XXXIX.—*An Improved Soxhlet Extractor, and Apparatus for Distilling in a Vacuum.*

By J. LEWKOWITSCH, Ph.D.

(1.) *An Improved Soxhlet Extractor.*

WHEN using the ordinary form of Soxhlet extractor, there is always a doubt as to the exact time when the substance is completely extracted, unless the whole apparatus is taken to pieces, and a test made by putting a fresh supply of the solvent into the extractor. As a rule, therefore, the extraction lasts far longer than is necessary, and this involves not only loss of time but also of the volatile solvent. To avoid this, I use a Soxhlet extractor, fitted up with a test tap in the syphon-tube as shown in Fig. 1; this allows a few drops of the solvent to be drawn off at any time to see whether it contains any of the substance to be extracted.

(2.) *Flask for Distilling Frothing Liquids in a Vacuum.*

On distilling frothing liquids in a vacuum, it has always been found useful to allow a very small quantity of air or of an indifferent gas to pass through the liquid by means of a finely-drawn tube, reaching nearly the bottom of the distilling-flask. When the quantity of the substance is small, and a small distilling-flask has to be

360 LEWKOWITSCH: AN IMPROVED SOXHLET EXTRACTOR.

used, it will be found almost impossible to insert at the same time both a tube of this kind and a thermometer. In this case, I find a distilling-flask of the form of Fig. 2 very convenient.

FIG. 1.

FIG. 2.

(3.) *An Adapter for Fractional Distillation in a Vacuum.*

Numerous pieces of apparatus for this purpose have lately been described, most of which are very complicated, and, therefore, out of the question in a laboratory, where fractional distillation in a vacuum has to be performed daily. I recommend, therefore, in cases where a vacuum-pipe with several taps is available (or a second water injector-pump) an adapter like that shown in Fig. 3. The tube *a* is connected with a Liebig condenser, and *b* and *c*, by means of india-rubber tubing, with two taps of the vacuum-pipe. On starting, the distilling-flask, the adapter and the Erlenmeyer flask are exhausted through *b* and *c*, the stopcock *d* being open. When the first fraction is collected, the tap *d* is closed, whereby the Erlenmeyer flask is shut off from the vacuum-pipe *b*, and it is then filled with air by disconnecting the india-rubber tubing from *c*. The Erlenmeyer flask can now easily be taken off, and emptied or replaced by another, while the distillation is carried on without interruption. When the Erlenmeyer flask is fitted on again, it is exhausted at *c* as before, the tap *d* opened, and the second fraction collected. I have used this adapter for some years, and found it work most satisfactorily.

FIG. 3.