gest that the contents of the first pair of glands are used by the cercaria to make its way through the tissues of its snail host.

The identity of *Cercaria parvus* was proved experimentally by rearing adult worms from cercariae and also by rearing cercariae from eggs produced by these adult worms. A detailed comparison of this species with descriptions of *C. wardi* Miller (1923) shows that they differ only in the presence of a dorsal crest on *C. parvus*. A corresponding structure was not described for *C. wardi*. Despite this apparent difference there is a possibility that they are identical. *C. parvus* in its position when floating or resting on the bottom differs from *C. elephantis*, which it closely resembles in structure.

A more complete description of the stages in the life history of this trematode and the development of its excretory system will be presented elsewhere. These researches were supported by a fellowship of the General Education Board.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

AN AUTOMATIC ZERO PIPETTE FOR DISPENSING STERILE CULTURE MEDIA[1]

AN apparatus constructed in this laboratory in connection with chemical studies on the nature of disease resistance has proved to be convenient in sterilizing and aseptically dispensing measured amounts of liquid culture media into sterile flasks. It is particularly useful when large numbers of flasks are to be filled, as in testing the inhibitory effects of organic compounds using the alcohol sterilization technic described elsewhere.[2] The details are shown in the figure; the measuring device resembles the automatic zero pipettes commercially available but is especially adapted for aseptic use.

The apparatus was made of Pyrex glass throughout and requires one No. 7/25 Standard Taper joint and one three-way stopcock with 2 mm bore; the other parts are readily constructed by any one with an elementary knowledge of glass blowing.

To prepare the apparatus for autoclaving, an upright Erlenmeyer flask of appropriate size (generally 4 liters) containing the nutrient medium is closed with a two-hole rubber stopper bearing the measuring device and an air vent tube A. The stopcock is turned so that air can escape from the flask through the pipette and the openings are plugged with cotton as indicated. The L-shaped tube B leading to the stopcock is pushed as far as it will go into the rubber stopper so that a minimum of head room in the autoclave is required; the level of the liquid in the flask should be below the end of this tube. The air vent tube, which is made of a 2 mm capillary and extends to the bottom of the flask, is closed with a No. 0 rubber stopper to prevent loss of liquid through the tube; this stopper must be removed as soon as the autoclave is opened to prevent the solution from reaching the cotton plug. After the large stopper is fastened in place with the clamp, the top of the flask and the pipette are covered with a folded sheet of wrapping paper and the apparatus placed in the autoclave.

When the system has cooled and is to be used, the paper hood is removed, the stopcock turned to an off position and the L-shaped tube carefully pulled out of the stopper until the end is practically flush with inner surface of the stopper. The expanded rings C of the tube in the stopper aid in preventing any leakage or tendency of the tube to come out of the stopper

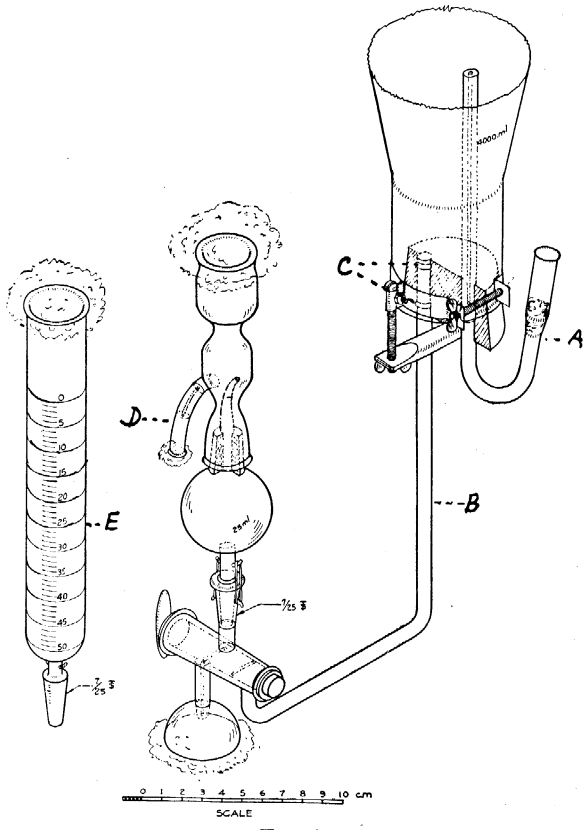

FIG. 1

[1] Approved by the director as contribution No. 598, Technical Series, of the Texas Agricultural Experiment Station.

