for identifying and determining the concentrations of substances having characteristic absorption bands, such as bilirubin, hematoporphyrin and methemoglobin.

ELY PERLMAN,
Research Fellow, Pneumonia Service, Harlem Hospital
NEW YORK UNIVERSITY COLLEGE OF MEDICINE

PERIODIC DISCHARGING OF LIQUIDS AND INTERMITTENT WASHING OF SOLIDS

A VERY efficient method of washing solids is an intermittent addition and draining of the solution. Also it is desirable in certain cases to add solution quickly for agitation but to drain slowly because of diffusion limitations from the surface or interior of the material being washed. Further, many substances such as shredded gels, being fragile, are partially lost in washing if agitation is done mechanically or by forcing gases through the bulk material.

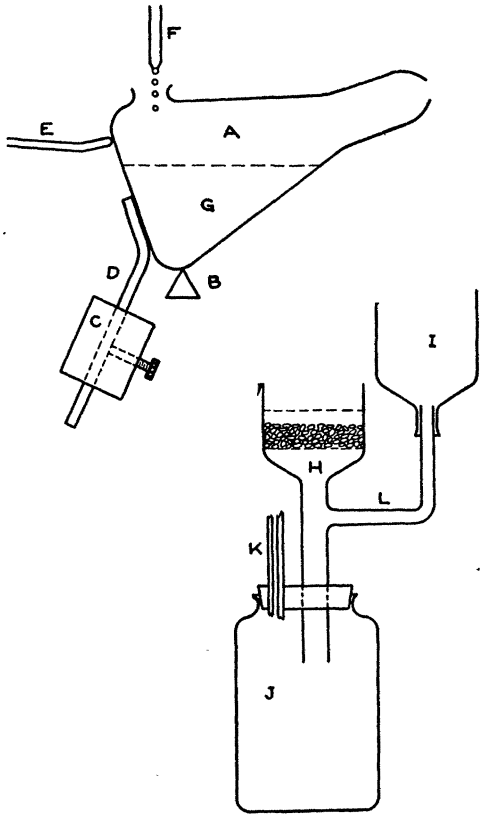

FIG. 1. Intermittent washing of solids.

We have devised a handy apparatus that can be set up in the laboratory. It is schematically shown in Fig. 1. A is merely an Erlenmeyer flask of appropriate dimensions with the mouth drawn down somewhat and a hole blown near the bottom. The flask rests on a fulcrum, B, and an adjustable weight, C, is attached to the flask by a rod D. B can include the holder for A, not shown in the diagram.

The sensitivity of the device depends on the unstable equilibrium, which in turn is influenced by the distance of the point of contact of the fulcrum from the center of gravity of the tilting flask containing liquid. With the appropriate dimensions the balance is maintained by moving C to the right position.

A stop bar, E, places the flask in the correct position for filling from a tube, F, and a slight adjustment of E also controls the amount of solution that will just dump. Obviously, the shape of the container is the cause of the mechanism shifting its center of gravity so that it functions on reaching a desired volume of wash solution. With a 500 cc flask the solution is delivered in 5 seconds.

The remainder of the figure is self-explanatory, H being a Buchner funnel and K a capillary that is adjustable. We have arranged that 500 cc drains in 3 minutes, while A fills in 5 minutes. The 111 mm inside diameter funnel will hold about 200 cc of material to be used. J is large enough to collect any sediment from the solid material so that K is not in danger of clogging.

The device is especially adaptable for washing such fragile material as shredded gelatin gels. The thinner the layer of material in the funnel the more uniform should be the washing. Funnels of larger diameter for the same weight of solid can be used for this purpose. No apparent difficulties are foreseen for making A any size desired.

C. L. GRAHAM
RAYMOND H. LAMBERT
RESEARCH LABORATORIES,
EASTMAN KODAK COMPANY

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