practice will render the dairymaid independent of its aid. Of course the expulsion of the albumen in washing the gathering butter is the main cause of the wonderful keeping quality of butter made in this way.

**WHEN TO CUT GRAIN CROPS.**—As usual, a great many crops of grain were allowed to stand too long, last harvest, before being cut. An experiment was tried, some time ago, by Mr. John Hannam, a well known Yorkshire farmer, on the proper age for cutting grain-crops, with the following results as regards wheat:

L. S. D.			
No. 1, cut quite green, August 1st, gave a return per acre of.....	11.	17.	0
No. 2, cut green, 19th.....	13.	6	0
No. 3, cut raw, Aug. 20th	14.	18.	0
No. 4, not quite so raw Aug 30th.....	14.	17.	4
No. 5, quite ripe, September 9th.....	13.	11.	8
Hence, a loss per acre on No. 1, as compared with No. 5, of....	1.	14.	8
Hence, a loss per acre on No. 2, as compared with No. 5, of....	0.	5.	8
Again on No. 3, as compared with No. 5, of	1.	6.	4

Again on No. 4, as compared with No. 5, of 1. 5. 8  
Again on No. 3, as compared with No. 1, of 3. 1. 0

Wheat cut two weeks before ripeness was attained had, in this case, the advantage in every point, viz: In weight of gross produce 13½ per cent In weight of equal measures ½ " In weight of equal number of grains.... 2½ " In quality and value of grain 3½ " In weight of straw... 5 "

In the last item, the weight of straw, we should have expected that the extra yield would have been higher. Stephens, in arguing the question, in his "Book of the Farm", says: "Upon one occasion, I cut down a few shocks (stooks) of potato oats when quite green, though full in the ear, to allow carts to pass to a place destined for the site of a hay-stack, and after standing till the rest of the field was carried, they were threshed, with the flail, by themselves, and the sample was the most beautiful grain I ever saw." Our experience agrees perfectly with Mr. Stephen's experience, both in regard to wheat and oats; barley, for malling, however, is quite a different thing, and should be allowed to stand till dead ripe, to ensure equality of growth on the malt-floors.

**WOOLLY TASTE IN MUTTON.**—A very nasty flavour, but it has nothing to do with the wool. It arises from not emptying the sheep's entrails immediately the animal is dead. A sheep should be fasted for 24 hours before being slaughtered, its entrails extracted at once, and the inside of the body well washed out.

**GREEN MANURING.**—Ploughing in green-crops may, doubtless, be good for the land, but, with our seven months of winter, making mutton of them seems to us to be better.

**LIME AND POTASH.**—"Some Scotch farmers say that a full dose of lime only last 7 years, others say its effects are visible for 30 years and more. Now when we consider that the influence of lime, upon a soil naturally deficient in this substance, is due to several distinct causes; and further, that the after treatment of the limed land differs greatly in different cases, we have no difficulty in understanding that there must be considerable variation in the periods of time during which the beneficial effects of lime will be apparent.

Two of the crops which are grown at Rothamsted in our ordinary rotation—roots and clover—contain large quantities of lime in their ash, and when potash is not abundant in the soil, they possess the property of utilising this lime in its place.

The ash of leguminous plants growing in an ordinary pasture that had been well supplied with potash, contained 32 p. c., of potash and 22 p. c., of lime; but on pasture where potash was not supplied, the ash contained 32 p. c., lime and 14 p. c., potash ("Lawes on lime").

**LUCERNE AGAIN.**

During the recent dry summers, when the plants produced a most welcome supply of green herbage while pastures were burned brown with the continued drought, the value of lucerne as one of

the best and most nutritious forage plants we have has become generally recognised. Not only does it share the property of abstracting nitrogen from the atmosphere and fixing it in the roots with other leguminous plants, but it provided several good cuttings a year, and a crop can be secured earlier than red clover. Its average duration in this country is about five or six years, though on certain lands it will remain down for twelve or even fifteen seasons. Under unfavourable conditions the plant as a rule dies out in three years. The roots descend to a great depth, and so enable the plant to resist drought; and even when it is withered from long continued drought, it very rapidly recovers and makes a fresh start if the rain comes. Wet weather is much more to be feared than either drought or frost, as the rain not only directly injures Lucerne, but encourages a dense growth of weeds which may obtain the upper hand. Lucerne seeks its food in the subsoil, and it is most essential that this should be good and also that it should contain a large proportion of lime. Hence we find the crop does best on loamy or sandy marls, overlying calcareous formations, though it does well on clay or even sand, provided that the subsoil be suitable. On gravelly formations a good depth of fair soil is required to ensure profitable results. It is seldom advisable to supply farm yard manure previous to sowing down a forage crop intended to remain on the land for any length of time as it encourages a rapid growth of rank weeds which crowd out the more valuable herbage; but seeding may advantageously follow a well-manured crop of roots. A dressing of superphosphate, or, if the land is not rich in lime, of basic slag, before sowing, is a profitable investment, about three cwts of the former or five of the latter being applied per acre. The herbage is eaten eagerly by all kinds of animals, but sheep are liable to become blown if allowed to graze the crop. When cut and somewhat withered, it is excellent feed for sheep, cows, horses, or pigs, as it is more nutritious than medium-quality red clover. Analysis shows lucerne to be particularly rich in albumen; and it is therefore most suitable for mixing with non-albuminous foods, such as green maize, straw chaff, &c. The seed may be sown any time from March until the end of June, at the rate of some 20 to 25 lbs. per acre. (1) Growth begins early in May; and it is always important to cut the crop some time before flowering, as the stems harden about that season. The crop must not be depastured, as sheep or cattle destroy it entirely. As with trifolium, (2) there is a serious loss in making the crop into hay, owing to the breaking off of leaves. The average produce in the various counties of Europe varies from 32 to over 100 cwts per acre. Schwert remarks that in France seven cuttings yield 136 to 144 cwts.

R. E. NICOLAS (of Toogood and Sons.)

**AGED FALLOW-DEER.**

Lord Fitzhardinge, who lately succeeded to the estate of Berkeley Castle, on the death of his brother, returned, at the Michaelmas credit, 30 per cent of the rents to his tenants. Rather annoying for him to have to pay, for suc-

- (1) 18 lbs. to the "arpent" of sound seed is sufficient.—Ed.
- (2) *T. incarnatum*, or crimson clover.

cession and estate-duty, the net income of the property for 5 or 6 years; as well as to be obliged to "take over" the deer and pheasants. But, what marvellous deer! the age of the raven in BARNABY RUDGE is nothing compared with their age, "ecce signum!"

"He was told that he must buy the pheasants and deer—the latter had been in the park 600 or 700 years! and he was asked three shillings each for 7,000 pheasants, which he refused, but consented to take them over and pay all expenses from the 20th June, and his offer was accepted on Saturday. He thought he would shoot some and send them round."

**The Grazier and Breeder.**

Danville Que., Nov. 10th 1896.

