

APPENDIX to evidence of Jas. W. Robertson, Dairy Commissioner, before the Select Standing Committee of the House of Commons on Agriculture and Colonization.

### ON THE MAKING OF BUTTER.

A thimbleful of milk of average quality contains over ten millions of globules of butter-fat. They are lighter than the liquid or serum of the milk, in which they float, and when it is left at rest they rise to the top. Cream is only that part of the milk into which the globules of fat are gathered in larger numbers than they are in the whole milk. It has no constant or regular percentage of butter-fat. There may be only 8 pounds or there may be 75 pounds of butter-fat in 100 pounds of cream.

### SEPARATING THE CREAM.

Two methods of separating the cream from milk are in common use; one is known as the natural or setting method, and the other as the mechanical or centrifugal method.

In the natural method, the force of gravitation attracts the heavier portion of the milk, commonly known as skim milk, downwards in the vessel which contains it, with the result that the globules of fat are pushed upwards towards the top. The serum of milk is the name given to the heavier portion consisting of water, containing the casein, albumen, sugar and ash, nearly wholly in solution in it. Sometimes the serum becomes viscous or sticky, and a small quantity of it adheres to the surface of the globules of fat, and like a coating of gum hinders their movement upwards.

A small quantity of lacto-fibrin occurs in milk after it is drawn from the cow, and its delicate mesh is similar to the fibrin which forms in blood, causing it to clot after it is drawn from an artery or vein. That also retards the separation of the globules of fat into cream.

In the mechanical method, centrifugal force is applied to the milk in a metallic bowl which is made to revolve very rapidly, in some machines at a rate of over 7,000 revolutions per minute. By the force thus applied, the serum of the milk is thrown outwards against the resisting inside of the bowl, and the globules of fat are pushed inwards towards the centre. In the form of cream they are then conducted by a mechanical device into one vessel, while the serum, which is practically the skim milk, is conducted into another vessel. The machine which is used for this purpose is called a centrifugal cream separator.

The following paragraphs are based upon the information derived from tests conducted at the experimental dairies, of which particulars are contained in the annual reports of the Experimental Farms and Dairy Commissioner.

### THE SETTING OF MILK.

1. All milk should be carefully strained immediately after the milking is completed.
2. When shallow pans are used, they should be placed in a room with a pure atmosphere, at a temperature as even as possible at between 50° and 60° Fahr.
3. When deep-setting pails are used, the water in the creamer or tank should be kept below 45° Fahr. or as near 45° Fahr. as is practicable. It is advantageous to have a supply of ice for use in the water.
4. When an abundant supply of cold water from a flowing spring is not available, the cooling power of fresh cold water may be applied economically by conveying it in a pipe to the bottom of the tank or creamer, and allowing the warmed water to run off