

calving. With normal milk, the temperature varies from 50° to 68° F., but for abnormal milk, the variation may be much greater, consequently, it is difficult to lay down fixed rules on this point. However, we may say that it is better for the temperature to be a little too low than too high, because in the latter case a risk is run of having a butter too soft and not enough of it.

In autumn, when the cows are housed, great care should be taken not to begin churning at too low a temperature, since the cream may then be in danger of frothing. Should this happen, it may be remedied by adding a little boiling water, but in general it is better to let the cream rest till the next day, to allow the froth to disappear. Then, by the warming it up 2° or 3° above the temperature of the previous day, the butter will come quickly, but as long as the cream froths, it will be very difficult to churn.

During the churning the temperature will always rise of its own accord, unless, indeed, the weather be too cold, or the churn be driven too slowly. The rise is generally about 2½° F., and arrives in half an hour, if the cream was at the right heat at the start.

If the temperature does not rise, under ordinary circumstances, it is because the churning has been done at too high a temperature, and, in this case, the butter will not all come, and what does come will be soft.

The cessation of churning at the proper time is of great importance as regards the consistence and texture of the butter. The coming of the butter is ascertained by the thermometer indicating a rise of temperature, and, when that instrument is withdrawn, by the appearance of the drops of liquid clinging to it, which, at the beginning, resemble sour cream with little bubbles of air, but gradually change their look, and at last show the butter itself in small grains. In order to follow up the changes that take place in the churn, a small pane of glass has been placed in the side, an improvement that is highly praised.

When the butter begins to come, and the grains are of equal size, many makers pour cold water into the churn to make the buttermilk thinner. At the same time, the motion of the churn is slackened, lest the butter should mass itself, or be over-churned, accidents that often occur at this moment. As soon as all the grains of butter attain the same size, the churning is stopped.

The size of the grains depends greatly upon the resources of the cream. Usually, they should be about as large as a cabbage seed; this is the best size and shows that the churning has been well done. If the cream is very rich in fat, the grains may sometimes be as large as peas, but, then, care must be taken not to prolong the churning, for the butter would be greasy. When the churning has been carried too far and the grains have become flat in shape, there is no means of making the butter of a brilliant, bright appearance; in spite of all the pains taken in working, it will have a tendency to become dull in look and the texture will be faulty.

After stopping churning, the first thing is to rinse the sides of the churn, the cover, and the spindle, with water that has been boiled and subsequently cooled to the churning temperature, this water must be always clear and pure. In some places, skim milk is used for this purpose, but only where the water is bad and has not been

boiled, boiling destroys the microbes.

The butter is removed from the churn with a sieve, holding the churn in a sloping position. In Denmark, the washing of butter, as it is done in France is not practised. The buttermilk runs off almost entirely through the sieve, and the butter is put into a tub placed at the side of the churn.

In some factories, this is the way in which the washing is done: a sieve full of butter is plunged into clear, pure water, previously boiled, and at the same temperature as the cream when being churned; this takes away most of the buttermilk. All the utensils employed are first scalded and then soaked in clear cold water previously boiled. This butter washing must be done very carefully, otherwise the aroma of the butter might be destroyed. The butter is then freed of the buttermilk by pressure, either by hand or power. (1)

The butter is now weighed, and the quantity of salt calculated according to the taste of the market. The salt is measured in a graduated glass, and sprinkled over the butter as it lies spread on the working table. The butter is then passed under the roller for a few minutes, and laid aside a little to allow it to grow firm, and for the salt to dissolve. When worked again the buttermilk runs off with the brine, but at each fresh working the butter becomes softer, and it would not be easy to determine how often the operation should be repeated. We must take into consideration the state of the cow, the food she is receiving, the season of the year, and the conditions of the churning; but, as regards a uniform quality of butter, temperature influences it greatly. The higher the temperature of the butter and its room, the greater care is needed not to overwork it; the butter, before reworking, must become firm again; consequently the time employed will be longer in summer, because then the butter will remain soft for a longer time, and shorter in winter, since we must not wait until the butter be brittle or too hard to work. Butter at 50° to 54° F. is about right.

**Refrigerators for butter.**—Take care that butter is cooled equally on all sides, and throughout the entire mass; otherwise a crust, so to speak, will form, the middle will remain soft, and the butter will run the risk of looking greasy. The moment when it is ready to be reworked is when it can be broken, showing grains with sharp edged attachments (*à arêtes vives*). Generally, in autumn or winter, 30 minutes or an hour will do; but in summer, when the butter is very soft, no fixed rule can be laid down. The man or woman, must judge by the consistence and temperature of the butter, when and how often it should be worked. In some places, the butter is worked only once, 2 to 4 hours after salting; but in general, it is better to let it have two or more workings after salting, to give it consistence and beauty. In cold weather, and at any time if the butter seems inclined to become hard, it is better to work it before the salt is completely dissolved, i. e., 45 minutes to an hour after mixing; and an hour, or an hour and a half later, to give it the last working. If, in summer, it is necessary to leave the butter till the next day before working it for the last time, it

(1) The "Dairy Messenger" No. 9, gives a description of one of these instruments. Formerly, the working was done by hand, and great care had to be taken to keep the hands clean and to cool them in ice-d

should be passed four or five times under the rollers after salting, care being taken to mix the salt more than usual, and expelling as little of the brine as possible.

If it is worked once or oftener and if the butter has a tendency to become either too soft or too hard, it ought always to be kept long enough to become firm, and to receive such a thorough working that the buttermilk be entirely expelled and the brine remain alone and in sufficient quantity. Without observing these rules good butter or superior butter cannot be made; and so as regards both the churning and the working, if we want to avoid breaking the texture of the butter and making it greasy.

**HOW TO JUDGE BUTTER AND TO RECOGNIZE ITS FAULTS**

Every maker should have a butter tester in order to detect the defects in the working and colour. These defects are not discernible until a couple of days after packing. The butter must have time to settle (*déposer*) first.

First rate butter appears, when drawn out by the tester (*sonde*), to be firm, clean, the texture resembling wax and of a uniform colour. If it has been overworked, its appearance will be dull greasy, or, as the exporters say, "not translucent." Butter worked for the last time before salt is completely dissolved is not uniform in colour throughout, but streaky, etc. Thus, the faults of the butter may be discovered in the factory, and so it would be as well to work it again before marketing it. The defects of colour are visible in a few days; if the right proportion of colouring has not been added, the butter will, of course, be too light or too dark. If the colouring is not of good quality a deposit will form on the bottom of the bottle or jar containing it and the butter will suffer.

Oily butter will be discoverable in a few days, and this characteristic will increase during eight or ten days. By using the tester, the maker will be able to find out the defects and in many cases be able to cure them, or, at any rate, take note of them as a guide in his future conduct.

(To be continued.)

**NOTES AND NOTICES.**

Mr. James H. Lloyd has gone in for breeding Bull Terriers in addition to the Yorkshires and Berkshires which he has been so successful with. His herds this year, secured 13 prizes with 14 entries at Montreal Exhibition, he has recently purchased two new boars which are well calculated to still further enhance the value of his stock. As will be seen in his advertisement he has some fine young sows ready for shipment at prices to suit the times.

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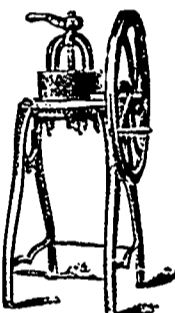
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