[2] Glenn A. Greathouse and Neil E. Rigler. Quantitative Comparison of Methods for Sterilizing Solutions of Organic Compounds Used in Culture Media. (In press.)

too readily. The apparatus, after being inverted, is placed in a large split iron ring attached to a ring stand and then has the appearance indicated in the drawing. The cotton in the side arm D of the overflow vessel is removed and a glass tube (not shown) is attached to it by means of a short rubber tube. This glass tube conducts the overflow to a beaker sitting on the table top. The 1 mm constriction in the side arm provides a liquid seal to prevent any chance of contamination through that member. The cotton plug is then removed from the bell-shaped shield and the apparatus is ready for use. The stopcock is turned so that the pipette fills. When a few drops of liquid have run out of the tip at the top, indicating that the pipette is completely filled, the stopcock is turned through 180° and the measured quantity is discharged into a sterile flask which is placed on the table underneath the bell. The interchangeable ground glass joint is provided to facilitate the use of various-sized pipettes from 10 to 100 ml. When different amounts of one solution are to be measured, but with less rapidity and accuracy, a graduated burette E can be inserted, instead of the pipette, by means of the interchangeable joint.

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A DRY-ICE FREEZING UNIT FOR CUTTING FROZEN SECTIONS

THE advantages in time-saving of different freezing methods in cutting microscope sections is well recognized, but available techniques are in many cases difficult or costly to use. Freezing by carbon dioxide gas is both costly and tedious in practice. The use of commercially available dry-ice freezing units has some disadvantages. Ordinarily these units are too small for pieces of tissue larger than 2 square cm, they fail to freeze the tissue uniformly, since the dry-ice container is arranged on an arm extending from the tissue table, and they do not hold enough dry ice to keep the tissue at a uniform temperature for a sufficiently long period of time.

In order to facilitate the cutting of rather large brain sections, a dry-ice freezing unit has been devised to eliminate many of the difficulties described above. The unit is constructed so that it can be used on different kinds of microtomes.

Fig. 1 presents a diagram of the apparatus in cross-section. The device consists of a cylindrical cast-aluminum container, constructed with a center table, to which is fitted a bakelite support. The block of tissue to be sectioned is placed on the center table, which is grooved in concentric circles, and powdered dry ice is packed around it within the container. The bakelite support is clamped to the block-holder of the microtome.

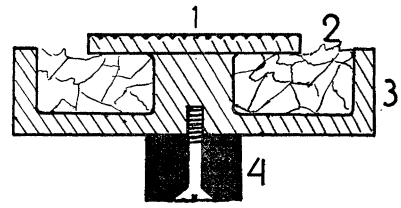

FIG. 1. The Dry-ice Freezing Unit: 1 represents the circular table of the freezing unit, 2, the circular container into which the dry ice is packed, 3, the side wall, and 4, the bakelite support, which is clamped into the block-holder of the microtome.

The dry-ice container measures 8.4 cm in diameter, 2 cm in height, and has a wall and base 0.4 cm thick. The tissue table is supported at the center of the container on a base 1.5 cm in diameter. The table itself is 5 cm in diameter and 0.5 cm thick, and is raised 0.2 cm above the wall of the container in order to avoid the possibility of fouling the knife. The hexagonal bakelite support is 1.5 cm high and 2.5 cm in width. Additional economy of space may be secured by constructing the apparatus so that the base support may be clamped directly in the microtome, thus eliminating the block-holder.

Using this device, complete frontal sections of the brains of large dogs, 30, 40 and 50 microns in thickness, have been cut very satisfactorily. The tissue is frozen uniformly since the tissue table is completely surrounded by dry ice. The dry ice keeps well, for it is partly enclosed within the container. Furthermore, the container is insulated from the metal of the microtome by the bakelite support. In these respects the freezing unit described has been found superior to other devices of this sort, both those which utilize dry ice or carbon dioxide gas in order to freeze the tissue.[1]

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[1] The freezing unit described may be obtained from Merle Hanford, Physics Department, University of Rochester, Rochester, N. Y.

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