A. R. J. Fust, Esq.  
Montreal.

**CROSSES.**

**Dairy-Shorthorns—Ayrshire crosses—Jersey and Canadians.**

MY DEAR S-R,

I have spent a pleasant, profitable evening looking through the November issue of the Journal and wish to congratulate you on the marked and steady improvement in the paper, during the last two or three years. It is impossible to get thinking men to agree in everything especially in the presence of so many different circumstances and conditions but the free and intelligent discussion of agricultural and dairy subjects, is sure to lead to improvement. I see you still fondly cling to your "Dairy shorthorn" as the best cow for the farmer, and of course you have a perfect right to that opinion, but for my favour don't advocate the spoiling of both, by advocating the crossing of them with Ayrshire. Although I am satisfied that the breeding up of Shorthorn grades on Ayrshire lines will be a great improvement from a Dairy point of view. Some fifteen years ago, we decided to experiment, with cross-breds and grades with the view of testing the relative merits of Grades and Crosses compared with, pure bred Ayrshires. To this end we purchased the best dairy shorthorn we could find she was a really magnificent animal) also a French Canadian cow (a gem). A yearling Holstein (High grade) from John Greenshields Esq. and a pure cross-bred heifer (Ayrshire and Jersey from) Wm. Rodden Esq., of Plantagenet, Ont., We decided to put the last named heifer to a good Jersey bull, she proved to be one of the best cows we ever owned; giving a large flow of rich milk for 10 months out of 12. Took many prizes including 1st at Quebec provincial Exhibition in a very strong class.

She had 4 calves sired by a Jersey Bull. The first proved barren and went to the butcher a 3½ years old; other two heifers turned out perfect mongrels with no milking qualities whatever. The Bull calf turned out the most vicious animal we ever owned. We changed our plan, and have since had 3 heifers sired by our imported Ayrshire. One is a very fine undersize Ayrshire with fair milking qualities. The other is a good for nothing Jersey. The last is now 2 years old a perfect picture of her mother which we hope will have all her good qualities, but still we will have to call this attempt at breeding a failure.

The Holstein heifer made a splendid

cow, giving as much milk and milking as persistently as the best of our Ayrshires. But her milk was very poor in butter fat, 2.80 to 3 per cent. Her progeny retained the color (black and white) for 3 generations gradually approaching the cleaner style of the Ayrshire without improving the quality of the milk. They might do for a milkman but for butter, unprofitable.

Our little Canadian gave a fair amount of milk of very rich quality and for the food consumed as profitable as our Ayrshires.

The progeny improved on quantity and retained the quality of the dam. They were hardy and gentle, making a really good cow for profit if we could have got a farm to suit us. But they are all extra long legged for the size of their bodies.

Our Dairy Shorthorn (1) mixed better with the Ayrshire than all the others, bringing us handsome well formed stately cows, a little too heavy in the fore quarters from a dairyman's point of view giving a large quantity of good milk 3.70 to 4.20 and rich in total solids for about 6 months in the year with a strong disposition to dry off and put on flesh the other half of the year.

Yesterday we got a heifer calf from the 6th generation of Crossbred: it is a perfect picture of its Grand sire "Silver King."

For a Crossbred as grade, we have had nothing so profitable to us in selling. They bring from \$45 to \$75 each, at the best, and we have, sent them all over the province and to Nova-Scotia. But they are not so profitable for us to keep for butter as pure bred Ayrshires. I can get the same quantity and quality of milk from one herd of Ayrshires for from 10 to 15 per cent less money than from those handsome gentle Short-horn crosses, and I can make "beef" quite as cheap though as scarcely as good a quality. So from the above I think you will scarcely blame me in agreeing with your friend Drummond as I believe the only way to improve an Ayrshire is to use a "better Ayrshire."

Yours truly,

A. McCALLUM.

Thanks; more again, as soon as you please Mr. McCallum.—A. R. J. F.

## ESSAY ON THE FEEDING OF MILCH COWS.

### Food of calf—Training heifer—Feeding cow—Water.

The feeding of a dairy cow, should begin as soon as she is dropped and the feeding of the calf in its first year has a great influence on the habits of the cow. A cow is very much a creature of habit, so much so that the habits contracted by the calf are sure to be retained by the cow to a great extent, and for that reason great care should be taken not to allow her the habit of turning her food into beef instead of milk and, to my mind, a calf raised on skimmed milk is worth more than one raised on whole milk, in fact I consider nothing that can be fed more injurious to its dairy qualities in the future. If fed enough whole milk to satisfy it, it will be getting so much fat forming matter that the first habit it will acquire will be to lay on fat, which habit will be its first thought at all time when fed liberally instead of converting it into milk. It should be fed only enough of fattening food, along

(1) There is not one Dairy-Shorthorn, in the province.—Ed.

with skimmed milk, roots, grass or some other succulent food to keep up a vigorous growth and, at the same time, bulky enough to extend the paunch well and form that much desired (and correct) wedge shape, without which very few ever make good dairy cows.

Having kept her from acquiring the beef forming habit, she should be bred so as to drop her first calf at about the age of two years and a half old, as the earlier she begins what is to be her life-work the better she will acquire the habit; and we prefer her bred in the spring of the year just before going on the good summer food when she will be getting more food than required for her growth she will then naturally turn the extra food into the new channel created for it—milk and growing her calf—and will be much more likely to develop milking qualities than if allowed good food without being pregnant, in which case she would acquire the habit of laying her surplus food on her back.

Her time and food will now be devoted to the growth of her calf and the developing of her milk making qualities, and at this stage, she can hardly be fed too well and one of the many reasons for this is that disease which all dairy men dread (milk-fever) can be more surely averted now than at any time in life.

I have never known a heifer to take it and believe that a heifer developed in this way is much less liable to it in after life. My experience has been that it was always cows that had dropped their first calf in moderate order and developed milking qualities later.

She should drop her first calf in November for other reasons, one of which is that we can control the temperature of her surroundings for the first six months of her milking period and have her, by proper care, milking as much when going to grass in May, as when fresh calved, which she will keep up until the flies and drought of July; thus establishing the habit of keeping up her flow of milk for at least 8 months, which habit is sure to follow her to a great extent all her life.

For the first two weeks after calving (and I prefer that she should never see her calf (1) but substitute the calf with a quiet, kind milker), I do not care to feed heavily, but gradually increase the feed according to the ability of the individual to consume to advantage which must be left to the discretion of the feeder or owner. I believe that the great majority of cows are not fed well enough to develop the best that is in them.

The process of feeding, milking and cleaning lasting about four hours A.M., and P.M., each leaving about eight hours between each time of disturbing their rest which they do by lying down nearly all the time; and, believe regularly of feeding and working together with kindness is a great mean of saving food, my custom and I believe it to be the best is to feed only twice each day, getting as near as possible to the natural way of feeding, giving variation of feed at each meal, with water always before them, of which they drink quite a number of times at each meal and invariably flush with a drink. To a cow in full milk, I feed about 50 lbs., corn silage, 16 lbs roots (mangels) 4 lbs bran, 5 lbs pea-meal or cotton seed meal and what clover hay they will eat. I have had best results from feeding neither wet nor dry but just damp enough to cause the meals to stick to the coarse part of the ration (cut hay) so as to

(1) So do we, most emphatically.—Ed.

distribute it evenly through the bulky food, keeping the stable at about 650 to 700, and find that the warmer they are the more milk they give and like plenty of light and air. With my cow fresh in Nov. I find that I can get about 50 p. c., more milk from her in a year than I can get from her equal fresh in May, and believe that the well bred, well raised, well trained, and well fed cow fresh in November to give her full flow of milk for about eight months go dry for about two and come in again in November can do more to help the financial position of our province (even at the low price of dairy produce) than by any other medium.

Corn, Clover, Roots, Cows, and more

(Signed) ROBERTSON & NESS. (1)

## THE COW STABLES.

### Building paper—Ventilation—Tie-chains—A back gutter—Plenty of light.

The time is now at hand when the cows need stabling. Neglect to do this will result in certain loss, and as every pound of milk has its money value, it should be plain to even the most obtuse that such loss should be guarded against as far as possible. The matter was brought to my mind very forcibly one day last week when, during my absence from home, the cows were left out in a drizzling rainstorm. That day's yield of butter fell short just six pounds on the herd from what they had been making.

