Histological examination has failed to show any significant difference between the colored and normal larvae. In every case control cultures were grown from the same stock and on food from the same supply, and none of the controls showed coloration or any other apparent deviation from normal.

Although the temperature in the discharge may have risen slightly, the temperature of the air throughout the bottle was not appreciably raised. In the polonium experiments no heating was possible. Also, while ozone and oxides of nitrogen are produced in a discharge, very little of either could have been present during the polonium experiments.

Flies from the same stock were treated by placing cultures in a drying oven at 33° C., and others in a desiccator containing calcium chloride. Although after several days all larvae in these cultures died, no coloration was apparent.

It would thus appear that ionized air is capable of producing an effect on living material.

C. T. CHASE
C. H. WILLEY

NEW YORK UNIVERSITY
UNIVERSITY HEIGHTS

APPLICATIONS OF PERVAPORATION

PERVAPORATION was discovered by Kober[1] in 1917, to whom we owe most of the information regarding its usefulness. Holmes[2,3] briefly outlines the method and its uses. Outside of these references the method appears to have been practically entirely overlooked. Since it has proved so efficient in this laboratory, it was felt that this very useful procedure should be brought to the attention of other workers.

The apparatus used by the writer is illustrated in Fig. 1. The figure is self-explanatory. Cellophane casing is used instead of the collodion membrane described in the original paper; the fresh casing should be soaked in distilled water for a few hours before use.

The apparatus has been successfully employed by the writer for the concentration of very dilute protein solutions with the simultaneous removal of salts and for the concentration of aqueous and aqueous-glycerol solutions of enzymes. The rate of concentration of glycerol solutions is, however, considerably slower, and more frequent washing of the bag is necessary to remove the glycerol from the outside.

Large quantities of water can be evaporated in a relatively short time at room temperature or even slightly below this. For example, using a bag 18″ x 3″, approximately 1 liter of water per 24 hours was removed, the average temperature inside the bag being 20° C.

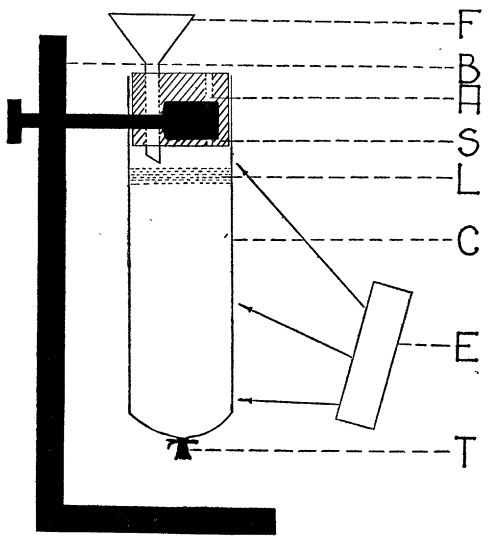

FIG. 1. Apparatus for Pervaporation. A, air vent; B, burette stand; C, Cellophane casing; E, electric fan; F, funnel; L, layer of toluene; S, rubber stopper; T, tied end of bag, dipped in paraffin.

The advantages of pervaporation are the simplicity of the necessary apparatus, the ease of manipulation and the little attention required during the operation. All that needs to be done is to refill the bag from time to time and to wash off its outside. In addition operations can be carried out under sterile conditions, and with a battery of pervaporators to take care of very large volumes of liquid.

LIONEL FARBER

UNIVERSITY OF TORONTO

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[2] Holmes, "Introductory Colloid Chemistry," 3rd Ed., p. 18, John Wiley and Sons, Inc., New York, 1934.
[3] Holmes, "Laboratory Manual of Colloid Chemistry," 2nd Ed., p. 30, John Wiley and Sons, Inc., New York, 1928.

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