a heavy rain as the surface is sufficiently dry in order to break up the crust and thus allow the circulation of air. This may appear to be heroic treatment, and many persons will hesitate to adopt it, fearing that the tender sprouts may be broken off the grain and the crop thus injured, but the fact is that in most cases seed is sown more thickly than is necessary, and if a few plants are spoiled the relief that is given to the many others more than compensates. The writer has practiced harrowing peas, which are considered especially tender in the early stages of growth, after being sown a week or ten days and being bound by a crust formed after a heavy rain, with entirely satisfactory results. This treatment is generally needed only on the tops and sides of hills or knolls which are of clay and which dry quickly after rain under the effect of a strong sun, and where from being packed or baked the crop falls behind the average of the field. Hesitation may be entertained about harrowing a crop that has been seeded to clover and grasses, but it should be remembered that the conditions which prevent the growth of grain will also, in all probability, prove fatal to the smaller seeds as well, and that the process of harrowing is likely to prove the lesser of two evils, if it is not a real blessing. But if one cannot find courage to apply the means proposed, on account of the danger to young clover plants, it will be but little expense to sow a little more clover seed on these spots and cover with a stroke of the harrows or a brush.

DAIRY.

An Old Story Revived.

MAKING BUTTER WITHOUT THE CHURN—THE COWS MAY EAT ANYTHING AND THE CREAM MAY BE RANK—TURNING SKIM MILK INTO OIL.

In September last the FARMER'S ADVOCATE published a description of a new process of making butter by passing through excessively ripened cream in a glass jar a current of air heated to 80 or 90 degrees. Two members of our staff visited the Medway Creamery, in Middlesex Co., Ont., owned by Mr. Jas. Carmichael, an experienced creamery-man, and spent an afternoon witnessing the process carried on by Mr. Walter Cole, from Australia, where he claimed to have originated it. He came first to London, England, and then to New York, in each of which he had a varied experience endeavoring to get his method inaugurated. He claimed that projected companies and speculators had endeavored to divest him of the fruits of his invention which he believed was designed to "revolutionize" the dairy industry of the world. He finally came to Canada, where he hoped to find a better field. At the Medway Creamery, where we found him, he operated his method, being visited by parties of capital interested in the manufacture and sale of dairy supplies and who were disposed to acquire the right for Canada, but the negotiations ultimately fell through. In the course of our article at that time we said:

"As to advantages, it was claimed: (1st) That cream of any age or sourness could be used in making butter, so that it could be gathered from long distances; (2nd) that all objectionable flavors would be driven off, even to turnip; (3rd) that more butter—in fact, *all*—could be secured from the cream, which churning did not do; and (4th) that the butter, being free from albuminous matter, would keep longer and more perfectly. The first point (cream gathering) conceded. That *some* odors might be driven off by the hot air rising would not seem unreasonable, but the claim is rather sweeping; there was no comparative test made on the day in question to demonstrate that a given quantity of cream would yield more butter than an equal quantity in the churn, nor was any test made of the buttermilk to show its freedom from fat, and, of course, we could say nothing as to its keeping qualities."

As nothing but oral testimony was offered in support of the two latter important claims, the editor of the ADVOCATE proposed, as stated in our article at that time, that the process be submitted to an independent test by the Professor of Dairying at the Ontario Agricultural College, or by the Dominion Dairy Commissioner, *but this he declined to do.* Mr. Cole urged that nothing be published then, but this we could not consent to, as the business of the FARMER'S ADVOCATE is to keep its readers posted on just such matters. He remained there several weeks, using a considerable quantity of cream, and having every opportunity to demonstrate the merits of the process. But Mr. Carmichael states that the butter, not being up to the mark through lack of body, etc., was not satisfactory to his customers, and he was able to get more butter from the cream by the churn. He did not think it possible by the new process to get as much fat out of cream properly ripened for the churn. A member of the ADVOCATE staff purchased a quantity of the butter, but found that it became quite rank in about a week's time. Another claim made was that skim milk, or the caseous portion of it, could be converted into oil, which in turn could be used to make a "full cream" cheese from skim milk curds. Something like oil, probably good for "shortening," was produced a few times, but many of the lots "went wrong." Mr. Carmichael finally concluded that he had no use for the process in his establishment. We understand it was operated next at the Bow Park Creamery, with practically a repetition of the above experience. Mr. Shuttleworth, the manager, had it tested thoroughly, but found it in no way equal to the old churning process. Latterly Mr. Cole located in Toronto, and we were surprised to notice about a week ago on the editorial page of the *Globe*, with sensational headlines, an article heralding this process as something new. Half a dozen leading members of the Ontario Legislature were present, together with reporters, at a demonstration given at the office of what is called the National Creamery Company, with one of the former (Mr. Macpherson) in the chair, and the reporters represent them as "much impressed," and that without doubt "the near future will see this useful and novel invention in general use."

