cial attention has been given to the knives used for mincing vegetables, since their composition may be important. Furthermore, in large-scale cookery salads are often prepared one or more hours before they are served. Therefore, attention was given to the rate of disappearance of ascorbic acid. All analyses were run by the method of Bessey.[4]

The procedure followed was to remove the vegetables from cold storage. A liberal sample was set aside without cutting. Another sample was thinly sliced with a plastic knife. A third was sliced with a steel knife. A fourth was put through the Buffalo grinder. The samples were then taken to the laboratory. The original time of cutting was recorded.

At the laboratory samples of the intact vegetable were prepared for immediate analysis by mincing on a wooden board with a plastic knife. The other samples were run one half hour and two hours after the initial slicing.

Typical data are shown in Table 1. These data indicate the losses that result from both the knives used in cutting and from the time of standing of the cut vegetable. Possibly some form of plastic bowl and knife can be devised for the "Buffalo chopper." Wherever possible salads should be prepared with large pieces of fruits or vegetables prepared just before serving.

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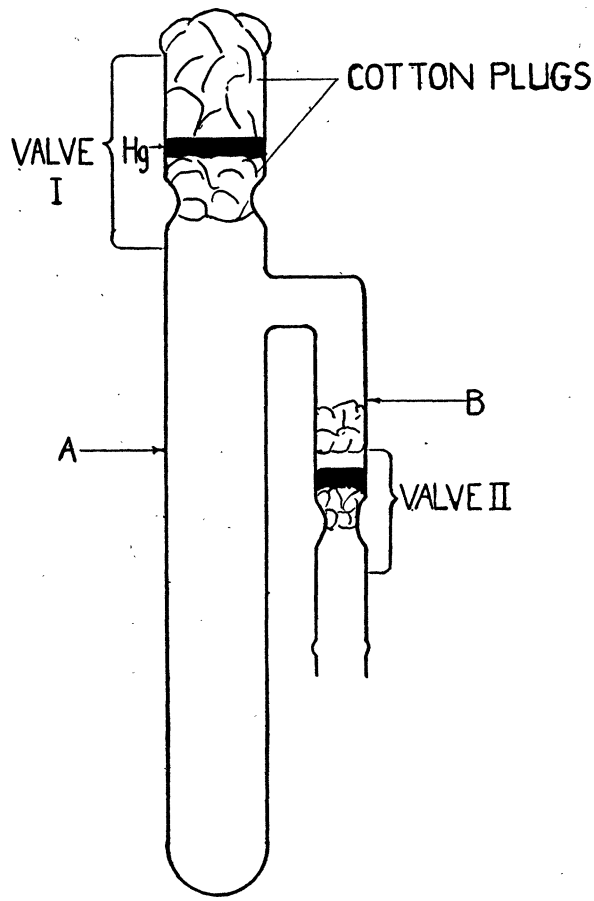
SCIENTIFIC APPARATUS AND LABORATORY METHODS

A SIMPLIFIED LABORATORY CHECK VALVE AND ITS APPLICATION IN THE CONSTRUCTION OF ANAEROBIC CULTURE TUBES

SINTERED glass filters have been used as one-way or check-valves in a variety of ways.[1] However, besides being difficult to construct, these are relatively expensive. An inexpensive substitute may readily be realized in any laboratory simply by floating mercury over a cotton or glass wool plug contained in the constricted portion of a tube. This valve will not permit the passage of air into the tube, but will relieve the slightest pressure of gas within.

In certain applications a check valve of the type described above possesses an advantage over the sintered glass type. This is particularly true of its application in the construction of bacteriological tubes for the growth of anaerobes. Fig. 1 shows a tube constructed in this laboratory for the cultivation of *Clostridium acetobutylicum*. *A* is a 22 × 175 mm test tube to which tube *B* (approximately 10 mm diameter) is sealed as a side arm. Tube *A* contains a constriction in which a cotton or glass wool plug fits snugly. Mercury is floated over this plug to a depth of at least ¼″; and above this mercury a cotton plug is inserted to prevent splattering. A sheet of paper fastened over the open end may be used to accomplish the same purpose. Tube *B* is bent at right angles. Below the bend a check valve is assembled in the same manner as indicated above. The use of the tube is illustrated in what follows.

