

The Dairy.

To Make Scald Cream Winter Butter, Including Some Hints for Butter-Factories.

(Concluded from last Number.)

You must have the usual American tall vessels to hold the milk—these are set into a trough which receives the cold water, but as steam has to be applied to them, they must set into the trough through a cover with holes in it, and each milk vessel must be made slightly tapered as illustrated, and the turned down edges of the stops must pass into and rest in cavities made in the cover, which cavities, when the steam is applied and condensation ensues, form so many water-joints to keep the steam from escaping. The cover with holes in it is a fixture and is of course made sufficiently tight to keep in the steam. In the bottom of the trough should be placed a false bottom or diaphragm full of small holes; this is for the purpose of spreading the steam and preventing it from heating any of the milk vessels unduly or faster than the others. Each trough should be large enough to take the morning or evening supply of milk, and as this will of course vary with the season, cover must be provided for the vacant holes.

The troughs must be so placed and arranged that they will become empty when the cold water is desired to be drawn off; the same slope will, as a matter of course, take away the condensed steam.

As each trough has to be heated in turn, each must stand in a separate apartment with good convenience for isolating it from the other troughs, and good ventilation for taking off the waste steam.

Having all prepared, meals milk is placed in its several vessels and all these placed through the holes in the cover of the troughs. Cold water is then let in and kept about the milk until all the cream has risen, when the cold water is run off, and steam from the boiler applied—this is kept on until the desired heat is produced.

But it may be found that it is difficult to make the pans hot enough with sufficient speed. If any trouble arises on this score the steam should be somewhat surcharged by being passed through a hot iron pipe heated in the fire. The steam may be raised to a considerable pressure in the boiler and let on to the pans gently through a small aperture.

When the heat is attained and has been kept up for about half an hour, all the cream will have risen and have consolidated, and then the cold water must be turned on again. When cold, the cream will be found to be of great thickness and solidity and may be removed to the churning tub in the ordinary manner, or the milk may be drawn from under it.

When you have the cream in the converting tub, instead of a churn, it will only want to be stirred all one way with a paddle, and the butter washed and salted—coloring it first if so desired in the manner above mentioned.

Butter made in this way will always be alike and if the heat is carried high enough will always be good and command the very best price.

It will be observed that the labor and trouble are brought to a minimum, and there is no handling or extra work. The steam should be let on with a flexible India rubber pipe in the same manner that water is let on to gardens and lawns from the town water-works.

We have purposely abstained from pictures and plans, as every man who is fit to engage in a butter factory will be quite competent to arrange his works to suit his own ideas and premises.

The only trouble is what to do with the skimmed milk? It is altogether too good for pigs, and as before pointed out, it will not make cheese, although all the cheese constituents (except the grease) are there, but the cheese will not sour and become cheesy. It is believed, however, that if the milk, after skimming, were condensed in a vacuum pan, a cheap and saleable article for town use for inferior purposes, would be easily made.

Condensed milk is now made and sold in New York on a large scale in New York and other American cities, and analysis shows that at all events some samples have lost

nearly if not quite all their original butter, which must have been removed in the shape of cream.

The skimmed milk is excellent for household use, puddings, &c., and the condensed vacuum pan milk would no doubt be largely used for tea, coffee, &c., and if canned, an unlimited sale might be found for it with shipping, and sale by the grocers and stores.

The important part of a manufactory of this kind is to bring it to a certainty. Neither butter nor cheese, as ordinarily made in private dairies, can be certainly depended on to produce always the same result, but when the scalding is practised (and practised continually), the same result is always arrived at, and a thoroughly useful and reliable article is produced.

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Correction.

EDITOR THE CANADA FARMER:—In your last number (which I am sorry to find is the last but one of the Canada Farmer,) in my article on this subject you make me say,—when warning your readers against boiling the milk—"If the milk is heated to boiling, you will get the full quantity of butter, and white particles will show in the butter, although it will be good and well tasted."

In this you are wrong,—I said "You will not get the full quantity of butter, &c." then as before quoted,—I know this to be a fact, but I never knew the reason until I read the next article following mine, viz., "New facts about butter," wherein the large quantity of water which Dorset and Devonshire butter contains is stated—this butter is mostly made from scalded milk (or at all events a great deal of it is,) but is never boiled but only scalded. It is now clear to me that boiling the milk deprives the butter of the power of taking up its natural quantity of water, and thus lessens the production. I could never before understand where the loss really was, it certainly does not evaporate, nor does it come away in the buttermilk, so that no real loss in the fatty principle can have occurred, but if the excessive heat prevents the butter taking up the natural quantity of water, the loss is at once accounted for.

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Feeding for Milk.

Prof. Dole, of Norwich University, Vt., gave the result of an experiment in feeding milch cows, to the *Vermont Chronicle*, going to prove the special value of corn meal and bran in the production of milk. We condense his report somewhat, as follows:—

I had three cows, which I was feeding for the double purpose of getting milk, and at the same time fattening the animal for beef. They were all farrow, one of them had been so for two years. They belonged to the common breed, and were what are called good milkers. At the time I began feeding they did not give enough to pay for the hay they ate. My object in experimenting was to find out, as near as possible, the most profitable feed. I continued the trial for four weeks with the following result:

The feed the first week was 8 lbs. of "shorts," half a bushel of sugar beets, and 10 lbs. of hay per day to each cow. I fed the shorts night and morning, 4 lbs. at a time. The beets were given at noon. They were fed all the hay they would eat up clean, three times a day. Thus, the first week I fed the three cows 210 lbs. of hay, 168 lbs. of shorts, and 10½ bushels of beets. The hay was of poor quality. I estimate the cost as follows: 168 lbs. of shorts at \$25 per ton, \$2.10; 210 lbs. of hay at \$12 per ton, \$1.26; 10½ bushels of beets at 15 cts. per bushel, \$1.57. Total, \$4.93. We got 379 lbs. of milk, making 16½ lbs. of butter, taking 23 lbs. of milk to make 1 lb. of butter. The butter was of the best quality, and at 30 cts a lb. would bring \$4.95. There was in addition the skimmed milk, and a steady gain of the cows in flesh.

