PASTEURIZATION AND ITS APPLICATION TO THE DAIRY INDUSTRY

G. F. Woods, '27

The Purpose of Pasteurization—It's Advantages and Disadvantages—Problems Arising and the Solution of Them

PASTEURIZATION is a subject in which dairymen and the consuming public are vitally interested. For the dairyman it has made possible the development of an industry which has seen a phenominal growth and has prospects for a bright future. From the standpoint of the consumer it has made possible the use of one of nature's choicest foods even though far removed from its source.

This process while compartively simple in operation is little understood by the majority of people, even though they profess preference for either raw or pasteurized milk, due to the complex nature of milk and the effect of its constituents during the pasteurization and its subsequent storage before consumption. Most people heretofore have taken what the dealers have offered for sale with little or no thought concerning it. Now, however, with increased educational advantages the marketing-wise housewife is beginning to take an intelligent interest in the milk she buys for her family. This awakened interest has brought about a great deal of discussion, particularly in regard to pasteurization and its advantages and disadvantages.

Let us briefly consider a few of the more important. What is the primary purpose of pasteurization? Its object is two-fold: the improvement of the keeping quality and the destruction of pathogenic bacteria. With this end in view thousands of dollars are spent annually in every large city of America on the installation and operation of pasteurizing equipment. In the large cities of the East such as New York and Boston the milk supply comes from numerous dairy farms ranging from fifty to five hundred miles in distance from the distributing plant and located perhaps in several states. The milk varies in quality with the care exercised in handling it on the individual farm. Infected milk from one farm could easily contaminate the entire supply of a distributing plant. It is to forestall such an occurance that these large plants pasteurize all milk received. Its effectiveness is proven by epidemiological studies made of such cities as Chicago and Richmond, Va. Laboratory tests show that all pathogenic bacteria commonly spread by milk are killed at the temperature used for pasteurizing. This, then, is the only method by which the distribuors can insure the public a safe product when they cannot supervise the production and handling of the raw milk.

Purebred Dairy Cattle and Pasteurized Milk Made a Successful Dairy

The other phase is equally as important because it enables a city to receive its supply of milk over a wide area. Milk is an extremely perishable product but by pasteurization at the distributing plant the bacteria count is reduced and the length of time that it will remain sweet greatly increased. In fact, it is this point alone that has enabled the market milk industry to grow in size and complexity until it is one of the most specialized in American agriculture.

It can be seen that the cost of pasteurization, while a disadvantage, is not sufficient to condemn the process. Then there is the question of palatability and change in nutritional value. There is no doubt but that both of these ponits are important and worthy of serious consideration. Perhaps the least important is that of palatability because the public can become used to the slight change in taste without serious inconvenience. The other is of utmost importance and is being worked upon by scientific investigators. It is primarily a question for the biochemist and dietitian to solve. From results published by able workers there is little doubt but that pasteurization impairs to some extent the nutritional value of milk. It is known that vitamine "C" is destroyed and that other sources of this essential food element must be made available. Other chemical changes are brought about but they have so far been deemed as of lesser importance. It would seem under the conditions existing in the large centers of population that pasteurization has come to stay as the advantages of the process are so apparent and bear so much weight as to offset the disadvantages.

What then are the conditions in Arizona and other regions of sparce population? For the past year or two if one traveled across the state, varying conditions would be found. In one town only pasteurized milk could be obtained and in another only raw milk was available. The consumer had no choice but had to take what was offered. But conditions are changing and the dairy industry is steadily growing. In the larger cities the market milk is being handled by the larger distributors in a somewhat similar manner to that of the eastern dealers. But the producing farms are all located comparatively near to the retailers,

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and, in many cases, the farmer retails his own milk. In fact, this is the only method in the majority of towns throughout the state. To the small dairymen handling one hundred gallons per day or less, the cost of pasteurizing equipment is prohibitive. His only resource is to market raw milk or sell to a distributing plant. Since there are none located in the smaller towns, pasteurization is out of the question, for the present at least. To insure a reasonably safe product the dairy selling raw milk should be carefully inspected and supervised by the health department. An excellent system is being used in Tucson at the present time; namely, the standard milk ordinance put out by the U. S. Public Health Service. The milk is graded and grades " A," " B," and "C" pasteurized can be sold. The production and handling of the milk is carefully supervised by the Health Department. Although all the points of the ordinance are important two in particular insure the public a safe grade of milk, these being, namely, tuberculin testing of the dairy herd and a health certificate for all dairy employees.

The skeptical minded person still perhaps will say that raw milk even thought grade "A" and suervised by the Health Department is not always safe. This is entirely true but it works both ways. R. S. Smith of the United States Department of Agriculture, points out that the mere presence of pasteurizing equipment does not insure a safe product. In many cases only attempts at pasteuribing are being made due t olack of proper attention or absence of understanding on the part of the operator. It is then up to the dairyman to see to it that all is done hat is humanly possible to insure a safe, high quality milk. When this is done the dairy industry will advance with greater strides than it has in the past.

Carrying It Too Far

"Everybody in our family is some kind of an animal," remarked Tommy.

"What do you mean?" asked his mother.

"Why mother, you're a dear, you know."

"Yes, Tom, and the baby is mother's little lamb."

"Well, I'm the kid, sister is a chicken, aunt is a cat, little brother is a pig, dad's the goat, and—"

"That's enough, Thomas."

Luck means the hardships and privations which you have not hesitated to endure; the long nights you have devoted to work. Luck means the oppointments you have never failed to keep; the trains you have never failed to catch.—Max O'Rell.

Among the people in whom the social gifts are the strongest, the individual fears ridicule above all things, and ridicule is the certain result of originality.—Amiel.

Attention is directed by Dr. J. G. Brown to an error in the June issue of the Agriculturist. In his article on lettuce the name Rhizopus should read Rhizoctonia.