

Continuous Extractor for Rapid Work

DOUGLAS HENVILLE, in *The Analyst* for July, 1928, reports the development of a continuous extractor. "This apparatus," he writes, "was devised for the rapid extraction of large quantities (50 grms.) of materials from which the oil or other soluble substance can be easily extracted, such as the extraction of phenols from carbolic powders having a siliceous base.

"The bottom of the extractor is packed with cotton wool or other suitable filtering medium. It is preferable to use one complete piece of cotton-wool, as, if several layers be used, air is enclosed between them which may rise during the extraction and disturb the

"Where the extract is heavy, as in the case of the extraction of phenols, etc., or where a considerable depth of a fine powder is being extracted, a certain amount of 'head' is at first necessary to drive the extract over and distillation is continued until a rapid flow of solvent is obtained; in addition, air bubbles have a retarding effect, but these gradually disperse.

Space Left to Develop Head

"A large margin of space to allow for the formation of this 'head' has been allowed in the design of the apparatus. The 5 gm. size extractor has also been made of such a diameter that the 3 to 5 gm. quantities usually taken for extraction form a shallow layer and do not obstruct the passage of the solvent.

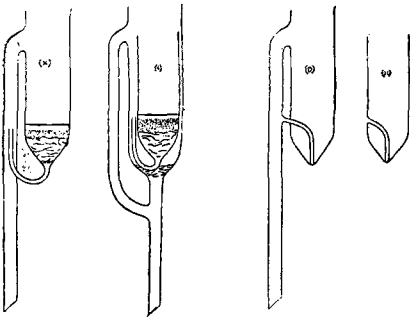
"The drawing (X) shows the complete extractor and the drawing (O) shows another type in which the small tube is placed inside.

"The apparatus has the following advantages:

"1. Neither thimbles nor filter paper packets are necessary (they can be used if required).

"2. The substance to be extracted is always totally immersed in the solvent.

"3. The 'pressure' is directly on the solvent in contact with the material and the extracting liquid is always in motion. (In the Soxhlet extractor the 'pull' acts on the liquid outside the thimble. After each 'siphoning over' a little more extract-containing solvent drains from the thimble into the bottom, and the extractor has to be filled again before 'siphoning' takes



Types of new extractor

packing. A weighed quantity of material is introduced, and the extractor attached to a reflux condenser. A flask containing the solvent is fitted to the stem of the extractor. The flask must not contain so much solvent that the extractor could fill up and overflow through the large side tube into the flask. The solvent is distilled into the extractor in the usual way.

place. This continues until extraction is complete.)

"4. There is a continuous and rapid flow of solvent. The rate of flow is, of course, dependent on the rate of distillation.

"5. If the apparatus be left to 'stand overnight,' the substance remains totally immersed, and when the extractor is started again the first few ml. of solvent from the condenser cause circulation to continue.

"6. As soon as the solvent is circulating easily, only a few ml. are necessary in the flask to continue the extraction.

"7. The contents of the extractor are visible.

"The extractor may be used for the extraction of substances which require no filtering medium, and

cakes, etc., in which some form of filter is necessary.

"Using asbestos as a filtering medium, cocoa has been successfully extracted without any of the fine powder passing through into the flask.

"On the same principle (1) and (2) are glass thimbles which are placed in the container shown. The thimble may rest on cotton-wool, which supplies a further filtering medium, or may rest directly on the glass, when the hot vapor will pass up and around the thimble.

"Except for special purposes, when these thimbles might be required, the complete extractor (X), as shown in the accompanying diagram is simpler and more satisfactory in use."

Book Reviews

THE INDUSTRIAL CHEMISTRY OF THE FATS AND WAXES. By T. P. HILDITCH, D. Sc., F. I. C., Professor of Industrial Chemistry (Oils, Fats, and Waxes) in the University of Liverpool, with an introduction by E. Frankland Armstrong D. Sc., LL. D., F. R. S., 8vo., XV—461 pp. D. Van Nostrand & Co., New York.

This admirable work offers what appears to be the most logical concise discussion of the chemistry of oils, fats and waxes from the viewpoint of advanced chemical knowledge, which has come to our notice.

The word "oil" is omitted from the title with purpose, as the author suggests the logical substitution of the term "liquid fat" for "fatty oil" to avoid confusion with oils of petrolic origin. An excellent suggestion, but one which is almost impossible of practical attainment, since its general adoption would

involve a radical change in the speech-habits of all persons connected with a vast, world-wide industry. For purely chemical use, however, it would promote clarity.

The author divides his work into ten sections, progressing from the chemical nature of fats and the composition of natural fats through the technology of fat production and utilization. The outstanding chapters are those on the composition and properties of fatty acids, on the distribution of fats and waxes in nature and on the physical chemistry of soap. As would be expected in a work from the pen of so eminent an educator (and in consonance with the purpose of the book, as expressed in the preface), the purely chemical chapters, including those on analysis, as well as those on composition and theory, surpass the technologic sections in