The cow stable on many farms needs repairing, if not replacing with a new one. Expensive buildings are not a necessity, but warmth and ventilation are, and must be had if best results are to be expected. Building paper is cheap, and will keep out cold better than matched siding.

As to ventilation, this should be provided by air-shafts opening at the bottom and top of stable to admit fresh and carry off foul air. It is sometimes considered that the feed-chutes are sufficient, but they are only outlets for foul air and into the feed-storage room at that. The atmosphere should be such that no animal odor will be observable on opening the door.

As to fattening cows in stalls, after trying several ways I have settled on the following as combining cheapness, convenience, comfort for the cow, and general utility to a great degree. Each cow has a stall to herself. Where two occupy one double stall, the feeding arrangements may be all right, but there is danger of injury to udders by one cow stepping upon another. I have seen cows ruined in this way.

Tie with chains about the necks to slip on iron rods vertically fastened to upright pieces at one side of manger. This gives the cow perfect freedom with her head. The swinging stanchion does this; yet I do not believe it to be so comfortable to the animal as the chain. Have front of manger low, so that cow will have a good place for her head when she lies down.

Provide a drop or trench (the latter is best) at the back. This must be arranged in accordance with size of cows, and is the greatest possible help in keeping cows clean. Have it deep enough so they will not stand in it, and just wide enough to clean easily. Clean it out twice a day, and if pos-

sible flush with water. If made of oak plank, it will well repay time and expense of making; if of cement, all the better.

Have plenty of light. Nothing is more essential than this. Cows cannot thrive in darkness nor can any other animal. (1) Let the windows be on the south, if possible. A flood or sunshine in winter will do the cows good.—Country Gentleman.

"Farm and Garden."

## Household-Matters.

### Guest-rooms—Recipes—Games.

CHRISTMAS 1896.—About the time this number of the Journal reaches its readers the anticipation of Christmas, with all its bright associations will be in full swing.

Happy thoughts of the meeting of near and dear friends long parted, visits of relatives who will bring with them memories of and talk about the long ago, a revival of old and almost forgotten stories, still new to the younger members of the family, who will flock round and listen with bated breath to the dangers and hair-breadth escapes they have gone through, when there was no other way of visiting friends but by the Stage Coach, the memory of which is still dear to many a one, (2) memories of which come back in the shape of dangers passed through and frolics on the way. These wonderful times, thanks to Dickens, can never be quite forgotten as long as his books are published and read.

In these days of advancement visiting is made so easy and comfortable, that one can go as often as one pleases, providing one has the means and time for doing so, and the preparation for receiving guests, need not be on a very extensive scale, as all necessaries are now within the reach of or can be brought to our doors.

ENTERTAINING FRIENDS.—The ideal room for the entertainment of friends in a country house is a large cheerful "sitting-room" that shall be library, music and drawing room in one; the heart and soul of the house.

It should be large, so that the party may break up into groups and enjoy themselves without interfering with one another. Here should be collected all that we care most to have about us—souvenirs of travel, favorite pictures, photographs, low book-cases containing readable books, luxurious divans with bright-hued pillows, and every chair made for comfort. A piano standing across one corner, so that the player faces the room, may be draped with gay stuffs and made a "thing of beauty." The addition of a tall lamp with gorgeous shade near by, and a fine palm or two, makes a "cozy corner" that would prove alluring. Growing plants, and many lamps whose shades supply luminous bits of color in the evening, add much to the attractiveness of such a room.

This ideal apartment might be realized by many of us if we would sacrifice

(1) Much healthier for cows and growing stock.

(2) To us, dear indeed! How well we recollect the "Exeter Telegraph," the "York-House Day," etc., in the "Thirder," with their swell-dragemen, Jem Adsam, Jack Sprawson, etc.—Ed.

our parlors knocking down partitions—and entertain formal visitors in some dainty little reception-room.

The furnishing of the guest chambers may be simplicity itself, but each should be provided with a comfortable lounge, a screen, a basket containing sewing materials, a few books and conveniences for writing. Such a room becomes like a bit of home, and a guest is generally glad of an opportunity to enjoy it for a time each day to rest, read, or write home letters. The renewed intercourse with the household after such an interval will be the more appreciated.

**MULLED CLARET.**—(1) Spice one quart of water with cloves and cinnamon, sweetening it with four tablespoonfuls of Demerara sugar, and when the whole has simmered for at least half an hour add a bottle of claret, which need not be necessarily of an expensive kind.

The claret must remain for ten minutes, so, or in a saucepan, and allowed to approach boiling point.

It will then be ready for pouring in the jugs and can be strained at the same time.

A very inexpensive and harmless drink.

**WHY FARMERS SHOULD BE CONTENT.**—Farmers should be the most contented class because they can if they will, have the whitest bread, the best butter, the richest milk, the choicest fruits, the freshest vegetables and eggs, the plumpest fowls and the purest air and water. Thus with surplus products to procure other necessities of life, added to a clear conscience, should make them the happiest, most contented people on earth.—Poor Man's Wife, in Farm and Home.

**ORIGIN OF CHRISTMAS CUSTOMS.**—Many of our Christmas customs are a mixture of Druidical and pagan observances. The use of the Christmas tree has descended from the German-Druids. Dressing the houses and churches with green is a relic of pagan worship in Rome; so also is the sending of presents to and fro.

**FOR THE CHILDREN**

**THE CHRISTMAS TREE GAME.**—A large flat board, with a handsomely engraved and colored representation of a Xmas tree, covered with gifts printed on; it stands against the wall at a convenient height. The players are provided with feathered darts, which they throw at the tree. Every dart striking a present on the tree counts so much for the player making the shot, while unsuccessful shots count against the players. The player who succeeds in getting the greatest number of and most valuable presents wins the game.

**THE PARSON'S CAT.**—The first player says the cat is (say) amiable. The next calls the cat awful, and so on, each person mentioning a quality beginning with the letter a. The game grows very amusing as the players exhaust the a's, and presently some one will fail to think of a quality beginning with that letter. He must pay a forfeit unless the next player fails too, for when two in succession are unable to find a word, the next letter is taken up; and in this way the game goes through all the letters, if desired.

(1) This was the Hypocrite of the middle ages.—Ed

**THE ORDER OF THE WHISTLE.**—The candidate for admission to this order must not have seen the game before. Blindfold him and go through with such mock initiation as your imagination may suggest, the most important part of which will be to put upon him a cloak, from the back of which must hang a short string with a small whistle at the end. Then tell him that only one thing remains to be done to make him a member. He must ascertain who has the whistle, and after sounding it once, unblind him and let the fun begin. Some one at his back uses the whistle; he turns to seize it, and of course carries it to someone else to sound. And so the sport goes on.

**UNDER THE MISTLETOE**

Grandma, in your frame on the wall,  
Beautiful maid of the long ago,  
Stately and slender, blonde and tall,  
With the pinched-in waist and the foot

so small,  
Prithee tell—for I fain would know—  
What did you on that Christmastide  
When great, great-grandpapa made you  
bride?

Handsome, and courtly, and debonaire,  
With his powdered queue and his  
Roman nose,

As richly dark as his bride is fair,  
He rests a hand on your straight-backed  
chair

To whisper to you I suppose—  
To whisper again as in long ago  
When he kissed you under the mistletoe.

Say, beautiful bride, in the antique  
dress,

Say, beautiful bride, in your bridal  
white.