In the second week the feed was the same as the first, with this exception—instead of feeding 8 lbs. of shorts, I gave them 8 lbs. of feed, composed half each of corn meal and shorts. This week I got 364 lbs. of milk and 18½ lbs. of butter, or 1 lb. for a little over 21 lbs. of milk. The cost of the feed this week, calling corn as I did \$2 per hundred, was \$5.65. The butter was worth, at 30 cts. a lb., \$5.55.

The third week the feed was the same as the first, with the exception of feeding bran instead of shorts. Amount of milk this week, 380 lbs.; both butter and milk same as first week.

Fourth week same as second, only using bran instead of shorts. Milk this week, 480 lbs.; butter, 19 lbs. Cost of feed same as second week, \$5.65; butter worth \$5.70.

I have not tried corn meal alone as grain feed, but from former experience am convinced that it is not as valuable for milk as either bran alone or bran and corn meal mixed in equal parts.

I have no doubt from the above results and my observa-

tions since, that no better feed can be given cows than corn meal and bran mixed. The cows have not only more than paid their keeping in milk, but have steadily gained in flesh, and are now fair beef. Had I only fed common hay, such as I had, they would not have paid their keeping. Perhaps I should state that all the feed was scalded, and cold water added, making a painful at a time per cow. The butter made was very nice, far better than it would have been with only hay for fodder. I am satisfied that bran is fully equal to shorts in value, and to mix with corn it is better. With bran at \$25 per ton, and corn at \$40, I would use as much corn as bran, and feed them mixed. I have said little about the roots fed, my object being to determine the best kind of grain or feed to buy. But so well satisfied am I with the result of feeding roots that I would not on any account be without them. Every farmer would find it to his advantage to raise from 75 to 100 bushels per year for every cow.

Apples for Milch Cows.

Prof. L. B. Arnold contributes the following to the *New York Tribune*:

Apples are an excellent food for milch cows, as they are for all other stock when fed in proper quantity. They give an excellent flavor to milk, and the butter and cheese made from it, and increase the yield of either. A few observant farmers have for a long time been aware of the fact that apples and other fruit are valuable and healthy food for stock, milch cows included, and have been in the habit of utilizing their inferior fruit by feeding it, and the many are beginning to learn its value and are yearly feeding more and more of such fruit as is not fit for market. The quantity which may be fed profitably varies with the size and constitution of the animal fed. A good healthy cow weighing 1,000 pounds can safely eat a peck of apples twice a day, and smaller animals in proportion. The quantity should never be so large as to produce either scouring or feverishness. In either case more harm than good will be done by feeding them. The feeder should begin with not more than half ration, and gradually increase the amount, carefully noting the effect. Taking the appetite of animals as a guide, it is not best to feed either sweet or sour exclusively. If but one could be used, sweet would be the best, but stock prefer to change from one to the other, or to have them mixed at the rate of two sweet to one sour. Either kind will be readily eaten by cows, though a mixture is preferred, and it is believed to be best for them. The best method of feeding is to slice them in a root-cutter and feed in the stable, but they may be fed upon the ground. I have fed a great many apples to cows in the orchard, shaking them from the trees. From haste and hooking each other, the animals are quite liable to get choked, but I never lost a cow from choking with an apple. Though unable to extract an apple from the throat, and severe bloating often occurred, the fruit would so far digest in the gullet as to become softened, and would be thrown out through the mouth. The experience of others may be different, but such has been mine. A potato in the throat has sometimes proved fatal. In cases of choking it is a good plan to prop the cow's mouth open by running a short stick, two to three inches in diameter, crosswise between her jaws and keeping it there by attaching a cord to either end of the stick and fastening to the horn above. By keeping the mouth open the cow is prevented from crowding the obstruction any further down by swallowing, and when softened by digestion and pushed by the gas crowding it from the stomach, it will be sooner thrown out than if the mouth was closed, and this often proves a safeguard against fatal consequences. The value of apples as a milk-producing food varies with the circumstances under which they are fed, reference being had to the quantity of milk which a given quantity of apples will produce. They are pretty nearly but not quite equal to potatoes for this purpose. When cows come into milk in the spring and their milk is not allowed to shrink by drouth or scanty feed beyond what it naturally would by distance from the time of coming in, apples fed in fall as an extra feed, and taken promiscuously as they usually grow, with sweet and sour mixed, will increase the milk in quantity and richness so much as to give a pound of cheese from a bushel of apples, or a pound of butter from two bushels and a half, a peck per day to a cow being consumed. If fed to cows nearly dry, or to those otherwise scantily fed, so that the substance of the fruit is employed to make fat or flesh, the increase in the yield of milk will be less. If they are full fed, and have more recently come in, they will give a better return than above stated. Taking the ordinary condition of cows at the season when apples are ripe, and counting in their value as a substitute for other food, as well as increasing the value of milk, and with butter and cheese at the prices now current, apples as a food for milch cows are estimated at 12 to 15 cents per bushel. I speak advisedly on this subject, having determined by weight and measure the increased yield of a ration of one peck per day each to a herd of 36 cows. To be fed advantageously to cows, fruit must be dealt out with care and judgment. If fed a little too freely, the result will be a loss instead of a profit. When judiciously fed, any kind of fruit, and particularly apples, not only increase the amount and richness of milk, but gives a deliciousness of flavor to both butter and cheese beyond that given by grass alone.