IN THE LABORATORY

A Method for Silvering a Dewar Flask for Optical Experiments

JOHN S. HAYNES and JESSE F. SCOTT

Department of Biology,
Massachusetts Institute of Technology

For the purpose of studying the interaction of light with various organic compounds at the temperature of different liquid gases, an all-quartz Dewar flask with optical windows was obtained.

The silvering of the space to be evacuated without also silvering the windows presented something of a problem, the following solution of which was thought to be of possible interest to other workers.

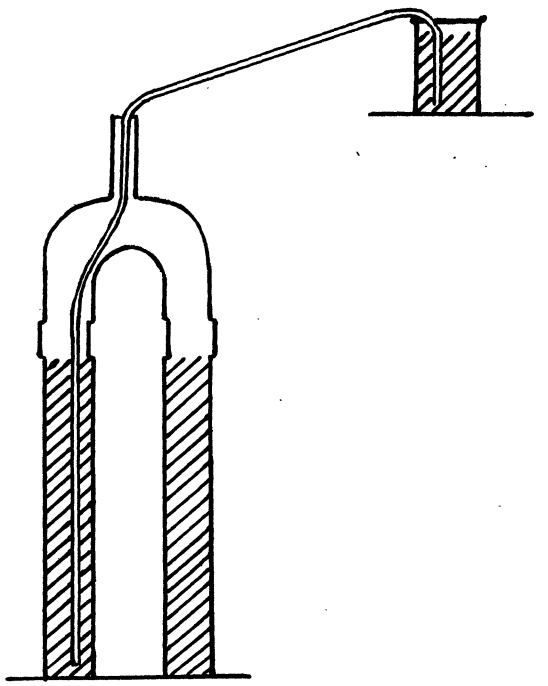

FIG. 1

It was necessary to introduce the silvering solution through an inlet of 5-mm diameter. A #12 French ureteral catheter (available through any surgical supply house) was employed. With the Dewar inverted, the solution was introduced through the catheter by siphon action to the level of the windows (Fig. 1); the catheter remained in place the requisite time for silver deposition and served to siphon off the spent solution. The deposit was then gently washed with distilled water.

To silver the area between the bottom of the flask and the windows, the Dewar was held upright, the catheter placed above the desired fluid level to release the air displaced by the solution, and the silvering solution introduced by gravity through a rubber tube placed over the

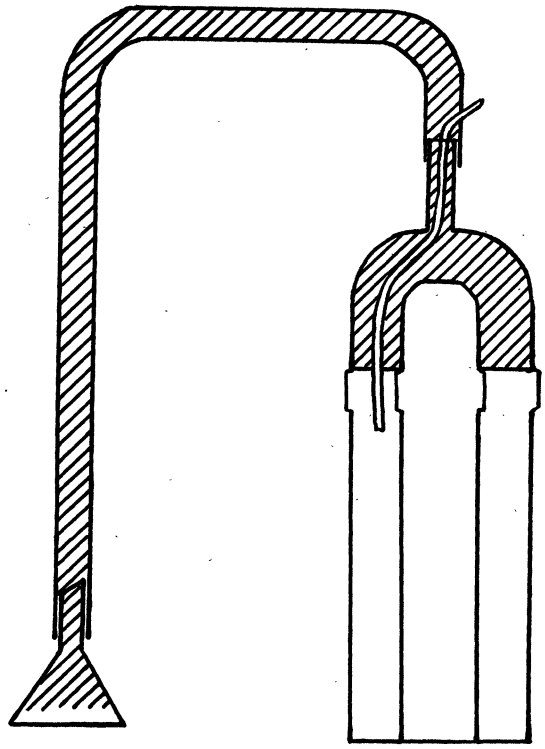

FIG. 2

inlet. The outlet of the catheter was exteriorized through a hole in the rubber tube (Fig. 2).

The remaining unsilvered band about the flask—at the level of the window—was silvered in two steps with the

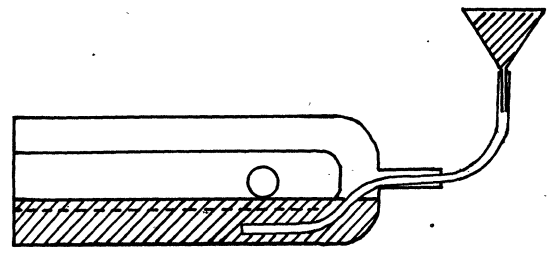

FIG. 3

flask in the horizontal position, as illustrated in Fig. 3, the catheter again being used as a siphon tube. The end result was complete silvering of surfaces of the space to be evacuated save for a square area enclosing the circular windows.