

Dairy.

The Cold System for Raising Cream.

A NEW APPLIANCE FOR CREAMERIES.

BY PROF. X. A. WILLARD.

About the year 1864 Mr. Slaughter of Orange County, N. Y., conceived the idea of applying the associated system of dairying to butter manufacture. He erected the first butter factory on the continent, and the first, it is believed, in the world. The factory was built directly over a large spring of flowing water at a low temperature, where large vats were arranged sunk in the earth for the reception of vessels holding the milk. These vessels were deep cans 8 inches in diameter and 20 inches long, and as soon as the milk was delivered the cans were filled within two inches of the top and sunk in the water to the height of the milk. Here the milk remained, with the cold water flowing continuously about it, for the space of 24 and 36 hours, when the cans were lifted from the vats and the cream removed. The cream was much thinner than that raised in the usual way in pans, and the butter manufactured from it was of the finest description, and at once began to be sought for in market on account of its excellence and uniformity. This parent factory was visited soon after its erection by the writer, who first gave to the public a detailed description of the new method.

It was generally believed at that time, or previous to Mr. Slaughter's experiments, that cream could not rise perfectly from deep sittings of milk, and that low temperatures in milk were fatal to success in creaming.

After the success of the American system had been demonstrated, the Swedes began to copy the plan and to experiment in a scientific way in regard to the most favorable temperature for getting the cream. Swarts found that by breaking up ice, and placing it thickly in the water surrounding the cans holding the milk, he could thus reduce the temperature to a low point; and, moreover, that when the milk was thus reduced the cream came up rapidly and in greater quantity than by the water-method alone. The butter made from cream treated on the ice-plan was exceedingly fine and sold for high prices in European markets; hence the "Swarts System," as it is sometimes called, began to be largely adopted, and some of the finest butter sent to the English markets is now made on this plan.

The first modification of the Swedish or Swarts system in this country was that of Mr. L. S. Hardin of Kentucky, which consisted in placing the cans of milk in refrigerators, the ice being above the milk which was reduced to a low temperature by chilling the air in the milk compartment, thus economizing greatly the quantity of ice required. As we hope hereafter to refer to Mr. Hardin's plan in connection with that of others, we need not discuss these methods further in this place. We may remark, however, that the "cold process" for setting milk is now gaining in favor not only in this country but in Europe, and it is undoubtedly the most economical of any that has been devised when the proper appliances are adopted for its practice.

FOR CREAMERIES, large or small, the new invention brought out by Whitman & Burrell of Little

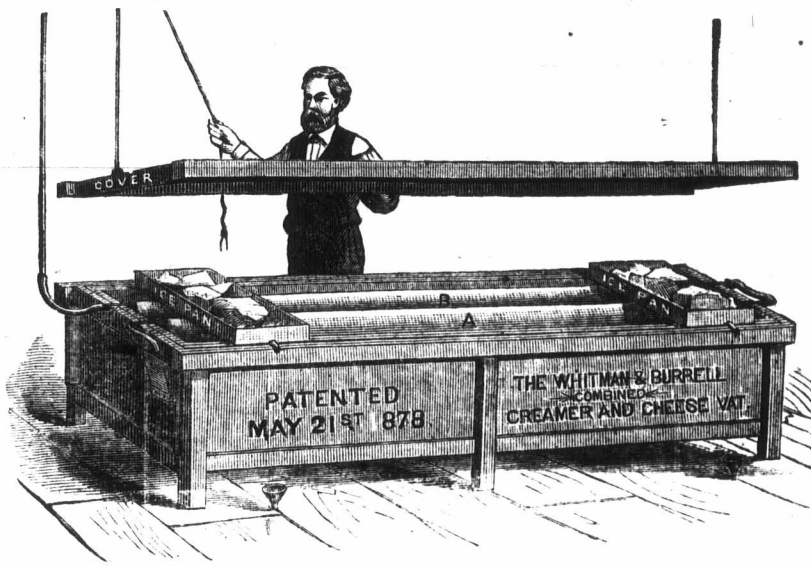
Falls, N. Y., merits attention. It is a combined creamer and cheese vat, and the cut here introduced shows its general form and its use as a creamer. It is, as will be seen, the ordinary 75 or 600 gallon milk-vat, with two hollow partitions (A B) running lengthwise of the vat. These partitions are made of tin, and are about 1½ inches in thickness and of the same height as the tin vat, and divide the milk into long narrow cells or compartments about ten or twelve inches wide, eighteen inches deep, and the length of the vat whatever that may be. These hollow partitions are arranged so as to be easily removed from the vat. Now, when milk is put in the vat—there being a slight space around the end of the partitions—it rises to the same level in each compartment. Cold water is at once run around the large tin vat and also through the hollow partitions.

