

NOTE.

A Simple Ventilating Tube for Fermentations.—In carrying on fermentations in flasks and other vessels, some means must be provided for permitting the gases generated to escape, which will at the same time prevent the entrance of all foreign organisms. Various forms of trap tubes have been devised to accomplish this result, all of which have various disadvantages. While engaged in the study of the fermentation of Cactus fruit at this Station, the author devised a very simple, efficient and inexpensive form of ventilating tube, which overcomes most of the disadvantages of the other forms. When the flasks containing the fermentations are weighed at regular intervals, there is no necessity for being able to see the evolved gas bubbling through a liquid seal in order to determine at what rate the fermentation is proceeding, or to find out when it is finished.

The ventilation tube consists of a short piece of glass tubing constricted to a small opening at one end. This tube is filled with asbestos fiber, packed fairly tight. Each morsel of asbestos is passed through a bunsen flame just as it is pushed into the tube.

The manner of using this tube is as follows: The rubber cork *without* the tube is inserted into the fermentation flask, usually an Erlenmeyer flask, containing the material to be fermented. If it is to be sterilized, that process is then carried out, and when it is time to cease the sterilizing, the glass tube filled with asbestos is heated in a flame to a temperature somewhat above the boiling point of water, but not hot enough to injure the rubber, and just as the heat is removed from the flask, this glass tube is inserted into the hole in the rubber stopper. The object of this manipulation is to avoid wetting the asbestos with escaping steam during the boiling of the solution, and at the same time to prevent any air from passing into the flask as it cools, without filtering that air through the asbestos in the tube, which effectually retains all dust and organisms. When the whole is cold the rubber stopper carrying the tube is of course easily removed momentarily, while the yeast culture is added. The gas generated during the progress of the fermentation easily escapes, while no foreign organisms can enter. In the case of the use of acetic or other ferments which cause an absorption of oxygen, this tube would be especially suitable for supplying sterilized air to the culture.

The tube is easily made, is not fragile (a feature that will be appreciated by those who have worked much with some of the more recent forms), and is very cheap; if it becomes soiled it may be rejected and a new one made, or the asbestos may be easily replaced by fresh.

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