

second volume devoted to zone electrophoresis. Both books are intended as practical handbooks for use in the clinical and biochemical laboratory. Sections of both volumes are replete with clinical interpretations. Together with Ivor Smith, who is the editor and also a contributor, there are thirty other contributing authors, each writing about a subject related to his own work. They have attempted to select critically and adequately describe useful techniques rather than to make a review of the literature; and in this lies the value of their work.

Volume I deals mainly with paper chromatography. It begins with the description of a "Universal Apparatus," to which it has been intended, without complete success, to relate wherever possible all the methods described in the book. There follows a very worthwhile general discussion of the preparation of sample and reagent solutions, the choice of solvents and methods of selecting and preparing samples for separation. Sections follow on the separation of specific classes of compounds including amino acids (with new chapters on DNP and phenylthiohydantoin derivatives), various classes of naturally occurring heterocyclics and some of their derivatives, sugars, keto and other acids, phenolic acids, various lipids, drugs important in forensic work (with new chapters on alkaloids and "neutral" drugs), and steroids.

There are new chapters on plant phenols and tannins, inorganic ions and on handling, separating and locating radioactive compounds. While a useful chapter on the study of intermediary metabolism of labeled compounds provides some information on the separation and identification of sugar phosphates, it would be useful if in some future edition there were included a chapter on the chromatography of organic phosphorus compounds. There is a new section on ion exchange celluloses (available in powdered or paper forms), and a chapter on partition columns, but not a mention in it of ion exchange resins. Sections on ion exchange resin chromatography and on gas chromatography would both make worthwhile additions to a future edition. Also, wider reference might be made to the excellent commercially available micro-pipettes (rather than to various models of homemade capillaries with "cycle valve rubber teets" and other gimmicks) and to the good quality commercially available acetylated and other reverse phase papers.

Volume II is devoted to zone electrophoresis. It has a fragmental organization that permits technical fine points to serve as chapter subjects: high as opposed to low voltage separations of small molecules, electrophoresis of serum on paper as opposed to electrophoresis on cellulose acetate or opposed to electrophoresis on agar or starch gels. This causes unavoidable repetitions and incomplete coverage, and results from the fact that the individual authors of each section are presenting rather complete descriptions of types of research. This topicality has some value to the lab worker who can find a complete discussion of a method in one chapter.

The book contains complete directions for constructing and using equipment for electrophoresis on papers, films, gels, starch blocks and even rubber sponges. There is also a chapter on the use of continuous (hanging curtain) electrophoresis. The discussions spread throughout the book of the relative merits of high (1-10 kv.) as opposed to low voltage, of various supporting media and various other details are worth looking for. There is some coverage of the separation of small molecules, but more could be said about nucleotides, and there is no mention of sugar phosphates.

The main concern of Volume II is blood proteins. There are demonstrable changes in the serum of patients with infections, liver damage, malignant conditions, genetic disorders, etc. As well as staining procedures for proteins, lipoproteins and glycoproteins, there are given complete descriptions of many immunological methods. These methods, when coupled with electrophoresis ("immunoelectrophoresis") provide an acutely sensitive way for discovering the purity or dispersity of a protein. Also there is a complete chapter on the detection and study of abnormal hemoglobins. Although Volume II lacks the breadth of appeal of Volume I, it should be of some worth to any biochemist who is working with proteins, or contemplating setting up some sort of electrophoretic apparatus. It belongs on the shelf in laboratories where there is active research with blood proteins.

These books cannot be expected to contain a complete guide to chromatographic and electrophoretic techniques. They are a practical collection of methods and gadgets and as such fill an important need.

BIO-ORGANIC CHEMISTRY
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Characterisation of Organic Compounds. By F. WILD, M.A., Ph. D., F.R.I.C., Fellow and Senior Tutor of Downing College, and Research Chemist, Department of Medicine, University of Cambridge. Cambridge University Press, 32 East 57th Street, New York 22, N. Y. 1960. viii + 306 pp. 14 × 21.5 cm. Price, Paper Edition, \$2.95.