Did you let him gaze on your loveliness

Till lifted eyes did your heart confess  
As you led the dance on your wedding  
night?

Did he press your hand as he bent to  
kiss?

Sweet words—as the lovers do to-day?

Ah! courtly groom of the vanished  
years.

Beautiful bride of the days long fled,  
Dust, but dust are your hopes and fears,  
Cold your kisses, and dried your tears:

But I hang here, over your head,  
A sprig of such Christmas mistletoe  
As you kissed beneath, in the long ago.

“Good Housekeeping.”

From H. and Home.

HOUSEKEEPER.

**JACK HORNER.**—Every one must remember the old song commemorative of this young gentleman's feat of investigation, his successful search after the plum, and his self-laudatory exclamation; but few people are aware that Mr. Horner was a real personage, and had temporarily reason to rejoice at his success, though how he feels now, is quite another thing: warm enough, at any rate, one would suppose! The estates are still in the hands of the Horner family; the owner of them, in 1840, we knew personally, and from him we heard that the following account of his ancestor's rascality was perfectly correct, with the exception that the “lad” was an oldish lad as he was steward of the Abbey. Of course the “pie” is an addition to the tale.

**“THE ORIGINAL JACK HORNER**

Jack Horner of the Christmas pie really existed, though whether he deserved the title of “good boy” is ex-

ceedingly doubtful. He was, however, a fortunate rogue.

When Henry VIII, suppressed the monasteries and drove the monks from their nests, the title deeds of the Abbey of Mells were demanded by the commissioners. The Abbot of Gastonbury determined that he would send them to London, and, as the documents were very valuable, and the road infested with thieves, it was difficult to get them to the metropolis safely.

To accomplish this end, he devised a very ingenious plan. He ordered a savory pie to be made, and inside he put the documents—the finest filling a pie ever had—and intrusted this dainty to a lad named Horner to carry up to London to deliver safely into the hands for whom it was intended.

But the journey was long and the day cold, and the boy was hungry and the pie was tempting and the chance of detection was small.

So the boy broke off a piece of the pie and beheld a parchment within. He pulled it forth innocently enough, wondering how it could have found its way there, done up in pastry, and arrived in town.

The parcel was delivered, but the title deeds of Mells Abbey were missing.

The fact was that Jack had them in his pocket. These were the juiciest plums in the pie. Great was the rage of the commissioners, and heavy the vengeance they dealt out to the monks.

But Master Jack Horner kept his secret, and when peaceable times were restored he claimed the estates and received them.”

“San Francisco paper.”

**CHRISTMAS.**

**The season — Patriarchs — Family meetings — Cattle in good order — Salvation.**

To the Christmas, the season of Christmas is the most joyful of the year: the glorious anniversary of the birth of Him whose empire is peace and good will. Every one feels a peculiar thrill of happiness at this blessed time, but to the good farmer it brings pleasures even more intense than to the dweller in the City. If his duty during the busy season of seed time, cultivation, and harvest, has been well performed, and his cattle are well housed, fed, cleaned and all their comforts attended to, he is enjoying the fruits of his labours in a temporal sense, and is better prepared to receive with profound gratitude the spiritual blessings the season announces.

It is interesting to remark how the Almighty has, as it were, identified Himself with rural life. First, He gave Adam the Garden of Eden, not only to enjoy but to cultivate.

Then, the Patriarchs were owners of flocks and herds, and were honored by God for their faithful care of them. And when the Redeemer came into the world, His coming was announced to Shepherds who were abiding in the fields, keeping watch over their flocks by night. For, it was lambing season in Palestine, and the climate there was not so severe as to necessitate the construction of sheep pens as here, and so the men were watching their ewes in the open field. Then, by a strange coincidence of circumstances, the Saviour was born in a stable and cradled in a manger. The History of

God's dealings with mankind is full of allusions, to rural affairs, and the farmer's position is thus a most honorable one; therefore, his heart should be full of thanksgiving, and if this is as it should be, it will be proved by his acts of charity and kindness to those who are not so blessed with abundance; more especially, at such a season, when the inclemency of the weather is likely to render assistance more useful.

Where is a family reunion so enjoyable as in a farm house at Christmas tide? How the sons and daughter look forward to the time when they can meet in brotherly and sisterly affection round the once familiar social dinner-table, and receive, once again, the congratulations and blessings of their aged and honored parents. And this in the old farm house away from the formalities and conventionalities of the city banqueting hall or drawing room. How delightful to hear the old couple discuss their reverses overcome, and successes achieved, which have enabled them to bring up their family and place them in good positions in life. Then, in the afternoon, with what pride does the old man, with his son, who has remained at home and is to succeed to the farm, take the party to inspect the stock of cattle, who, one would almost think, were partaking also of the Christmas festivities, so sleek, happy and contented do they look.

How pleased is the grandfather to place his daughter's four year old boy on the back of old Charley, his favourite market horse, who seems to enjoy the honour done him as much as the man or the child. Evening comes, and then the children have a pleasant hour, Christmas is emphatically the children's festival, and every child should have an opportunity of spending it in such a way that it will always be a happy memory. Many a young man, many a young woman, has been saved from wrong-doing by the thought of the happy time they had at their grandparents' at Christmas-tide.

These are some of the delights the good, honest, faithful farmer may experience, but are not for the negligent, careless, inattentive or lazy. They know no true Christmas rejoicing of the heart themselves, and therefore have not the power of communicating it to others, even if they have the will.

Their families are scattered far and wide in the great struggle for existence occupying no good positions, because they had neither good training nor good example. No Christmas dinner awaits them at the old home. Alas; their parents are almost too poor to provide one for themselves, and if the children came it would be a cheerless affair for them. They would have no pride in showing their stable to any chance visitor, where the animals are shivering in the cold, up to their bellies in filth, and moaning for more food. These are no fancy pictures, but their prototypes can be found in many places, and what is the lesson to be learned? It is that well directed efforts and perseverance will enable us to enjoy, and to help others to enjoy, the goods, both temporal and spiritual, that are so bountifully provided by an all wise and beneficent Creator, and by doing our duty well in our various occupations we can make sure of what, I permit me to wish all the readers of the “Journal”: A merry Christmas and a happy new year.

G. MOORE.

FARMERS' SYNDICATE OF THE PROVINCE OF QUEBEC, Office: 23 St. Louis Street, Quebec.

President: His Grace Mgr. L. N. Begin. General Secretary: Ferd. Audet, N.P. Treasurer: P. G. Lafrance, Cashier of the National Bank. Farmers, Agricultural Clubs and Societies can be supplied with every thing they want, viz: Pigs: Chester, Berkshire, Yorkshire, &c., &c. Cattle: Canadian, Ayrshire, Jersey, Durham, &c., &c. Sheep: Shropshire, Lincoln, Oxford, Cotswold, South-down, &c., &c. Fertilizers and agricultural implements of every kind. Send in your order at once for feed-cutters. Farm products of all kind sold for our members. Information of all kind given to members.

LONDON MARKET'S.

Table with 2 columns: Item and Price. Includes Wheat, White, Red, London flour, Barley, Oats, and White pease.

FOREIGN

Table with 2 columns: Item and Price. Includes Wheat-Manitoba and Canadian white pease.

BEASTS.

Table with 2 columns: Item and Price. Includes Scotch per stone, Herefords, Welsh, Shorthorns, and Fat cows.

SHEEP.

Table with 2 columns: Item and Price. Includes Small Downs, Half-breeds, and Lamb trade over.

BUTTER.

Table with 2 columns: Item and Price. Includes Fresh, English Dairy-butter, Irish, Danish, and Canadian.

