

then immersed in the milk, and in various other ways to suit the convenience of those who have the care of the dairy. Recently coolers have been invented to be used at the farm for cooling milk with ice, but it may be well to caution those who employ ice, for the purpose indicated, that it should not be used in direct contact with the milk, or in any way in which the milk may come in contact with an ice cold surface.

An impression prevails with many that no injury can result to milk from the use of ice, no matter in what way it may be employed. Ice, if judiciously used in connection with the dairy, is convenient and useful in hot weather, and especially so when the supply of water is limited, or its temperature is so high that the milk cannot be cooled down properly by it alone. But because the direct application of an ice cold surface to milk gives it no apparent injury for the moment, it must not be inferred that it has no remote influence upon the product of butter or cheese which may be manufactured out of such milk. It is a well known fact that all animal bodies, though they may be kept fresh and sweet for a long time when laid upon ice in an ice box, yet when exposed to the air and warmth, rapidly decompose and become stale.

When milk has been cooled by coming in contact with ice, and then manufactured into cheese, the injury does not immediately show itself, but it has been observed that the cheese ripens rapidly, decays early, and will not keep in flavor like that which is made of milk, none of the particles of which have come in contact with a surface of lower temperature than 50°. The butter-makers of Orange Co., N.Y., who have experimented largely with milk, are extremely cautious in the use of ice in connection with butter manufacture. It is sometimes necessary to use it during hot weather, while churning, by breaking it up fine and applying to cream, but it is well understood that when ice has been employed in this way the butter will not keep, though for present use it may be regarded as of prime quality.

Last year, during the month of July, we had extremely warm weather, and ice was used in the New York factories quite freely, often injudiciously. From an account given by the English shipper, Mr. Webb, it appears there was not a single factory sending cheese abroad where it was of good, clean flavor.

He says: "The English dealer and the English consumer alike began to get a surfeit of that strong-flavored, loosely-made, bad-keeping quality, which was the universal characteristic of the July make of cheese. This inferior quality," he remarks, "was doubtless largely owing to the intensely hot weather then prevailing; but whatever the cause, your very serious attention should be directed to the discovery of a remedy, for not a single dairy, as far as my experience and pretty full inquiries extended—not one single dairy stood the test of that most trying month. Even those dairies that for a series of years have been always and uniformly excellent—did not hold their own last July, but proved in the matter of flavor and keeping qualities, to be no bet-

ter than the great majority of your State factories."

Now, how far the injudicious use of ice may have added to the trouble we are unable to say, but we have no doubt that some share, at least, may be justly laid to this source. We have personal knowledge of some factories where large quantities of ice are used to cool the milk by applying it directly to the milk in the vats and the milk is in good order generally, and yet great complaint is made of the cheese manufactured as soon off flavor, while it must be observed that the best flavored goods are not made at those factories which use the ice in this way but where there is an abundance of cool pure water—cold water, and an agitator which stirs the milk during the night, worked by the waste water from the vats, give practically the best results.

As this question of ice is somewhat new to the dairy public, and has not been very closely investigated by cheese manufacturers, it will be sufficient, perhaps, to call their attention to the matter, with the suggestion to avoid as far as possible the use of ice or an iced cold surface in direct contact with the milk.

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RULES FOR TREATMENT AND DELIVERY OF MILK.

The following rules for the treatment and delivery of milk have been adopted and are to be rigidly enforced by the Illinois Milk Condensing Company, a large establishment at Elgin, Ill. As they present valuable suggestions to directors of cheese factories, we give them entire:—

1. The milk shall be drawn from the cow in the most cleanly manner, and strained through wire-cloth strainers.

2. The milk must be thoroughly cooled immediately after it is drawn from the cow by placing the can in which it is contained in a tub or vat of cold water, deep enough to come up to the height of the milk in the can, containing at least three times as much water as the milk to be cooled; the milk to be occasionally stirred until the animal heat is expelled, as below.

3. In summer, or in the spring and fall, when the weather is warm, the bath shall be spring water, not over 52° temperature, (a day or night after a heavy rain excepted), constantly running or pouring in at the bottom, necessary to reduce the temperature of the milk within 45 minutes to below 58°; and if night's milk to remain in such bath until the time of bringing it to the factory, and to below 55°. The morning's milk not to exceed 60° when brought to the factory.

4. In winter, or in freezing weather, the bath shall be kept at the coolest point (it need not be running spring water), by the addition of ice or snow sufficient to reduce the temperature of night's milk speedily below 50°.

5. In spring and fall weather, a medium course will be pursued, so that night's milk shall be cooled within an hour below 50°; and morning's milk below 55°.