The major concern in this book is the preparation of suitable derivatives of unknown organic materials. In this respect, the text represents a useful addition to the present literature in the field of qualitative organic analysis. It must be noted that this book does not pretend to be a complete discussion of the characterization of organic compounds. The standard techniques and tests for functional group classification are mentioned only in passing in the brief second chapter. Physical methods of functional group classification are not discussed.

Within the delineated area, the preparation of derivatives, the book is most useful. The bulk of the text is divided into chapters dealing with satisfactory derivatives of the various classes of organic compounds: hydrocarbons, halides, compounds containing the hydroxyl group, etc. The discussions are remarkably inclusive. For a given derivative there is generally a good discussion of the advantages, disadvantages and pitfalls in the use of the particular reaction, detailed, generalized experimental instructions, necessary information concerning the preparation of the reagent and important literature references. In certain cases, there is a brief discussion of theoretical principles involved in the derivative-forming reactions. The number of derivatives included is quite remarkable. No less than 35 reagents are mentioned for the preparation of hydrazones from aldehydes and ketones. Of these 35, only those most generally used are discussed in detail.

The material in each chapter is summarized by extensive tables of derivatives. While the number of compounds in the tables is somewhat less than that found in other standard textbooks of qualitative organic analysis, the number of derivatives per compound is much greater. For example, the available information concerning 16 different derivatives of the simple carboxylic acids has been tabulated. For the primary aliphatic amines the available properties of 26 derivatives have been included. It is this remarkable inclusiveness concerning the formation of derivatives which makes this book a valuable contribution to the field of qualitative organic analysis.

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Contributi Teorici e Sperimentali di Polarografia. Volume V. By GIOVANNI SEMERANO. Consiglio Nazionale Delle Ricerche, Piazzale delle Scienze, n. 7, Rome, Italy. 1960. 315 pp. 17 × 24 cm. Price, L. 2500.

Bibliografia Polarografica 1922-1959. Parte I. Elenco dei Lavori e Indice Degli Autori. Supplemento N. 12. By DOTT. LUCIANA GRIGGIO. Consiglio Nazionale Delle Ricerche, Piazzale delle Scienze, n. 7, Rome, Italy. 1960. 80 pp. 17 × 24 cm. Price, L. 1000.

This fifth volume of this well known continuing series presents papers that were presented at two conferences in August, 1959, at the University of Padua. The first twelve papers, from the first conference, deal with the broad subject of the relation between constitution and physico-chemical behavior. Since none of these papers is concerned with polarography they would seem to be out of place in this volume.

The second half of the volume comprises ten papers from the second conference on "Relationship between Polarographic Constants and Molecular Structure." These provide very good reviews of the current state of knowledge of several facets of the theme subject. Most of the papers are

in English, with the remainder in German, French and Italian.

The twelfth supplement of the *Bibliografia Polarografica* brings the literature references up to date through 1959.

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BOOKS RECEIVED

June 10, 1961—July 10, 1961

- LAWRENCE H. ALLER. "Interscience Monographs and Texts in Physics and Astronomy." Volume VII. "The Abundance of the Elements." Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1961. 283 pp. \$10.00.
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- C. W. BUNN. "Chemical Crystallography. An Introduction to Optical and X-Ray Methods." Second Edition. Oxford University Press, 417 Fifth Avenue, New York 16, N. Y. 1961. 509 pp. \$12.00.
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- V. V. CHERDYNTSEV. Translated by WALTER NICHIPORUK. "Abundance of Chemical Elements." The University of Chicago Press, 5750 Ellis Avenue, Chicago 37, Illinois. 1961. 304 pp. \$10.00.
- J. C. COLLINS, General Editor. "Radioactive Wastes. Their Treatment and Disposal." John Wiley and Sons, Inc., 440 Park Avenue South, New York 16, N. Y. 1961. 239 pp. \$8.00.
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- F. F. NORD, Edited by. "Advances in Enzymology and Related Subjects of Biochemistry." Volume XXIII. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1961. 557 pp. \$15.50.
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- C. GUY SUITS, General Editor. "The Collected Works of Irving Langmuir." Volume 5. Plasma and Oscillations." Pergamon Press Ltd., Headington Hill Hall, Oxford, England. 1961. 261 pp. £5.