Book Review

STANDARD METHODS OF CHEMICAL ANALYSIS. INSTRUMENTAL ANALYSIS. 6th edition. Edited by Frank J. Welcher. Volume IIIA, pp. xviii + 1–974; volume IIIB, pp. xi + 975–2018 (including index). D. Van Nostrand Co. Ltd., London, 1966. Single volume, £18 18s.; if part of complete set, £16 16s.

Volumes IIIA and IIIB of Standard Methods of Chemical Analysis are concerned entirely with instrumental methods of chemical analysis: the volumes are under the general editorship of Professor F. J. Welcher and have 84 American authors as contributors.

The first of these books is devoted to instrumental techniques *per se* and these vary from a selection of spectroscopic methods through various electrochemical procedures to such aspects as gas chromatography, thin-layer chromatography and sedimentation analysis. The second volume sees the application of such techniques to various disciplines and the sixteen sections covered range from instrumental methods in clinical medicine to the determination of water, dealing en route with such diverse topics as soaps and synthetic detergents, semi-conductors, paper, wood and pulp, and pesticide residue analysis. The avowed editorial plan for each chapter is to deal first with the principles upon which the technique is based, then to outline the arrangement and operation of the instruments, thirdly to provide detailed directions for each step in the analytical method from the introduction of the sample to the evaluation of the final result, and finally to give detailed descriptions of representative applications followed by a tabulation of the entire range of applications. These are formidable aims and in assessing how far they have been achieved a reviewer can do little more than refer to a few of the methods with which he may be familiar. From a comparison of some six chapters the first point to note is that the standard of writing and the field covered vary considerably. Thus 42 pages are devoted to thin-layer chromatography whilst but 7 pages are devoted to mass spectrometry. Although the intending user would find much of value in the former chapter, one wonders how much useful information would be derived from the latter. In the section on thin-layer chromatography, the reader will find a detailed description of most of the commercially available apparatus together with a discussion of coating materials, solvents, and applications; this chapter may fairly be said to meet the publishers claims. For mass spectrometry on the other hand, the writer of this chapter wisely confines his remarks to generalities and directs the reader's attention to more specialist volumes. This is the only possible approach, of course, with such sophisticated techniques and is the one adopted moreover for nuclear magnetic and electron spin resonance. Indeed if to these already mentioned there are added chapters on X-ray diffraction (12 pages), X-ray emission and absorption (14 pages), electron microscopy (5 pages), it is obvious that for many of the methods the practising analyst would require access to other sources of information and to specialist workers. For certain other less sophisticated methods, however, e.g. gas chromatography and polarimetry, the ground covered gives a not unreasonable picture of the field although it is doubted if the *entire* range of applications is ever covered. It seems to the reviewer that the present volumes are more useful as a *review* of instrumental methods in general use rather than as a "complete reference book on instrumental analysis" for the laboratory—this appears to be the publisher's claim. At the price, however, it is an expensive review, and the books appear to fall between the two extremes of review and detailed manuals for each technique.

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