

The Dairy.

Salting Butter.

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It has been accepted without question for years that salt is the preservative agent in keeping butter, but when one considers for a moment that all poor butter is profusely salted, then there is another side to the question, and one perhaps worth considering for a moment. Butter is an animal fat, the same as tallow or lard, and why should we not salt them to give them keeping qualities? Oxygen, the "sharp tooth of time," it is true will after a while destroy lard and tallow, but why butter should deteriorate so quick even when preserved with salt is not so easy to understand.

If anyone has direct evidence that salt does keep butter they would confer a great favor upon the dairy public by publishing the methods of procedure, so that the dairymen of this country could avail themselves of its benefits, and so prepare their offerings that there would be about a half a billion pounds less of badly preserved butter for the consumers to reject, or eat with distorted faces.

It may be said that lard and tallow keep because they have been rendered, or extracted by great heat, and possibly if butter could be cooked, it, too, would keep, but at the same time that we are arguing this we drop the salt theory and admit that salt does not keep the butter.

That salt has no power to keep or hasten the decay of butter is seen from the fact that salt and fats have no affinity for each other; mix them as we may they are yet salt and fats, the union being the same in principle as to mix salt and bird shot. Then what action does salt have upon butter?

Churn and work our butter as best we may, there are yet traceable findings of caseine, buttermilk, and milk sugar. If these are left in the butter, the caseine soon begins to ferment, the buttermilk changes to lactic acid, and the sugar also starts upon its natural changes. The result is that the ferment of the curd or cheesy matter gives off gases, just as it does in the unsalted cheese, and then we get off flavor, and lastly rancidity, not from the butter fats, but from this uncooked curd. In the process of cheese making, we cook the curd to render latent this very activity in developing gases, and the action of the rennet, with its digestive principle, also aids in holding this ferment—if it may be so called—in check, and the cheese cures, a principle which is not sought in the unsalted cheeses that have the active principle of the seven smells of cologne about them.

Now in butter, we have no control of this caseinous matter, and the nearest we can come to it is to salt it and try to hold this action in suspension. Even if we do exert some control over the caseine in the butter, we cannot prevent the traces of buttermilk from turning to lactic acid, and hence, salt or no salt, we have been defeated. Then what shall we do? If it is simply a matter of keeping the butter, all we need to do is to wash out the granulated butter with pure water until no traces of buttermilk can be discovered. Then drain the water off, and seal up this yet ungathered

butter in brine and away from the air. If the moisture is forced out of this butter, it will keep for a long time with or without salt brine, sealed or not, the salt neither adding to nor detracting from its keeping qualities.

The Danish butter exhibit at the Centennial in 1876 is a case in point of long-keeping unsalted butter, an article which had been made in 1873, which was quite as well as lard or tallow could have exhibited. This butter was made from sweet cream, and the buttermilk washed out thoroughly with water, which had been first boiled and then cooled down to the proper temperature for washing butter. Possibly in this we see that a long-keeping butter, if unsalted, needs to be made somewhat differently from sour cream butter, and that the keeping qualities of each are not equal, even though the same skill be exhibited in their manufacture; and I am quite inclined to think that success in the future in butter making will come quite as much from studying the conditions of age, temperature and like matters of the cream before churning, and thus estimating its probable keeping and other qualities, as from better and more complicated mechanism, peculiar packages, and skillfully devised ways of salting.

Then we premise that the real object after all in salting butter is to gratify an acquired taste in this matter, and the yet other object of disguising the real flavor that the butter may have by unskillful management. Between the taste of salt and the true butter flavor there is a very wide gulf, and some day the butter consumer will prefer to do his own salting. Would the Esquimaux think the flavor of his seal oil improved by adding a proportion of salt? Does the wild red man season his buffalo steak with salt? Does the Oriental, who dresses his food with olive oil, season it with salt? And yet all these people eat oils and fats exactly as we do butter, and for the same purpose, that of supplying the body with carbon to produce heat.

So we are back to the original point of habit, and habit alone is the authority that has decreed that butter must be salted. The demands of the consumers indicate that there is no standard of salting. The wants of the consumer vary from no salt at all up to 1½ ounces to the pound of butter.

One of the important things for our butter makers to find out is that salt does not give keeping qualities to butter, but rather that such qualities are the result of careful study and inquiry into the process and working of cream and butter, and discernment of their actual needs.

ITEMS ABOUT MILK.—New milk weighs 8 pounds 8 ounces per gallon, skimmed milk 8 pounds 9 ounces, cream 8 pounds 4 ounces, buttermilk 8 pounds 8½ ounces, and water 8 pounds 5 ounces. Those who believe in testing milk by one lactometer, or any specific gravity test, will observe that 3 gallons of skimmed milk and 1 gallon of water will have the same specific gravity as a gallon of milk. Millions of fraud have been perpetrated by not knowing these facts and figures.

Mouldy and unventilated cellars will spoil butter or milk

Methods of Separating Cream.

There are three recognized methods of separating cream from milk, each having its particular merits, depending upon seasons of the year and other circumstances. The old system, and the one still recognized in most households, is the shallow pan method. Tests have been numerous enough to prove which is the most profitable system in the long run, and facts and figures may be given to enable farmers to make calculations for themselves. In the pan method the average of a number of experiments showed 3.36 as the percentage of cream from the milk by weight; in the ice method, 3.46, and with centrifugal separator, 3.82. These figures include the average of all the months in the year. The pan showed the highest record in December and January, viz., 3.60 per cent, while the ice showed 3.50 during these months, and the centrifuge 4.15, the latter being the highest percentage recorded during the whole of the tests. The lowest record, 3.10, was obtained from the pan in the month of August, and the next lowest, 3.20, was from the ice in the month of November. The lowest record of the centrifuge never registered much less than the highest of the other systems, viz., 3.60. Comparing the ice with the pan in the hot months, the former give the highest and the latter the lowest results; and during the cold months exactly the reverse has been the case. Let us figure a little more accurately. An average cow will give about 4,500 lbs. of milk in a season, and this, according to the pan system, will produce 60 lbs. of butter, which at 20 cents, would bring \$12. The same cow on the ice plan would fetch \$12.45 worth of butter, while on the centrifugal plan her butter would bring \$13.75. Multiply these amounts by the number of your cows, and you will find the relative profits of the three systems in dollars and cents.

Milk Tests.

The following comparison of the milk of various breeds will, I think, be found interesting. The Ayrshire cow certainly stands the test well, and it goes to show that she is not appreciated as much as she ought to be on her merits.

The account of these tests was published in the North British Agriculturist, and it is to that paper that we are indebted for the information. For some inexplicable reason the agricultural press seems to have given the subject very little attention, although one of great importance:

"At the British dairy show in 1876, at Islington, twelve samples of milk were tested from cows representing seven different breeds and three crosses—one Ayrshire, three Jerseys, one Guernsey, one Kerry, one Dexter, one Brittany, and two Dutch cows. Certified samples were analyzed to show the quantities of water, pure butter fat, casein, milk sugar, mineral matters, specific gravity at 60° Fahr., and the percentage of cream by measure after standing twenty-four hours. Highest on the list ranked the Ayrshire, showing the least water and the most fat, followed in turn by the three Jerseys, the others in the order named above. The Ayrshire gave 5½ per cent. butter fat, and the Dutch cows only 2½ to 2¾ per cent. butter fat. At the same show in 1880 there were one Ayrshire, three Shorthorns, Dutch