

$\text{Ag}_2\text{S}$  as a reaction involving only  $\text{Ag}^+$  and  $\text{S}^{2-}$  ions. There is an appendix of Tables of Physical Constants, which gives, however, only a selection. Surely a "Comprehensive Analytical Chemistry" should do better than present a mere selection which can be found in every textbook! And even this selection is carelessly compiled: on page 172 (solubility products) appears a compound  $\text{Hf}(\text{OH})_2(\text{OH})_2?$ , while on page 176 the compound  $\text{Zr}(\text{OH})_4$  is mentioned! The reference list of this section has only 29 entries of which 17 are textbooks. The chapter on apparatus by W. I. STEPHEN (16 pages) seems to contain all essentials. The chapter on acidimetry and alkalimetry by CORA AYERS (17 pages) again contains as few as 29 references, while argentometric, oxidimetric and complexometric methods have 41, 123 and 232 references respectively. Surely some uniformity should be maintained between the various contributions. In spite of these shortcomings titrimetric analysis has been reviewed in its entirety and in much more detail than can be found in textbooks. It is a pity that the book cannot be used as a basis for a literature survey.

M. LEDERER (Rome)

The second half of this book could be described as a complete treatise of organic analysis, which already on its own could be considered as an excellent laboratory handbook. From the revolutionary changes in methods, which are characteristic of the last years, this volume selects and elaborates on the most recent discoveries in this field. Each subject is exhaustively discussed and the various methods critically illustrated with examples found in the literature. Generally for each type of determination the experimental details of the most suitable method are given. Each topic is discussed clearly and exhaustively and is completed by an extensive bibliography and a series of excellent drawings, which could be used as a basis for the construction of apparatus. The authors have dealt extensively with the determination of elements, the determination of functional groups and titration in non-aqueous solvents. The last chapter by T. S. WEST is particularly interesting as it includes much practical information in a well-ordered manner.

G. B. MARINI-BETTÒLO (Rome)

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*Gas Chromatography 1960*, edited by R. P. W. SCOTT, Butterworths, London, 1960, 466 pages, price 95 s.

This volume collects the proceedings of the third symposium on gas chromatography, which was held in Edinburgh in June 1960; this conference was very successful in giving a complete and general view of the present day status of gas chromatography. The volume contains 29 papers dealing with different aspects of gas chromatography and also includes the discussion, which followed each paper.

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The papers are collected in three sections dealing with the development and evaluation of apparatus, with the theoretical aspects of the chromatographic separations and with applications in different fields. The papers on apparatus deal mainly with argon and flame ionization detectors, which are at present considered the most sensitive devices; excellent reports covering many aspects of these detectors are presented. The argon detector seems to have greater flexibility than the hydrogen flame detector, but the use of the latter is more widely spread because it is less subject to disturbing factors.

The stride towards more speed in obtaining chromatograms is highlighted in a paper by R. P. W. SCOTT, who uses a micro-argon detector connected with a d.c. amplifier to a cathode-ray oscilloscope.

Several papers deal with the use of tubular (capillary) columns made of metals, glass and nylon. The factors affecting column efficiency, resolution and operating conditions are evaluated in interesting papers by D. H. DESTY AND M. GOLDUP and R. P. W. SCOTT AND G. S. F. HAZELDEAN.

In two detailed papers C. S. G. PHILLIPS and coworkers describe the application of metal coordination compounds as the liquid phase; crystalline structure may be the determining step in providing separations on the basis of size and shape of eluted compounds. Gas chromatography, though not of universal application, may become an additional tool in the study of coordination chemistry.

Other applications that particularly deserve mention are the gas chromatographic determination of inorganic compounds, which is discussed in several papers and the preparative scale chromatography treated by F. H. HUYTEN.

Anyone engaged in gas chromatographic research will find this book a source of valuable information and anyone who is contemplating using this technique will find the reading of this volume particularly inspiring and stimulating.

A. LIBERTI (Messina)

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*Reagent Chemicals, 1960*, published by The American Chemical Society, 1155 Sixteenth St. N.W., Washington 6, D.C., 1961, 564 pages, price \$ 10.00 (official from March 1, 1961).

"Analyzed Reagent", "Reagent Grade", "Certified Reagent", etc., accompanied by a lot analysis on the label has supplanted the term of a generation ago "C.P." (Chemically Pure) as an indication of the purity of a chemical. The methods of analysis and the maximum permissible quantities of impurities for 234 of the most common chemical reagents are formulated by the half-century old Committee on Analytical Reagents of the American Chemical Society. The present edition is the third revision of the procedures and standards adopted by this Committee to appear in book form, the other two being the 1950 and 1955 editions.

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