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.

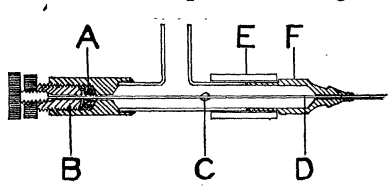

FIG. 1

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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