

Suppose there are 100 pounds (10 gallons) of milk to be cooled, and the temperature directly after milking, allowing for some air cooling, is 90 degrees. If this milk is placed in a tank containing an equal quantity of water at 56 degrees, the result, theoretically, would be to reduce the temperature of the milk to 73 degrees ($90 + 56 \div 2 = 73$). In practice, however, the actual cooling would be less, because the water will absorb heat from the air in the meantime. Even if the water is changed after the first supply has lost its cooling power, the very best that could be expected after one change, would be to bring the milk down to about 64 degrees. A temperature of 64 degrees is not low enough for preserving Saturday night's or Sunday morning's milk.

The advantages of using a special milk cooler are twofold. First, the cooling may be done more rapidly and therefore more effectively, and second, only about half the quantity of water will be required to reach a result similar to that secured by surrounding the milk cans with water.

ICE NECESSARY FOR LONG KEEPING.

Roughly speaking, 10 pounds of ice are equal in cooling power to 100 pounds of cold water. Thus 100 pounds of water containing 10 pounds of ice will do as much cooling as 200 pounds of the same water. Or, in other words, the use of ice in the water surrounding the milk may do away with the necessity for changing it. The same advantage applies in the case of using a special milk cooler. The ice can be placed in the receptacle which contains the supply of water for the cooler.

But the most important advantage in the use of ice arises from the fact that by its use the temperature of the milk can be reduced to, and maintained at, a lower point than is possible with the use of water alone; and a low temperature is absolutely necessary for preserving milk for lengthy periods. The temperature should be reduced to 50 degrees and maintained at that temperature when milk is to be kept from Saturday night or Sunday morning till the following Monday morning.

The accompanying plan (Plate 1) shows a convenient arrangement for the storage of ice in connection with a milk stand, designed to meet the needs of patrons of cheese factories and creameries. This plan was first brought to the writer's attention by Mr. G. G. Publow, Chief Dairy Instructor for Eastern Ontario, when travelling with him through Hastings and Prince Edward counties, where many of the progressive farmers have adopted this plan. A model combined milk stand and ice-house was erected on the grounds of the Central Canada Exhibition Association at Ottawa last autumn, and attracted considerable attention. This arrangement, which affords both protection from the weather and dust, and also from animals or insects, if all openings are provided with screens, and convenience for the cooling of the milk, cannot be too highly recommended. Very great improvement would be made in our hot weather cheese if the night's milk was always properly cooled, and the saving of loss in cases where the milk turns sour before reaching the factory would amount to a very considerable sum.

To utilize the ice for household purposes in connection with an arrangement of this kind, it would be necessary to provide an insulated ice box in which to put articles of food along with a quantity of ice from time to time. A simple arrangement, which will give good satisfaction, is to make a box in the shape of a trunk or chest, lined with galvanized iron, and divided in the centre by a partition open at the top and bottom to allow for a circulation of air between the two compartments. The ice can be placed in one side of the partition and articles of food on the other side. A box constructed as follows will give good satisfaction: One layer of matched boards covered with one inch of hair felt and finished with another layer of inch-boards. That is to say, the sides, top and bottom will consist of two ply of matched boards with one layer of one-inch hair felt between. The cover should fit tightly and be provided with a cushion of some kind to make it air-tight. The galvanized iron lining is necessary to prevent the dampness from affecting the wood and destroying the insulation. It is necessary to provide a drainage pipe for the melting ice, and the