A GLASS EXTRACTION APPARATUS.*

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In connection with the chemical investigation of indigenous medicinal plants, large quantities of plant products such as roots, seeds, bark, etc., had to be extracted with different solvents whose boiling points ranged between 35 and 100° C. For this purpose most of the commonly described forms of apparatus† had some disadvantage or other and it became necessary to devise a glass apparatus wherein the use of corks and rubber could be reduced to a minimum. The newly introduced ground-glass joints facilitated the work.

The flask for the solvent may be either a two-necked one (A), or a large sized distillation flask, and is set on an electrically heated water-bath (B). The material to be extracted is placed in a modified Woulf's bottle (C) with two openings at the top and one at the bottom. A long double-surface condenser fits into the larger opening at the top which also serves for introducing the material into the bottle. The second opening is connected to the vapour inlet tube (D). The narrow opening at the bottom is joined on to the siphoning arrangement. Before charging the bottle, a little purified cotton-wool is loosely packed behind this outlet, in order to prevent the siphoning liquid from carrying with it any of the solid material.

The siphoning arrangement is made of ordinary glass tubing and a T piece (E) connects it with the bottle as shown in the diagram. The introduction of a two way stop-cock (F) permits the use of the apparatus either as a Soxhlet or as a continuous percolator. By varying the length of the bent tube (G) the same apparatus can be used for the extraction of smaller quantities of material.

The apparatus may be made of any desired and convenient size. A few observations on the relative sizes of the various parts may be noted. The capacity of the flask should be the same as that of the bottle. The inside diameter of the vapour inlet tube (D) should

*The rights of manufacture are under negotiation.
be five times that of the tube used for siphon arrangement. The most convenient sizes have been found to be 15 mm. and 3 mm. respectively. If the extractor is made in sizes above 3 litres two condensers will have to be ground in at the top of the extraction chamber.

A few rubber connections are retained in order to give the apparatus a certain amount of flexibility. Otherwise, if the parts are not truly set a considerable amount of strain would be induced, and that would cause easy breakage of the more delicate parts. Since, however, the openings of the glass parts inside these connections are nearly flush with one another, the surface of rubber exposed to the action of the solvent will be negligible.