BACON.

Table with 2 columns: Item and Price. Includes Irish, Canadian, American, and Irish hams.

Table with 2 columns: Item and Price. Includes Hay, Prime meadow, Prime clover, and Straw.

Hops from 65s. to 105s. per 112 lbs.

GRAIN AVERAGE-ENGLAND.

The immense difference between the average price of wheat in England in the years 1851 and 1896 is worthy of notice. In 1852, the writer paid for his seed wheat 4s. 6d. a bushel, and sold the crop in 1853 for 10s. 6d! Wheat was sold in the Reading market (Eng.) on the 24th of October last for 5s. a bushel, a price that has not been realised several years.

GRAIN TRADE STATISTICS.

QUANTITIES SOLD AND AVERAGES.

For the week ended October 24th 1896.

Table with 3 columns: Grain, Quantities Sold, and Averages. Includes Wheat, Barley, and Oats.

QUANTITIES SOLD AND COMPARATIVE AVERAGES.

For the week ended October 24th 1896, and corresponding weeks in the four preceding years.

Table with 3 main columns: WHEAT, BARLEY, OATS. Each column has sub-columns for Yrs., Qrs., and s. d.

-P. G. Craigie, Board of Agriculture, October 24th, 1896.

AGRICULTURE IN THE COUNTY OF GASPE

Roots and potatoes--Hay-crop--Fodder-corn--Red-clover--People--Stock--Hogs--Farmer's Clubs--Opponents--Market at home.

Quebec, Oct., 26 1896.

G. A. Gigault, Esq., Asst. Commissioner of Agriculture Province of Quebec

SIR.

In accordance with your instructions I visited the County of Gaspé, and have the honour to submit the following report.

Notwithstanding the fact that fishing is the principal industry, the possibilities for successful agriculture are apparent.

The soil, in most places along the coast of the Baie des Chaleurs from Newport to Gaspé Basin, is as rich and well calculated for the raising of crops, and feeding stock as in the most favoured portions of the Province. The season, although dry in the early summer, has been a very good one for the root crops, which are excellent. Oats, too, where planted under right conditions, have made an abundant yield; some growers reporting as much as nineteen bushels harvested from one bushel of seed sown. All kinds of roots grow well when manured with sea weed. One Swedish Turnip at Percé was found upon measurement to be 32 inches in circumference and the yield of the whole field proportionately large. In fact, all the way I traveled the turnips were magnificent. Beets and mangels are not so extensively grown as they might be, but were always a good crop, as were cabbages. Potatoes, also, manured with kelp or sea weed, were in some places phenomenal.

At Barachois, the Revd. Mr. Sirois P. P., had just harvested 65 barrels of large potatoes from less than two thirds of an acre, (307 bush. to the imperial acre), excellent in quality, and many tubers weighing one and a half to two pounds. The variety "Glory of the world" has proved most satisfactory. At Grand Rivière, Mr. Carberry had a wonderful crop, some roots weighing two pounds and three quarters.

The hay crop was reported light on account of the weather being unfavourable, and the usual bad system of grazing in the Autumn, the idea of planting supplemental crops not being yet adopted. I had the pleasure, assisted by Mr. Dalaire, to point out to our hearers the prime necessity of this, and

have no doubt, from the great interest evinced, that much improvement, in this respect will ensue.

Indian Corn, for fodder, has not been grown as a field crop, but some patches planted, experimentally, in gardens, proved that its culture for this purpose is quite practicable, and from the many enquiries as to the best varieties for the purpose, method of culture etc., it is evident that many are alive to the fact of its usefulness and will plant next year.

We scarcely saw any red clover on our journey, and did all we could to explain the desirability of using it extensively as a valuable fodder-crop and fertilizer of the land.

Those who suppose that the South shore of the Bay is a mere cold, infertile and inhospitable coast, occupied by rude and clownish fishermen and their families, make a serious mistake.

The climate is not much more unpropitious than in many other parts of the province. It is true that the spring is some days later but this is made up for, in a great measure, by the fact that the heat, tempered by the sea breeze, causes rapid and healthy growth of all vegetation, so that, after all, the harvest is not so much later than it is in what are considered more favourable localities, the grain crops having been secured, by those who had planted early, by the first week in October, and the potatoes by the middle of the month.

As to the people themselves, so far from being rude and clownish they are as a rule respectful and well informed, and, considering their somewhat isolated position this is the more remarkable. It is gratifying to note that the majority were anxious to learn anything that would be likely to improve their condition socially or financially, and from the fact that many had been purchasing, and acquiring from the Experimental farm, new varieties of grain, roots etc., and experimenting with them, it is evident that a growing interest in agriculture has been awakened.

The breeds of animals especially of hogs need improvement and, partly with this end in view, we urged, successfully, the establishment of farmer's clubs in every Township.

A few instances of indifference to the importance of fostering Agriculture were noticed on the part of influential gentlemen who could not have been alive to the fact that this is not a party question, but one in which all are concerned, whatever their political principles may be, and one in which their personal interests are involved. The argument of these men was that it was

no use for farmers to be taught how to grow crops which they could not sell owing to the want of communications, forgetting that, if the products were raised there was a market for them at their own doors. This was proved on the spot where the said remarks were made by the landing of 100 bushels of oats from Prince Edward Island, and a statement made by one of the farmer that he had just raised 100 lbs. from 10 lbs of Banner Oats he had received from Ottawa, and that he could sell all he could grow.

In conclusion, it is worthy of remark that the county of Gaspé and its inhabitants are well worthy of the consideration of all who sincerely desire to aid in the development of the resources of this great Dominion.

Respectfully submitted, GEO. MOORE

CLEANING OUT DITCHES, Etc.

Negligence about cleaning out ditches in proper time--Ayrshires not much in evidence at Islington--Dairy Shorthorns unknown in Quebec--The Old English Cart-Horse--Improvement in domestic animals always accompanies improved farming--Milking machine ought to be tested at Experimental Farm--English Horse-Market--Frenchmen the founders of the Veterinary Profession.

DEAR SIR.

A blustering rainy day, the rain not unwelcome in itself, as it is a warm penetrating rain, that will do good to hard land, that still wants softening, if there is much of it that still wants it.

I am afraid that we have had enough of rain for all the land that is susceptible to its good influence. There is land here in such bad condition, so long uncultivated, trampled over by animals, "en package," and so long undrained, that the water lies on the surface, without penetrating it, or softening it to any sufficient extent, and the ploughing of such land is not made any easier by the rain. Fine dry days will be scarce enough now, until all autumn work shall have to be laid aside, and every fine day, is a "jour de grâce" indeed.

Most of the people here put off the work of cleaning ditches, until the ploughing is done. This is generally done so late in the season that they don't like facing the water in the ditches, and the work is put off until the spring. This indifference and shirking in the matter of cleaning out ditches is truly wonderful, and the loss occasioned thereby is great indeed, as you may imagine. The time to make new ditches, or clean out old ones, is immediately after the haying is over. This is the right time for this work, and the only right time, and it should never be allowed to slip by. Every kind of work has its own special season, and by careful division of labour, it is possible to do the right work at the right time, although often enough there may be but barely sufficient time to do it.

They are not as fond of Ayrshires in England as they are here. At the 21st Annual Show at Islington, Ayrshires were entirely confined to a few exhibits from Southern breeders, the absence of the Scotch contingent being noticeable. A capital class of 23 Shorthorns, 30 Jerseys, Guerneys, a small class of



nue, Red Polls 6 and Ayrshires only 5 to number.