Medium is introduced into tube A, and the tube and its contents are sterilized with the cotton plugs of valve I, and the plugs and mercury of valve II in place. Following sterilization and cooling, the in-



[4] O. A. Bessey, *Jour. Biol. Chem.*, 126: 771, 1938.

[1] A. A. Morton, "Laboratory Technique, Organic Chemistry," McGraw-Hill. 1938.

oculum is introduced aseptically into *A*, the lower cotton plug is re-inserted and covered with a layer of mercury, and then the upper plug is inserted. Inert gas is introduced through tube *B*, care being taken to regulate the flow so that excessive splattering is avoided. A rate of about 2 cc per minute is not excessive. The gas bubbles through check valve II and out of valve I. The tube following the displacement of air is now ready for incubation. Gases formed in *A* are vented through valve I. Following active fermentation the tube remains sealed against losses of volatile substances.

Following a run, check valve I is readily disassembled, and the tube may be cleaned and prepared for the next run. Valve II may also be disassembled to facilitate cleaning.

An advantage over sintered glass disc filters lies in the ease with which valve I is disassembled to permit the introduction of inoculum, and to permit the cleaning and re-use of a tube.

If more thorough displacement of air is desirable a tube connected to *B* by means of an inner seal and leading to the bottom of *A* may be introduced. With certain organisms, side arm *B* and valve *II* may be dispensed with. Thus with heavy inoculum of *Cl. acetobutylicum*, growth may start at the bottom of the medium, and gases given off may render conditions sufficiently anaerobic for fermentation to proceed.

In using glass wool plugs as supports for the mercury, care should be taken to prevent loose fiber from extending too far into the mercury, a condition which permits leakage of air into the tube.

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A CANNULA WITH OBTURATOR FOR USE IN ARTERIAL PRESSURE MEASUREMENTS ON SMALL ANIMALS

IN the course of experiments on rats subjected to severe hypothermia, attempts to measure the arterial pressure using the conventional type of arterial cannula failed because of repeated clotting in the constricted portion of the lumen. A cannula provided with a closely fitted obturator which could be left within the narrow tip except during actual registration of pressure aided greatly in maintaining a patent recording system.

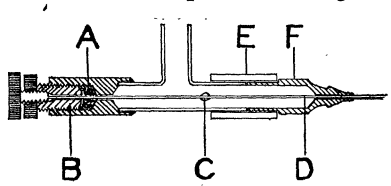

FIG. 1

The cannula was constructed from a 22 G. hypodermic needle (F), with the shaft of the needle cut to 6 mm and the flanges of the hub ground off to form a smooth cylinder. The needle tip was ground to a blunt bevel. The body of the cannula, to which the needle was joined by a short piece of rubber tubing (E), was made of a T tube of 5 mm glass tubing with each arm of the T cut to a length of 1 cm. The sliding obturator (D) was arranged in the longer axis of the cannula so that it moved within a brass gland (B) cemented to the glass T tube and filled with graphite-impregnated packing (A). The nickel-silver obturator was soldered to a threaded plug which could be screwed firmly into the gland. On the shaft of the obturator was fixed a bead of solder (C) in such a position that it would arrest the movement of the shaft when it had been withdrawn far enough to remove the tip from the lumen of the needle. With the cannula assembled, the obturator pushed completely into the needle and screwed into place, the obturator was ground to a bevel to match that of the needle.

The use of the cannula involved the usual procedure of filling the cannula and recording system with anticoagulant solution, securing the cannula within the vessel and balancing the pressure in the manometer system against the expected arterial pressure. Communication between the artery and the recording system was accomplished by withdrawing the obturator long enough for the desired measurement of pressure. In the intervals between measurements, the obturator was pushed into the lumen of the needle and left in place until the next determination. Thus any blood clot which had formed in the needle during the course of pressure recording was broken up and pushed out of the cannula.

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