

have the water held mechanically between the particles of butter, which water easily passes out of, and away from, the fat or butter oil, making what is known as "leaky butter" in the trade.

Wood is a porous substance—that is, it is full of pores or small openings. If a piece of wood be allowed to remain in water for some time it absorbs, or takes up water, by its soaking into the pores, and we speak of such as "water-logged" or "water-soaked." Advantage is taken of this property of wood to soak water, to prevent butter sticking. We fill the pores of the wood with water, and as we have seen that water and butter, which is a form of solid oil, have no liking for each other, the water keeps the butter away from the wood and thus it cannot stick.

When people are troubled with "sticking" it is because the wooden utensil has not been properly prepared; by which we mean, the pores of the wood have not been saturated with water. If we allowed the water and wood to be in contact with each other long enough, the utensil would become prepared of itself. But usually people are in a hurry when they commence to churn—it is something that must be "got out of the road" as quickly as possible. They "slap in" some half-warm water, give the churn a few turns, then add the cream and find that the butter sticks. More frequently, however, the trouble is greater with the worker, ladles and printer, because the pores of the churn become more or less soaked with buttermilk before the churning is completed.

As hot water is much more penetrating than cold water, or has greater soaking quality, this should be used for preparing wooden ware used in churning, but the utensils should be properly cooled before coming in contact with the cream or butter, otherwise the hot wood will melt the cream or butter and make it oily.

If cold water is used, and this is sometimes advisable in hot weather where it is difficult to keep the temperature low enough to make firm butter, some salt should be added to the water, and a stiff brush be used vigorously to cause the brine to go into the wood.

In a word, if we wish to prevent butter sticking to dairy utensils made of wood, the wood must be properly prepared by filling the pores with water—first hot and then cold. Where the butter sticks, the cause is improper preparation of the vessels. The buttermaker will save time and worry by preparing these utensils properly.

O. A. C.

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The Richness of Cream for Butter-Making.

A question was recently asked in the New York Produce Review as to what richness of cream creamerymen prefer for butter-making: also the enquirer wanted to know the average test of farm-skimmed cream receipts. From the answers given by practical creamerymen in the United States it seems that around 30% and 35% is generally preferred. Some, however, run as high as 45%. The range was from 30 to 45%. Possibly about 35% would be the average cream desired by the creameryman in his business. A richer cream for butter-making is preferred because it gives a better body to the butter, is nicer to handle, and satisfies both creameryman and creamery patron to better advantage. One maker advised a 45% cream, because he held that when the cream cans and vat were rinsed and the cream pasteurized and a starter added it was thinned down enough to churn. A rich cream he also held saves ice and time in handling, and extra churning. He said it also saves more skimmed milk at home for the farmer to feed to calves, pigs and poultry. It saves extra cooling and extra hauling, and keeps sweet longer. Less fat is lost in the buttermilk from the rich than from the poor cream. Invariably the makers desire a rich cream, most of them stating from 35% to 40% or 35% to 45% fat. These factorymen have been instructing their patrons to separate a richer cream than they formerly did. One factory stated that two years ago the cream as sent in by patrons to their factory tested from 12 to 25% fat, but under their instructions to skim a richer cream it had risen to from 33% to 38%. Some are endeavoring to get the patrons to send a 40% cream throughout. Most of the makers have succeeded in inducing their patrons to skim a cream richer than 30%.

It is claimed that thin cream is chiefly responsible for the abnormal loss of butterfat and low quality of butter, and hence low prices paid patrons for fat. The advent of the hand separator has caused the great changes in creamery work. Most dairymen separate the milk on the farm, as the cream does not sour as quickly as milk and deliveries need not be made as frequently, which means a great saving in cost of getting the butterfat from the farm to the creamery.

Four important reasons given why heavy cream means a better quality of butter are:

1. Heavy cream does not sour as quickly as thin cream.

2. Heavy cream means a smaller amount to be taken care of, hence it is likely to be thoroughly cooled and receive better care.

3. Heavy milk can be pasteurized in the creamery with less loss of fat in the buttermilk.

4. Heavy cream permits of the use of a larger amount of a good starter.

It is more profitable to the creamery patron, because he receives a better price per pound for his butterfat, and because he retains a larger amount of wholesome skim-milk for feed. It is more profitable to the creamery, because it reduces the mechanical loss of butterfat, improves the quality of the butter by permitting the use of clean, highly-flavored starter, increases the capacity of the creamery, gives a larger overrun, thus reducing the cost of manufacture, and where the cream is pasteurized it prevents the abnormal loss of butterfat in churning.

Some of the best creameries in the United States to-day are following the policy of taking the percentage of butterfat into consideration in determining the price paid for the cream. Cream that is clean-flavored and testing over 30% butterfat receives top quotations, while cream testing less than 30 receives one or two cents less for butterfat. There is only one conclusion to arrive at from this investigation, and that is that for creamery-patron and for butter factory alike, the rich cream is preferable. Much more attention should be paid to a great many of the hand separators operated in the dairy, that the cream test be kept more uniform and be raised to a higher level.

Raising Calves for the Dairy.

Editor "The Farmer's Advocate":

The problem in every section where the whole milk is sold off the farm is replenishing the dairy herd. At present the greatest question is that of acquiring cows of sufficient ability to keep the dairy herd up to a profitable producing standard. The result is that good milk cows of superior merit are high in price, and difficult to buy. There is only one way remaining. The dairyman must use good bulls, raise the heifer calves, develop the young heifers, and give the best of care and feed. To raise calves without milk is quite a difficult task. During the first three weeks of the calf's life it is quite, if not absolutely, impossible. The newly-born calf should be allowed to remain with the mother for the first two or three days. It is thus enabled to obtain the colostrum or first milk, which is so essential in starting the work of the digestive apparatus. This is of advantage to the mother also, to relieve the inflammation which is invariably present in the udder to a greater or lesser degree at freshening time. The increased use of milk separators in the dairy sections of the country has resulted in greater attention being paid to raising calves on skim-milk. It is well settled at this time that practically as large, strong and vigorous calves can be grown on skim-milk, supplemented by some suitable grain feed, as on whole milk, providing they are properly fed and cared for. There is no question but that whole milk is the normal food for calves, and when the cream or butter-fat is removed it becomes necessary to replace it in the calf ration with some equivalent, but cheaper form of food.