As soon as the milk becomes as cold as the air of the room in which the vat is standing, the cover is let down over the entire top of the vat, and it is made to fit tight so as to exclude all external air. Then when the milk becomes as cold as the water which is being run about the vat and through the hollow partitions, if it is desired to reduce the temperature still more, the cover is raised for a moment and two or three ice-pans are placed on top the vat—one in the centre and the

feeding or for other purposes than it would be if allowed to sour.

But another advantage of importance is that the vats are readily turned for the purpose of making cheese, and the arrangement of the covers makes them the best cheese-vats for retaining heat and keeping up a uniform temperature of the curds—a point of considerable importance in Cheddar-cheese making.

It often happens that a change from butter to cheese making is desirable at a factory, and with these appliances the change can be made with little or no extra cost. Of course these creameries are admirably adapted to making skim-cheese; but as we cannot advise the making of "skim-cheese," believing that it is not wanted in the markets of the world and its making will not prove remunerative, this adaptation of the creamer need not be referred to. It is sometimes desirable, however, to heat milk up to 130 degrees and then set it for cream, especially in spring or late in fall and winter. For this purpose it will be seen the creamer is admirably adapted. These creamers took the first premium at the late International Dairy Fair at New-York, and as the latest and most ingenious contrivance for a combined creamer and cheese vat adapted to various theories in the manufacture of both butter and cheese, we have thought it desirable to bring the invention to the attention of the Canadian dairymen. We understand that Pearce & Pickering of London, Ont., have lately obtained a license for manufacturing these creamers for the supply of the Canadian market.



COMBINED CREAMER AND CHEESE VAT.

other two at the ends. Little pipes three inches long (¾ gas-pipe) extend from the bottom of each ice-pan into holes bored through the wood frame of the vat to carry off the drip from the ice-pans. A few pieces of ice are now placed in the pans, and, if extreme cold is desired, a little salt is added. The cover is again lowered and the water shut off from around the vat and through the partitions. As the cold cannot escape from under the air-tight cover, it passes through the milk, and the cream rises rapidly. When the cream is all up the cover is raised, the ice-pans removed, and the cream is then skimmed off the milk; then the hollow tin partitions are tilted up and the water which was left in them runs out, when they are quickly removed from the vat and hung up against the wall out of the way.

The covers of these combined vats are made with an air space of an inch in thickness, and the inside is lined with roofing-tin, and then the top is painted and the tin is paraffined over.

The advantages of these creamers for factories will be readily seen. They occupy little space comparatively, the covers exclude dust and flies, while the application of salt and ice in pans immediately above the milk must reduce the temperature to any desired degree. The cream is tender and delicious, and can be raised while the milk is sweet, thus making it of more value for

suffering consumers condemned to wrestle three times a day with an enemy whose strength overcomes them. We do not exaggerate. Experts, whose lives are made miserable by reason of the bad butter they are compelled in the course of trade to taste or smell, assure us that a large share of the butter brought to market is classed as grease, and sells for a low price. If it were just fairly good it would bring twice what the wretched stuff brings as material for slushing down the masts of ships or filling some other plebeian purpose in the world's economy. First-class butter is wanted in large quantities, and is quickly taken up at figures which head the list in market reports, or is retailed privately at prices far in advance of those. Reports come from the butter dealers inquiring, "What can we do with the white, streaky, badly-smelling butter, to render it fit for sale?" "What can they do with it?" Not all the spices of Araby could sweeten it. Disguise cannot cover up its iniquity. It comes in such a questionable shape, after all the vain attempts to reconstruct it, that it is suspected at once; and butter, like Caesar's wife, should be above suspicion.

The fact must be confessed that a large share of our butter is below first-class, and is disagreeable or unfit for use. A hundred million dollars slip through the farmer's fingers in consequence of bad butter. Sour, bitter cream from dirty vessels yields butter depraved from the churn. We should learn there is such a virtue as cleanliness. An increase of one-fourth in quantity and price would make a difference of nearly three millions of dollars in our dairy product of Vermont yearly, allowing 200,000 cows to be employed in the product of the dairy.

Loss from Bad Butter.

From an address by the President of the Vermont Dairymen's Association in the *N. E. Farmer* we take the following extracts:

If all the butter in the country was of good quality it would be a saving of a hundred million dollars per annum. What comforts, enjoyments, joys, might be purchased with this amount; and, on the other hand, what misery is imposed on the