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# United States Department of Agriculture,

## BUREAU OF ANIMAL INDUSTRY.

### DIRECTIONS FOR THE PASTEURIZATION OF MILK.\*

The pasteurization of milk for children, now quite extensively practiced in order to destroy the injurious germs which it may contain, can be satisfactorily accomplished with very simple apparatus. The vessel containing the milk, which may be the bottle from which it is to be used or any other suitable vessel, is placed inside of a larger vessel of metal, which contains water. If a bottle, it is plugged with absorbent cotton, if this is at hand, or in its absence other clean cotton will answer. A small fruit jar loosely covered may be used instead of a bottle. The requirements are simply that the interior vessel shall be raised about half an inch above the bottom of the other, and that the water shall reach nearly or quite as high as the milk. The apparatus is then heated on a range or stove until the water reaches a temperature of 155 degrees Fahrenheit, when it is removed from the heat and kept tightly covered for half an hour. The milk is rapidly cooled without removing it from its containers and kept in a cool place. It may be used at a time within twenty-four hours. A temperature of 150 degrees maintained for half an hour is sufficient to destroy any germs likely to be present in the milk, in cold weather, or when it is known that the milk reaches the consumer soon after milking, and it is generally safe to adopt this limit. It is found in practice that raising the temperature to 155 degrees and then allowing the milk to stand in the heated water for half an hour insures the proper temperature for the required time. If the temperature is raised above 155 degrees the taste and quality of the milk will be affected.

Inasmuch as the milk furnished to consumers in large cities in summer contains at the time of delivery an immense number of miscellaneous bacteria, this procedure may not fully meet the requirements during hot weather, not only because such milk will not remain sweet for twenty-four hours unless kept in a good refrigerator, but also because the bacteria not destroyed by the heating may at times produce digestive disturbances in the very young. Under such circumstances it is best to keep the bottles in the water until it boils or to use one of the many steamers now on the market. After the bottles have been kept at the boiling point for three to five minutes (or longer if they are large) they should be cooled as promptly as possible and kept in a refrigerator until used.

The simplest plan is to take a tin pail and invert a perforated tin pie-plate in the bottom, or have made for it a removable false bottom perforated with holes and having legs half an inch high to allow circulation of the water. The milk-bottle is set on this false bottom, and sufficient water is put into the pail to reach the level of the surface of the milk in the bottle. A hole may be punched in the cover of the pail, a cork inserted, and a chemical thermometer put through the cork, so that the bulb dips into the water. The temperature can thus be watched without removing the cover. If preferred, an ordinary dairy thermometer † may be used and the temperature read from time to time by removing the lid. This is very easily arranged, and is just as satisfactory as the patented apparatus sold for the same purpose.

The accompanying illustrations show the form of apparatus described.

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Approved:

JAMES WILSON,  
*Secretary.*

WASHINGTON, November 15, 1897.

\*This circular appeared December 19, 1893, as Directions for the Sterilization of Milk.  
† Before using the dairy thermometer it is best to have it tested, as it may be unreliable in the upper parts of the scale.