BULLETIN LXI.

DETERMINATION OF FAT IN MILK.

Babcock's Centrifugal Method.

Methods have been suggested from time to time for the rapid determination of fat in milk, useful, not simply in the chemical laboratory, but also in the creamery, the cheese-factory and the dairy. Some of these have been modified and improved, most of them rejected as impracticable. Any method suitable to the demands of analysts and dairymen must meet at least four requirements, viz :

1. It must be rapid in its work and in giving results.
2. It must be comparatively easy of manipulation.
3. It must not be very expensive.
4. It must be accurate under varying conditions.

After a thorough test in which the results have been verified by thorough gravimetric analysis, we have concluded that the method devised by Dr. S. M. Babcock, chemist of the Wisconsin Experiment Station, most nearly fulfils the above four requirements. His method was given to the public in Wisconsin bulletin No. 24, 1890, entitled "A new method for the estimation of fat in milk, especially adapted to creameries and cheese-factories."

Method of analysis. Small glass bottles are provided in which the milk is to be tested. These are seven inches high, carrying a graduated neck four inches long and one-quarter inch internal diameter. As the accuracy depends primarily upon the correct graduation of these bottles, they should be purchased only from a reliable firm that guarantee their correctness. Equal volumes (17.5 cubic centimetres) of milk and strong commercial sulphuric acid or oil of vitriol are mixed in these test bottles. The effect is that the casein is dissolved and a rim of yellowish oil begins to form on the dark purple colored solution. The test bottles are then placed in a whirling machine and while kept warm by hot water or steam the centrifugal motion forces the heavy acid to the bottom and the light oil to the top. Warm water is added and the melted oil slowly rises into the neck, the amount read by the graduations giving the percentage of butter fat in the milk. Machines may be obtained that will carry from four to sixty bottles at one time.