The dairy Shorthorn, is an animal that gives more and as rich milk as the Ayrshire and, of course, sells much better for beef. As nobody, in this Province as far as I know has a herd, of well bred dairy Shorthorns, while there is a large number of very good Ayrshires, it is not possible to prove the truth of this assertion.

There are not many Government lecturers who make any attempt to preach the Gospel of the improvement of the breeds of domestic animals, and, I do not think that much is done, practically, in that way, at any of the Experimental Farms. From year's end, to year's end, the habitant here, keeps the same cows whether they milk two quarts or two gallons, and, as any sort of a scrub bull is used, no improvement is possible. I think that in travelling through a country, you can gauge the quality of the farming by the quality of the stock you see in the fields.

Although in such a bad plight at present, the English are still the best farmers in the world, and although they now have the best and most sought after breeds of domestic animals, they had some of the worst to begin with. Take the old English cart horse, for instance, and if you have, or can borrow a "Stone-henge" look at the illustration that writer gives of one, and you will see, that the accompanying description is not overdrawn.

"From time immemorial this country (England) has possessed a heavy and comparatively misshapen animal, the more active of which were formerly used as chargers or pack horses, while the others were devoted to the plough, and, as time wore on, to the lumbering vehicles of the period of Queen Elizabeth and her immediate successors. In colour, almost invariably black with a great saddle case, in the place of head, and feet concealed in long masses of "hair", depending from misshapen legs, he suited that sides, upright shoulders, mean and narrow hips and very drooping quarters. Still, plain as he was, he did his work willingly, and would pull at a dead weight until he dropped. From the above named animal what a transition to the modern Shire, the Clydesdale and the Suffolk Punch."

Butter tests and feeding tests of exceptionally good ones, from an inferior breed, do not teach you how to breed an equally good, or a still better animal, out of that cow, nor does the winner of a small prize, at an agricultural show, with the least objectionable out of a number of inferior animals, learn how to breed a better animal, out of a brood mare in future, even were he provided with the means of doing so, which he is not at present.

I have just received my Nov. number of the Journal. It is a pleasure to read an article on horses by somebody who knows something about a horse, and, who, if I may venture to say so is evidently not, the footiest man on a horse, and the horriest man on foot, we have sometimes met. It is the easiest thing in the world, to see, in reading an article about horses and horse breeding, whether the writer knows anything about what he is writing about, from practical knowledge, or not. There is indeed, a good market, for hunters in England, as Mr. Gilbert says, even for light weight ones up to no more than 12.7 to 13 stone. Here are the prices of half a dozen, sold in Leicester, on the 17th of last month. Ballyhooly 310 guineas, Birdseye, 200, Gamcock 220, Whitesocks 220, Bantam 150, Badger, 145,

horses with a reputation of course, but still, only light weight hunters, a little over \$375 dollars for the lot. Of course, we do not send over horses like these, because, in Ontario they have not got the mares, and in Quebec, we have neither the mares nor the horses, but we keep sending over a good many useful half-breeds, all the same much to the disgust of the English breeder.

"Field." Sale of Canadian horses, on Thursday, week; Messrs. Pritchard and Moore, proprietors of the Canadian Horses Repository, Lamb's Conduit St., sold a consignment of Canadian horses. Some of the lots realized prices which should cause something like consternation to many a breeder of half-bred stock. These importations will not in our opinion affect the price of high class horses, but if they can be bred in Canada, shipped to England, and sold at a profit at the price mentioned, 59 pounds, 50 pounds etc., the English breeder should bestir himself. On Oct. 19th 41 American harness horses, consigned by Douglas H. Grand, sold at very good prices, considering their class.

Also 60 Canadian horses, announced for sale, at Freeman's, consigned by Mr. J. D. Hodgins of London, Ontario. Harness horses, principally, and some hunters amongst them. (1)

I read a more extended notice of the Whistle milking machine, in my Field, the other day, but having mislaid it, cannot refer to it for particulars. However I think, it is quite in order for one to be tested without delay, at one of the Experimental Farms, even if a trifling sum of money should be lost in consequence.

This is one of the things, we want done by Experimental farms. If the machine is a failure, or only partially successful, let us know all about it at once. If it is as good as described, we cannot get them too soon. Every dairy farmer knows what an expense the wages of competent milkers, for a large herd of cows' comes to. If a man or boy can with this machine milk sixty cows in half an hour, no more useful appliance has been invented for a long time. Why it should take less time to milk 60 cows than 10 in proportion, I do not exactly understand, but a machine that milks 10 cows clean in 10 minutes and that too directly from the udder's into the pail, without coming into contact with either a very dirty human hand, or more or less contaminated outer air, is good enough.

Thanks to Professor Couture, for confirmation of what, as a scientific man he must know to be true, that the best breeds of half bred horses, such as roadsters, coachers, riding horses and troopers, are those which have been most extensively crossed with thoroughbred blood. Although there may be a certain amount of prejudice in horse matters, both here and in England, against anything French, let us not forget, what we owe to the French Veterinary School, to Claude Bourgelat, and Vial de St. Bel. Claude Bourgelat was the founder of the first Veterinary school, and consequently the first to institute a distinct profession of Veterinary surgeons. Born in Lyons in 1712, he died there in 1799. He was a learned lawyer, an able writer, and the bosom friend of the great d'Alembert, enjoying also the esteem of Pembroke, Voltaire, Buffon and Haller.

Vial de St. Bel, came to England and founded the St. Pancras College, Camden Town, London, in 1792. Before

(1) Freeman's used, we think, to be "Aldridge's."—Ed.

that time, we must read the incredible prescriptions and methods of treatment, recommended and used by the so-called farriers and horse doctors in England, to have a proper idea of their ignorance, and of the miseries to which the poor horse was subjected.

C. F. BOUTHILLIER.

## The Poultry-Yard.

My dear Mr. Jenner Fust,

I enclose a letter which I hope will be acceptable. I hope you are well and happy and in case I have not opportunity I have wished you, my dear friend, and your large family of readers a very happy Christmas. The grand old season is fast approaching, where we old time journalists, sharpen our pencils and in rhyme and more prosaic serial repeat the story of "Peace on Earth and Good will to men," sung by the Angels to the Shepherds of Bethlehem, as they announced the birth of our Redeemer. We may not tell the story in the exact words quoted but we try to convey the sentiment in tale and moral. Truly it ought to be a happy time to all true men and women. With what tremendous import to us all is the event which we observe and commemorate on Christmas day!

With kindest regards,  
I am yours very sincerely  
A. G. GILBERT.

**Money which ought to have gone into a farmer's pocket—Clerk and Farmer—Neglected opportunities—Advantages in near location to good markets—A Merry Christmas.**

(A. G. GILBERT)

The season has now arrived when new laid eggs are in demand and paying prices paid for them. The farmer, who has had his early pullets laying for some time and his hens beginning their output for the winter, ought to be making money. Last week I visited a popular hostelry of this city to find out if they were receiving new laid eggs in quantity sufficient to supply the wants of the establishment. I was gratified at being informed that all the new laid eggs required were being supplied, but I was disappointed at discovering that the source of supply was a breeder of Leghorns who lived at or near the city limits. An enterprising, pushing young man, who, occupied a clerkship in the city, but who added a snug little sum to his income every year by his proper management of a flock of White Leghorns.

