and particularly to Dr. MacMunn, of Wolverhampton, the recognized expert in the spectroscopy of animal pigments.

TRANSFERRING WASH SOLUTIONS.

THE tube, *a*, *b*, is kept full and gently overflowing with water by connection at *a* with the town water supply, the excess being conducted to a sink through the pipe, *c*, *d*. When the cock, *e*, is opened the tube, *a*, *b*, tends to empty itself into the large bottle, *F*, which at the start is full of air. The air in *F* is consequently under pressure to a degree determined by the height of the column of water in *a*, *b*, and the pressure under which it is flowing out at *b*. This com-

pressed air is conducted by $\frac{1}{4}$ inch lead piping to various convenient parts of the laboratory, where any wash bottle with the customary short and long tubes may be attached by its short tube, and the wash water delivered through a nozzle. In the laboratory of the authors the bottle used is one large enough to suffice for half a day's continuous use, after which the water is allowed to drain into the sink by opening the cock, *h*.

A WASH FUNNEL FOR OXIDIZABLE PRECIPITATES.

By J. A. FORRET.

THE funnel, *A*, is fitted with a perforated metal cone, and covered with a circular piece of wood carrying three glass tubes (*B*, *C*, and *D*), to which are attached India rubber tubes furnished with spring clips. The wooden cover has also a glazed aperture as large as the diameter of the funnel will admit, to enable the operator to see the contents of the funnel. To the stem of *A* is fitted a piece of India rubber tubing, *F*, into the other end of which a short glass tube is inserted; underneath is placed a beaker or basin of convenient size containing water, under the surface of which the glass tube dips. Into the tube, *D*, the stem

of a second funnel, *E*, is inserted; both funnels are conveniently supported in the rings of a retort stand. The apparatus is used in the following manner: A piece of fine calico is placed inside the metal cone, and the wooden top cemented to the funnel, *A*, by means of almond meal made into a stiff lute with water to which a little glycerine has been added. The tube, *D*, is closed, and a current of coal gas, carbonic anhydride or other suitable gas is passed through the funnel by the tubes, *B* and *C*, to displace atmospheric air. The precipitate to be treated is poured into the funnel, *E*, and by means of the clip at *D* rapidly transferred to the funnel, *A*. When the bulk of the water has passed through the funnel, the tube, *F*, is closed by a clip, and the funnel, *A*, filled with boiled water through

the funnel, *E*. After the lapse of a few minutes the water is run off and the operation repeated till the precipitate is practically free from soluble salt. The tube, *C*, is now closed and the precipitate allowed to drain.

It is desirable to maintain a gentle current of gas while the washing is being carried through; and when the tube, *C*, is closed, the resulting pressure guards against the entrance of atmospheric air through any flaw in the connections.

Ferrous carbonate is the only salt I have had occasion to treat in this way, the wash bottle referred to being used to precipitate the carbonate. With some slight modification of the funnel, *A*, however, I believe the above arrangement could be conveniently used both for precipitating and washing such unstable salts as ferrous carbonate, ferrous phosphate, etc.—*Chem. and Drug.*

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