My method of raising calves is as follows: The calf is allowed to run with its mother the first three or four days of its life. It is then removed and left twenty-four hours without food, when it becomes hungry and is easily taught to drink. For a week thereafter it is fed whole milk at the rate of four pounds in the morning, two pounds at noon, and four pounds at night. The second week about the same amount of milk is given in two feeds, morning and night. Within two weeks after removal from the cow, skim-milk is gradually substituted for whole milk, at the rate of half a pint per feed, until the entire amount is skim-milk. About a month after the calf is taken from the cow it is receiving twelve to fourteen pounds of skim-milk; at two months, eighteen pounds, and finally reaches twenty-two to twenty-four pounds per day. The grain added to the ration is fed dry in boxes. The calves begin to eat grain when ten days or two weeks old. At first a handful is put into the calf's mouth as soon as it has finished drinking its milk, and it soon learns to eat with a relish from the feed boxes. A mixture of corn, oats, bran and oil meal in equal parts, supplemented with a small amount of corn silage, makes an excellent ration for young calves.

When the calves are ten days to two weeks old they will begin to nibble hay, and are thereafter fed all they can eat. The hay is given fresh twice daily.

Changes from dry hay to pasture must be made very gradually, or the calves are almost sure to have scours. This is done by turning them onto pasture for only a short time the first day and gradually increasing the period, or by mixing increased amounts of green feed with

their hay until they are getting about all they will eat. The greatest difficulty I have in raising calves is to contend with scours. The principal causes of this difficulty are overfeeding sour milk, feeding cold milk, using dirty milk pails, and irregularity in feeding. I watch very carefully the effect of the feed on the calves, and as soon as I see signs of scours the milk is reduced one-half or more, and gradually increased again as the calf is able to stand it.

A remedy that I have found to be successful is to give from one to two ounces of castor oil in the morning, and twenty drops of laudanum and a teaspoonful of dried blood. From the time milk ceases to be the main food for the calf until the heifer drops her first calf, at which time she becomes a cow regardless of age, the feeding of the animal should be with a view to nourishment and growth without accumulation of flesh. When pasturage is good, after the calf is six months old, there can be no better food; if grass is short or dry and growth slackens, then it is well to supplement with clover hay, wheat bran or oats. At other times let the food be mainly the coarser and more bulky kinds of forage. The digestive apparatus needs to be developed, and become accustomed to working up large quantities of food. A big belly may result, but no matter. If accompanied with a well-sprung rib, a strong back and loin, depth of flank and other marks of constitutional vigor, a big belly is to be desired, indicating capacity as a feeder and user of feeds. Give long forage, fodder or roughness the preference with young stock, and use grain sparingly as needed to balance the ration and promote growth and thrift.

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THE APIARY.

Don't Neglect Preparations for Winter.

Editor "The Farmer's Advocate":

In a short time farmers will have their buildings, for the accommodation of live stock and poultry, prepared for the winter season if they have not done so already. As this is about the busiest time of the year on many farms, the apiary of the farmer beekeeper is very liable to be left to look after itself until everything is cared for. A few colonies of bees, in the estimation of some, are considered in much the same way as a flock of scrub hens that pass the winter in some old shed, roosting on the farm machinery. They don't contribute much to the farm income, and are left to shift for themselves.

Some years ago I bought a few colonies in old box hives merely to supply enough honey for table use. When winter came I packed them as I had been told by the former owner, and left them to take their chances. I happened to meet a farmer who had kept a small apiary for some time. I was anxious to secure some pointers about wintering, so I asked him about his methods of caring for them. He informed me that he "killed off" all his old colonies each fall, and merely kept a few swarms over winter. In this way he got what honey he needed. I did not trouble him for any more information. Let us hope that such barbarous methods will soon be heard of no more.

If fall feeding has not been done, colonies may even yet be fed stores on warm, bright days. Some beekeepers can tell by lifting a hive whether it contains sufficient honey to last all winter. I find it a safer plan for an amateur to weigh each hive separately. It only takes a short time to pull a wheelbarrow scales from the barn to the apiary, place it behind each row of hives, weigh them, and mark the weight plainly on the top. I first weigh a super full of empty combs with cover and bottom boards. The whole outfit weighed thirty-two or three pounds. I allow thirty-five pounds for the total weight, and try to feed enough to bring it up to eighty pounds. A colony that only occupies four or five frames had better be united with another weakling, as it is not safe to risk them.

After weighing, place the winter cases around the hives. The cases that hold four, two facing each way, are the best. I have always used long boxes holding three or four colonies. See that the bottom board is turned so that the shallow side is up, and be careful that the bottom of the hive is level with the opening in the case. Six inches long and three-quarters of an inch deep is a fair-sized opening. Place a board between the hive and the case, resting on the edges of the bottom board to form a "bridge" so that the bees can pass out with ease, and tight enough that no chaff can leak down to clog the entrance. When this is done I do whatever feeding is needed. Place an empty super on top of the brood chamber, fill some five-pound honey tins or sealers with sugar solution, mixed two pounds of sugar to one of water, cover with one or two thicknesses of cheesecloth and invert the frames. Buckwheat honey may be used, but it is not considered as good as the sugar. If the mixture is

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