### MONEY A FARMER OUGHT TO HAVE MADE

Now, Mr. Editor, I contend that the money made by this young man ought to have been made by a farmer in the neighborhood of the city. I do not mean to say that the clerk had no right to make money out of poultry in his spare time, nor do I wish to disparage his praiseworthy and successful energy. But I do say that it would have pleased me better had I learned that a farmer was getting the money for new laid eggs from his poultry. There are several reasons why the farmer should have made the money rather than the clerk and some of them are:

- 1.—It was the legitimate work of a farmer rather than of a clerk.
- 2.—The clerk is paid for his legitimate

work, and it was his industry in his hours before, or after, the discharge of his legitimate duties that brought him the additional income from his hens.

3.—The farmer would attend to his poultry in the course of his regular daily duties.

4.—The farmer had a far better opportunity to make the money more easily and cheaply than the clerk, for his hens would have a better run and he could use much of what is waste on his farm in procuring the eggs. The clerk probably had to buy his grain foods from the miller or provision dealer at advanced prices.

There are reasons that might be given which time and space will not permit the discussion of. It might be said that the near location of the clerk to the city market was a point greatly in his favor. To this the reply can be made that there are scores of farmers in the neighborhood of large towns and cities who, are into market twice, or thrice every week and who have flocks of hens of probably antiquated age and small size, and which are as neglected as the opportunity to make money out of them.

### THE DIFFERENCE BETWEEN THE CLERK AND FARMER

But the real difference between the clerk and farmer is not difficult to discover. Both have the same market; the same opportunity with the difference of cheap food much in favor of the farmer; the same God-given intelligence, but the farmer lacks the inclination, or the energy, or both, of the clerk. The clerk saw how he could help to pay for his house, purchase a neighboring lot or field, by making his hens lay when their product was at its greatest value. The farmer complaining lustily of the few opportunities left by which he can make money, shuts his eyes to the great opportunity, in his hand, of making from one hundred and fifty to two hundred per cent profit out of well managed fowls. There can be no doubt about it. It is being done, in numerous cases, but in far too many by others than farmers. If information is wanted on poultry management, back numbers of the "Journal of Agriculture" have only to be referred to.

### SOMETHING FOR FARMERS TO THINK ABOUT

It has been shown in previous numbers of this paper what advantages farmers in the localities of such markets as Montreal and other cities have to obtain high prices for eggs in winter. Nay more they have been urged to and instructed how to take advantage of them. If it is said that all farm produce is so low as to be hardly worth bringing to market, the same cannot be said of new laid eggs at 40 to 45 cents per dozen from December to March in the Montreal market, and "not easy to get at that price."

### A MERRY CHRISTMAS

How time flies! If I do not take advantage of the present, I shall not have another opportunity to wish yourself and readers "A Happy Christmas," before that season of joy and gladness will have come and gone. Well, with all my heart, I wish you one and all "A very Happy Christmas" indeed. May all have manna and goose and turkey wherewith to grace the festive board. And see to it that those who have not, are not let want by those who have.

## Orchard and Garden.

## THE CHRYSANTHEMUM SHOW.

Whether the name of this, the most gorgeous of all flowers, originally meant "Gold coloured flower," or whether it was intended to convey the idea that, as gold is the most precious of all metals, so the chrysanthemum, in Japan, its original habitat, was considered the most valuable of all the products of the gardener's skill, admits of a doubt: not that it signifies very much whether of the twain we select as the proper origin of the name, for we have the thing signified and that is enough for us without troubling ourselves about its etymology.

The "Gardeners and Florists of Montreal," at their Exhibition of the 10th, 11th, and 12th of November, this year, fairly out did their work of past years. Anything more gorgeously superb than the central parterre in the Windsor Hall, composed almost entirely of cut blossom of the various colours and forms of the festal-flower, we never saw. Though many specimens of other kinds of green house plants were on show, at either end of the Hall, they all had to "pale their ineffectual fire" before the superb, heads that towered in lofty majesty from the vases where in they were passing their, alas! but too short reign of triumph for the delectation of the veritable amateurs of the art of horticulture. In plain prose, the show was excellent, and the exhibitors, as a body deserve our highest commendations.

The specimens that struck us most were:

Mr. Wilshire's dinner-table, adorned with a variety of "orchids" in full bloom;

Mr. Holliday, gardener to Sir Wm. Van Horne, his collection of "orchids" notably the *Catleyas*—massed with other plants;

Twenty-four, twelve, and six cut blooms of chrysanthemums, exhibited by Mr. McHugh, Forest and Stream Club, were magnificent—there is no other word for it—;

A new variety, pale salmon colour, from Mr. Reid's garden, promises well; but what was gained by growing a 9 foot specimen, with two puny blooms at the top, we do not see. The chrysanthemum is naked enough anyhow, "fix it as you will," but to lengthen the stem seems to us to be an error in judgment, though, in this case, no doubt, the "tour de force" took a good deal of trouble to accomplish.

One thing delighted us: the roughly clad gigantic heads are now being reduced to more compact form, their locks more carefully combed, and the "quilling up" of the blooms more generally looked after. "The Silver Cloud", a specimen from Mr. McHugh's lot, is a perfect type of the form we prefer. Ragged blooms, however monstrous in size, are not aesthetically beautiful however much they may manifest the gardener's skill.

The "roses" were doubtless very fine when they first entered the Hall, but when we saw them, the heat, gas, and absence from the parent stem had worked their will on them, so that hardly anything but their exquisite fragrance remained.

The "salvias" were in good form, but in too dark a place for the flowers to be very easily distinguishable.

Some tree-ferns, from Mr. Angus' gar-

den, were in perfect condition, the colour and general freshness of the fronds remarkably striking.

A new plant—the "Rualla" or "Realia"—does not seem to us worth taking much trouble about. The stem is lanky, and the few flowers—of a bell-like form—are not very good in colour.

Are our gardeners going to improve in Chrysanthemum culture? May be; but, in honest truth, we do not see how they can hope to excel the exhibition of November, 1896.

## GINSENG.

**A medicine—Grows wild in Canada—Requires shade—Sowing—Cultivation.**

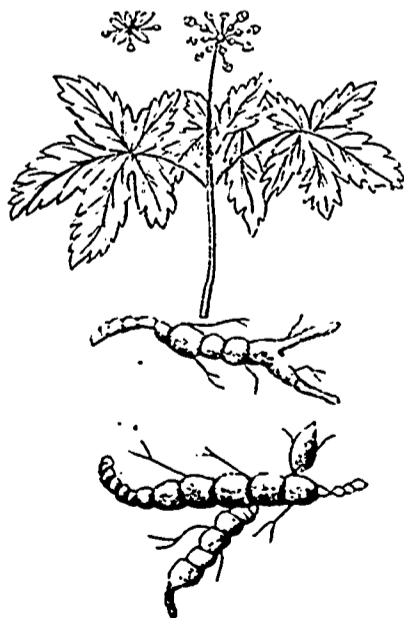
DEAR SIR:

I beg to reply as follows to a number of queries which have come to me from time to time regarding the botanical, and medicinal characteristics of ginseng in addition to facts relating to its culture.

**GINSENG**—I... Chinese physicians introduce it into nearly all their prescriptions for the nobility to heal the sick and increase the vigour of the healthy. A traveller in China remarks that he never entered a drug shop but ginseng was being sold. Volumes have been written by Chinese doctors upon its medicinal powers, asserting that it gives ready relief in extreme fatigue, renders respiration easy, strengthens the digestion, promotes the appetite, relieves all nervous affections and gives a vigorous tone of body even in extreme old age. So writes Prof. Panton in Bulletin No. 65 of the Ontario Agricultural College, in 1891.