The account given in the *Globe* substantially describes the process as related last September in these columns, but with no more definite data to substantiate the claims made than a year ago. The FARMER'S ADVOCATE gladly welcomes and seeks to promote every real advance made in dairying, but we are not disposed to recommend dairymen to abandon the churn and put in a new outfit till proper evidence is forthcoming as to the percentage of fat in the buttermilk left by the new process, and the keeping and other qualities of the butter made as we saw it at the Medway Creamery in August, 1896. We want some pretty clear and independent evidence before believing that it makes no difference about the flavor of what the cow eats, nor if the cream is stale and rank enough to have "whiskers on it," or that bubbling hot air through the cream will turn all the fat into choice, perfect-keeping butter, to say nothing of making oil out of skim milk!

How the Food Cost of Butter was Reduced at the O. A. C. Dairy.

To the Editor FARMER'S ADVOCATE:

In a note published in your issue of Feb. 15th, I stated that "the food cost of a pound of butter for our herd was 12 8 cents for December, 1896, whereas in December, 1895, the food cost was 18.8 cents per pound of butter." In looking up the data on this point, I find that there are three main factors which contributed to this result, viz.: (1) More fresh cows in 1896; (2) lower prices paid for purchased feed in 1896; (3) more economical feeding in 1896.

(1) Experience proves that "fresh" milkers will produce milk, butter or cheese more economically than "strippers." For a period of three to six months after calving the milk glands are stimulated to produce an excess of milk and at this time the cow gives greatest returns for food fed, consequently produces most economically at this period. In order to produce milk or butter economically, "fresh" milkers is a very important factor. In our herd in Dec., 1895, there were 5 cows which had been milking under 6 months and 11 cows over 6 months. In Dec., 1896, there were 8 cows under 6 months and 11 cows over 6 months. We find the month of December a trying month for economical milk production, as then the cows are kept in the stable or yard all the time and are not yet accustomed to dry feed altogether.

(2) The silage, clover hay and roots fed to the cows are obtained from the farm department and are charged at the same prices both years, except the hay, which was charged at $10 per ton in 1895 and $6 per ton in 1896. The prices of the purchased foods for each year were as follows:

Year.	Price per bushel, including grinding— Oats.	Peas.	Price per ton— Bran.	Oil cake.
1895-'96	29 3c.	56 1c.	$13.00	$20.00
1896-'97	22.5c.	45.0c.	9.00	19.00

Your readers will observe that this difference in the prices paid for meals ought materially to affect the food cost of dairy products. Our ration for 1896 and 1897 consists of the following:

35 pounds corn silage.
10 " cut clover hay mixed with the silage.
20 " mangels.
2 " bran.
2 " oats.
2 " peas.
2 " oil cake.

This is fed at two feeds, except the mangels, which are given at noon. Sometimes a little long hay is given at noon. The ration costs us 13 cents per day.

(3) By a closer study of the feeding of *each cow*, in connection with the weighing and testing of her milk, we have been able to reduce the unprofitable feeding materially. When we find that a cow is not paying for her feed at the milk pail (unless we intend to fatten her or if she is not in good condition, in which cases we feed extra) we at once reduce the amount of feed given to that cow, because the scales and the test clearly show that she is receiving more food than she can make profitable use of. It is a "nice" point in feeding to give a cow all she can use with profit—not overfeed her, nor yet underfeed her. This takes more skill than the average feeder possesses.

I may add that the food cost of a pound of butter in January, 1897, was 11.4 cents; February, 11.8 cents, and March, 14 cents. I consider that March is too high, for some reason or other that is not clear to me at the present moment. We make up the food cost for each cow and the average for the whole herd of milkers monthly.

H. H. DEAN.

Feeding Dairy Cows.

