

PROTECTING THE ALKALINE SOLUTION FROM THE AIR.

The alkaline solution must be protected from the air since if exposed to air it weakens, due to the neutralization of the alkali by the carbonic acid of the air. The most common form of acidimeter is arranged to syphon solution through glass and rubber tubing from the bottle into the burette. The air admitted to the bottle to replace the solution drawn out, is first passed through the alkaline solution in a small "wash bottle" to neutralize the carbonic acid. This method of protecting the solution from the carbonic acid has not been entirely satisfactory. Prof. W. O. Walker of Queen's University, Kingston, Ont., has recommended covering the surface of the solution in the bottle with kerosene which prevents air from coming in contact with the solution.

MAKING THE TEST.

In determining the per cent of acid in a sample of milk, one should first see that all glassware is perfectly clean. The sample is poured to ensure uniformity and by means of the 10 c.c. pipette, 10 c.c. of milk is measured and delivered into the cup or beaker. The pipette should be rinsed with a few cubic centimetres of distilled water or clean rain water, and the rinse water added to the cup. Three to five drops of the indicator solution are now delivered from the dropper bottle into the cup and the burette filled with solution to the 0 mark on the graduation scale, care being taken that no air remains in the tip of the burette. Solution is now carefully dropped from the burette into the milk in the cup, and the milk and solution constantly mixed by stirring with the glass rod. The solution is added until a faint pink colour is obtained uniformly throughout the mixture, which indicates that the neutral point has been reached. If one ceases adding the solution at the correct point, this faint pink colour will disappear in a few seconds due to the action of the carbonic acid on the air. *Sufficient solution should not be added to make the pink colour permanent, as the neutral point will have been passed and the mixture in the cup will be decidedly alkaline.* The number of cubic centimetres of solution drawn from the burette is now noted, and each 1 c.c. used represents .1 per cent of acid in the milk; therefore, to determine the per cent of acid in the milk, multiply the number of cubic centimetres of solution used by .1. For example, if 2.1 c.c. of solution have been used, the per cent of acid in milk equals $2.1 \times .1 = .21$.

PREPARATION OF THE ALKALINE SOLUTION.

As previously stated, the alkaline solution is a caustic soda solution of strength known as $\frac{n}{9}$, which means that in each 1000 c.c. of the solution there are 4% grams of chemically pure caustic soda. Owing to the difficulty of getting caustic soda absolutely pure and free from moisture, the solution is not prepared by weighing out a definite quantity of caustic soda and dissolving the same in a definite volume of water. A $\frac{n}{9}$ acid (usually hydrochloric) solution is prepared by a trained chemist and the alkaline solution made of such a strength that the $\frac{n}{9}$ acid solution and the alkaline solution neutralize each other in equal volumes; that is, 10 c.c. of the $\frac{n}{9}$ acid solution will exactly neutralize 10 c.c. of the alkaline solution. The alkaline solution will then be $\frac{n}{9}$.

The cheese or butter maker who wishes to prepare the standard alkaline solution for himself should secure a quantity of the standard $\frac{n}{9}$ acid solution from one of the