2... There is every reason to suppose that it could be successfully cultivated in Ontario, although I am not aware that it has been tried, owing no doubt in a large measure to the fact that it may be collected in the woods without difficulty in many parts of Ontario and Quebec. Ginseng is cultivated to a limited extent in the State of New-York.

3... It is found growing wild in limestone formations on loamy wooded uplands. It thrives in the shade of sugar



GINSENG.—(*Aralia quinquefolia*)  
From Bulletin Ontario Ag. College

maples, but is rapidly killed out when these areas are pastured, cattle being fond of the leaves. The following directions, which I believe to be correct in the main, are offered by a writer in the American Agriculturist:

"Shade seems to be essential, for when the plants are exposed to the direct rays of the sun they soon die out, and for this reason open field or garden cultivation of the plants has rarely or never been attended with success. The proper way to start a plantation is to select a piece of land at the edge of some forest where the plants are found growing wild. Then, clear out all the underbrush and small trees, leaving just enough of the larger ones to afford the shade required. This should be done in spring or during the summer, then break up the surface of the soil with a harrow, steel rakes, hoes, or other implements to the depth of two or three inches, removing all weeds, grasses and their roots. The bed thus prepared will be ready for the reception of the seeds, and such small unsaleable roots as are collected in the autumn, the season of seed ripening depending somewhat upon latitude.

Ginseng berries are of a crimson colour when ripe, each containing two seeds, and produced in small clusters at the top of a central peduncle elevated above the principal leaves. When gathering the seed the roots may also be dug up, and all small and unsaleable ones preserved and replanted in the prepared bed. The seed should be rubbed from the pulp very carefully with the hand, and then sown, or better, pressed into the ground with the finger about half an inch deep, and one every six inches along the row. The rows should be from one to two feet apart for convenience of removing weeds, should any appear. Both seeds and plants should be in the ground before hard frosts occur in the autumn, for when these come, the leaves of the large trees will fall on the bed and give the natural protection required.

"The following season no cultivation will be needed, if the bed is thinly covered with leaves, except to cut out sprouts and remove any large coarse weeds which may spring up from seeds or roots left in the ground. If winds blow away the leaves needed as a mulch, a few old dead branches of trees may be scattered about to hold the mulch in place. At the end of the third season the roots will have reached marketable size and may then be dug, and the same bed worked over and restocked with seeds or small plants.

4... It is possible that seed and roots might be purchased of George Stanton, Summit Station, N. Y., U. S.: I do not know of any other commercial source. It is probable at the present time that one would have to collect seed and roots in the woods, which would not be an easy task, although ginseng is reported as growing in quantity on the line of the Kingston and Pembroke railway. The export of roots from this region has amounted, in some seasons, to several thousands of dollars. Ginseng is known botanically by the name of "*Aralia quinquefolia*." The family to which it belongs is quite closely related to the parsnip and celery family. Prof. Panton gives the following popular description of the plant:

Main stem about one foot long, branches into three stalks at the summit, each three and one-half inches long; on the end of each of these are arranged five leaflets borne on slender stalks an inch in length. The leaflets are thin, smooth below and of delicate structure; two in each cluster are about two inches long and the others almost four, oval in general form, but tapering to a point and doubly tooth-

ed along the edge. Rising from the main stem in the centre of the three compound leaves is a stalk three inches long, bearing inconspicuous greenish white flowers, appearing not unlike a small head of clover.

This "single flower stalk" is an important point, for I have found some calling a plant of this family ginseng (*Aralia quinquefolia*) which had four flower stalks and belonged to an entirely different species, though of the same genus."

The short fleshy roots three to four inches in length furnish the raw article of commerce. These are dried and the product when prepared, as already stated, largely used by Chinese physicians.

The Ontario legislature passed an act in 1891 designed to protect the ginseng plant. The Bill provides, under pain of a \$5.00 to \$20.00 fine, that the plant shall not be collected before the first day of September, so that it may ripen its seeds.

## Special Notices.

"Handy to have in the house"—Ayer's Cherry Pectoral—a prompt and certain remedy for croup, colds, and pulmonary affections.

Word comes from all quarters that the neatest and most satisfactory dye for coloring the beard a brown or black is Buckingham's Dye for the Whiskers.

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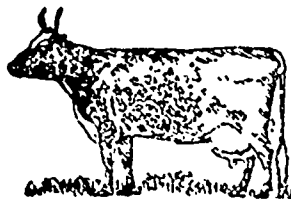
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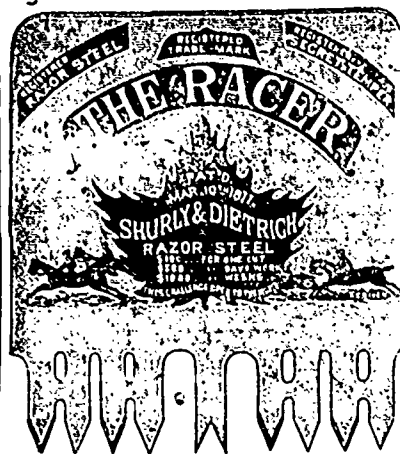
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Helderleigh Fruit Farm and Nurseries. Salesmen wanted in Province of Quebec to sell a full line of HARDY FRUIT TREES and ORNAMENTAL STOCK. Prices to suit the times. Terms liberal as I am a grower and not a dealer. Address, E. D. Smith, Prop 112 Winona, Ont.

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We take pleasure in offering to the public a saw manufactured of the finest quality of steel, and a temper which toughens and refines the steel, gives a keener cutting edge and holds it longer than by any process known. A saw to cut fast must hold a keen cutting edge.

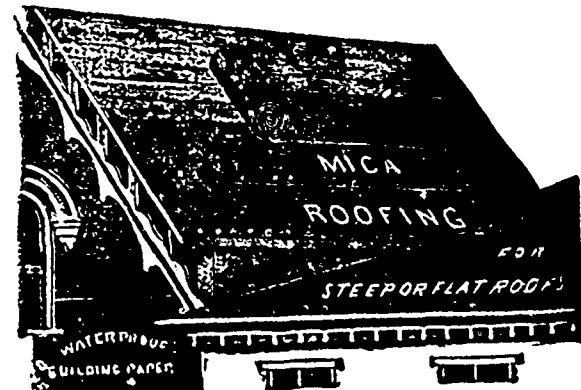
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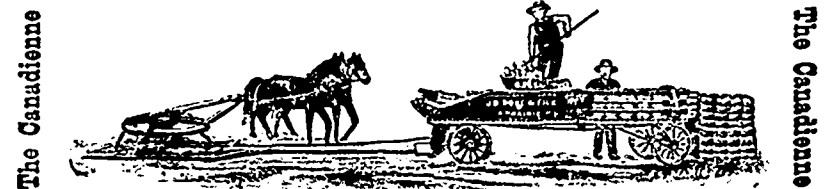
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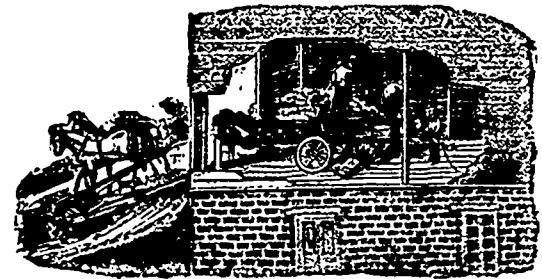
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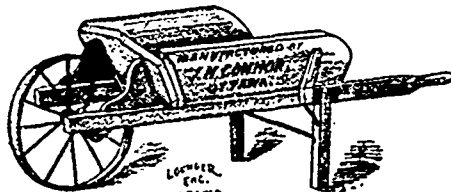
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