

The ordinary pipette consists of a glass tube enlarged into a bulb about midway between the two ends (Fig. 1). The lower stem of the pipette should be small enough in diameter to pass readily into the neck of the test bottle. It should also be drawn in to a small opening at the point, since if the opening is too large air bubbles will pass up into the bulb when measuring the sample and thus make accurate measurement impossible.

The upper stem of the pipette is marked and the pipette filled to this mark contains seventeen and six-tenths cubic centimetres (17.6 c.c.). The pipette should be so constructed that the graduation mark is low down on the stem and quite close to the bulb.

The construction of the automatic pipette is shown in Fig. 2. The novice will measure the sample more quickly and possibly more accurately with the automatic pipette than with the ordinary pipette. The automatic pipette is more likely to be broken and is more expensive.

THE MILK TEST BOTTLE.

The construction of the milk test bottle is illustrated by Fig. 3. The bulb of the bottle is about one and one-quarter inches in diameter, and should have a capacity of, at least, forty-five cubic centimetres (45 c.c.). The neck of the bottle is about four inches in length and is graduated to read the percentage of milk fat when the test is completed. The graduation consists of ten main divisions numbered from zero at the bottom to ten at the top. Each division represents one per cent of fat and is subdivided into five equal subdivisions, consequently each subdivision represents one-fifth or two-tenths of one per cent of fat.

THE ACID MEASURE AND ACID BURETTE.

The acid measure (Fig. 4) is a small cylinder graduated to contain seventeen and five-tenths cubic centimetres (17.5 c.c.). Frequently an acid burette (Fig. 5) is used instead of the acid graduate. Each division on the scale of the burette represents 17.5 c.c. A stand with a clamp attached is used to hold the burette.

THE CENTRIFUGE.

The centrifuge (Fig. 6) is a machine for whirling the bottles in making the test. It is fitted with swinging pockets to receive the test bottles and when the machine is in motion the pockets assume a horizontal position. The machine is usually driven by either hand power, or by a steam jet or turbine. Hand-driven testers are usually made to receive either two, four, eight, ten or twelve bottles, while the turbine testers will usually receive either twenty-four or thirty-six bottles. The two-bottle and four-bottle hand testers are not made with a covering frame. The larger capacity hand testers are constructed with a frame (usually cast metal) which closes in the bottles when the machine is running, which aids in keeping the samples warm. Where steam is available and the amount of testing to be done will warrant the additional expense, the turbine tester is preferable as it keeps the samples hot while being revolved.

THE REQUIRED SPEED OF THE CENTRIFUGE.

The speed at which the tester should be revolved is usually stated on the machine and varies with the diameter of the circle described by the *bottom of the bottle* in revolving.

The following table of speeds for machines of different diameters is given by Farrington and Woll in "Testing Milk and its Products":—

Diameter of Circle.	No. of Revolutions of bottle per Min.	Diameter of Circle.	No. of Revolutions of bottle per Min.
10 inches.	1,074	18 inches.	800
12 "	980	20 "	759
14 "	909	22 "	724
16 "	848	24 "	693