The question of the cheaper production of dairy products is one in which every dairy farmer must interest himself, as apparently his increased profits must be sought at this end of the line rather than at the market end over which he has no control except by improvement in the quality of his goods. In order to ascertain as far as possible, for the benefit of our readers, the best foods to grow for dairy cows, and the best methods of compounding them, we submit the following questions, which, if answered in the light of experience, will do many dairy farmers a valuable service:

1.—To what extent do you recommend corn to be depended upon as food for dairy cows, and how do you recommend to have it planted as to thickness, and whether in hills or drills?

2.—Do you prefer Dent, Flint, or Sweet Evergreen sorts, and which varieties of those suit your district and requirements best?

3.—What other fodder crops do you recommend for cows, and how do you grow them?

4.—What provision do you make for grain for your cows, and what do you consider a proper ration for cows giving milk in summer and in winter? And what value do you place upon bran as a part of the ration?

Ensilage, Roots and Bran for Dairy Cows.

1.—Corn, in the shape of ensilage, from 35 to 50 lbs. a day for each cow (according to size) during the winter; also for feeding in early fall. We always plant with ordinary seed drill, about thirty inches apart in drill.

2.—We have always used Red Cob corn. We sow as soon after the 15th of May as we can, and cut the last of September or first week of October.

3.—We grow about 15 acres a year of turnips, and find them one of the best crops we can grow. We sow White or Greystone for feeding the latter part of September and the first of October, then the tops of general crop, which are swedes, are put in piles when cut, and with dry fodder corn give us another month's feed. For butter turnips would impair the flavor, but mangels would answer.

4.—We lay in 30 or 35 tons of bran generally in June, also feed from 2 lbs. to 4 lbs. of meal or ground grain to each cow per day. If cows have a good pasture, do not feed any in the stable; but if pasture is poor, feed bran, if it can be bought for $12 a ton; if not, feed green oats, or peas and oats, followed by green corn. We would consider the following a good ration for winter: 10 lbs. hay, 40 lbs. ensilage, 30 lbs. roots, 4 lbs. bran, 2 lbs. meal.

Carleton Co., Ont. R. REID & Co.

Ensilage Corn for Muskoka.

1.—I recommend 50 lbs. of ensilage corn a day for a dairy cow. I consider it the best, healthiest, and cheapest feed we can grow. Last year I planted my corn in hills three feet apart, but I think I shall put it 40 inches this summer. I find it much easier to cultivate and harvest in hills than in drills. Four or five stalks are enough in a hill. I plant it with a hand planter called the King of the Field.

2.—Flint. I plant the Angel of Midnight. I have tried over a dozen varieties, and this is the best for this northern part of Ontario—Muskoka. I found it difficult to find a corn that would mature in time to escape the frost which usually comes about the 8th of September.

3.—Clover hay, and peas and oats cut green. I sow two bushels of White Siberian oats and one bushel of Prussian Blue peas to the acre. These two varieties are the most suitable for this purpose. I cut it when the oats are in the milk and dry it like hay for winter.

4.—I pasture my cows in summer, but when the pasture gets bad I cut some peas and oats for them once a day, and in the winter I consider the cob corn in the silo and the peas and oats is sufficient grain. The green oats and peas is both better and cheaper than chopped grain. It makes better flavored butter than any other food. My cows will not give enough extra milk to pay for feeding bran. I think the farmer should grow all the feed himself. I find that 50 lbs. of ensilage corn and about 12 lbs. of clover hay and the same amount of peas and oats cut green is a very good ration.

Muskoka, Ont. M. CLIPSHAM.

Success with Corn and Lucerne.

1.—We could not get along very well without corn for our cows. We work it, if possible, to have sufficient to form the principal ingredient in our winter ration. We feed it until the early forage crops are fit to use. We plant the hills 3 x 3 feet, cultivate both ways, which leaves very little to hoe. Give it a light scuffle once a week until it is in blossom, which not only breaks capillary attraction, but is a good weed destroyer. We think the corn is sweeter sown thus, and it grows taller and cobs well.

2.—We prefer the Dent, as we feed a number of hogs, husking the larger ears for the shoats, and cut the smaller ones along with the stalk for the cows. Off of a field of eight (8) acres this year we husked over 700 bushels of large ears, and though some claim the cattle will not eat the Dent fodder with the relish they have for the fodder corn, we think the extra cob more than repays us.

3.—But by far the best fodder crop I know is lucerne or alfalfa. This clover has *so many* points in its favor. Among the best points is the fact that it has not to be sown every year. Once seeded it is there for years, some say forever if you so wish it. It has not to be plowed up and resown every two or three years, as red clover, nor does it gradually run out as other grasses do. Everything likes it,