BOOK REVIEWS

Gas Chromatography. By A. I. M. Keulemans, Research Chemist, Koninklijke/Shell Laboratorium, Amsterdam, Holland. Edited by C. G. Verver. Reinhold Publishing Corporation, 430 Park Avenue, New York 22, N. Y. 1957. xix + 217 pp. 16 × 23.5 cm. Price, $7.50.

In recent months gas chromatography has reached something approaching boom proportions in the analytical field. Workers publishing on any aspect of the subject are receiving unprecedented numbers of reprint requests which exemplify the need for comprehensive treatment in a well organized book. This is the third book to the reviewer's knowledge which has appeared that deals exclusively with gas chromatography.

The first book, "Gas Chromatography," by Courtenay Phillips, Academic Press Inc., 1956, covers in brief form much of the information on the subject volume. The second book, "Vapour Phase Chromatography," by D. H. Desty, *et al.*, Butterworths, Ltd., 1956, is an assemblage of papers presented at the London Symposium on Vapour Phase Chromatography, May/June 1956, sponsored by the British Institute of Petroleum. The author has included considerable information from the symposium papers in his book and has, in addition, included some of his own work not published previously.

This is by far the most definitive coverage of gas chromatography now available. A whole chapter is devoted to the mobile phase, and another to the stationary phase including the solid support. The organization of the book is excellent, enabling even an uninitiated reader to follow the rather extensive theoretical treatments without difficulty. The author has exercised great care in the choice of terminology, definitions and sequence of concepts and, where permissible, he has avoided rigorous derivations. Complete literature references are listed in the chapters to which they apply.

The reviewer was particularly impressed by the development of certain aspects of the theory *via* different approaches. For example, the phenomenon of band broadening is treated from classical plate-distillation theory and from a more exact rate process.

The author has included a wealth of practical information on applications of gas–liquid chromatography, apparatus details and appendices giving valuable data on stationary liquids, detector design, etc. The treatment of gas–solid chromatography is rather limited, but he justifies this by referring to the more widespread use of GLC and problems of tailing inherent in GSC. The use of GLC for the more sophisticated measurements of thermodynamic data are dealt with as a logical consequence of adequate theoretical treatments of the chromatographic process.

In spite of continuing rapid developments in the field, this book will remain of considerable value to anyone engaged in gas chromatography for some time to come.

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Advances in Protein Chemistry. Vol. XI. With Cumulative Subject Index, Vols. VI-X. Edited by M. L. Anson, Cambridge, Massachusetts; Kenneth Bailey, University of Cambridge, Cambridge, England; and John T. Edsall, Biological Laboratories, Harvard University, Cambridge, Massachusettes. Academic Press Inc., Publishers, 111 Fifth Avenue New York 3, N. Y., 1956. x + 665 pp. 15.5 × 24 cm. Price: $12.00.

The publication of Vol. XI of the well known "Advances in Protein Chemistry" illustrates the continued demand for up-to-date reviews of selected topics in this broad field, which requires for the solution of its problems the coöperation of organic, physical, inorganic, analytical and biochemists and physicists. The articles in the present volume are not simply impersonal literature reviews. To the contrary they have a distinct personal flavor which reflects the intimate familiarity of the authors with their respective subjects and makes the book profitable and fascinating reading.

The striking progress of the past few years in the field of protein and polypeptides structure is probably best reflected in the first two chapters, which deal with the recent and numerous determinations of peptide sequences and the relationship of these and other structural properties to biological function. The first chapter by C. B. Anfinsen, and R. R. Redfield (100 pp.) on "Protein Structure in Relation to Function and Biosynthesis" surveys with remarkable clarity the manner in which information derived from the various fields cited above are converging to a fuller knowledge of the mechanism of enzyme action. The second chapter by C. H. Li (90 pp.) goes more specifically into the same problem concentrating on "Hormones of the Anterior Pituitary Gland" and evaluating the many brilliant advances that have been made in this field in the past four years. The following two articles by S. Moore and W. H. Stein entitled "Column Chromatography of Proteins (46 pp.) and by P. von Tavel and R. Signer "Countercurrent Distribution in Protein Chemistry" (54 pp.) acquaint the reader with the most recent developments of these techniques which, without doubt, are the origin of a considerable fraction of recent progress in the field of protein chemistry. The diversity of the volume is evidenced by the thorough, critical, and up to date report by F. N. R. Gurd and P. E. Wilcox on "Complex Formation between Metallic Cations and Proteins, Peptides and Amino Acids" (128 pp.) The final chapter by L. J. Gosting is titled "Measurement and Interpretation of Diffusion Coefficients of Proteins." This article, very helpful for practical applications, has the further virtue of adhering as closely as possible to the viewpoint that processes like diffusion fall into the domain of the thermodynamics of irreversible processes. The thermodynamic aspects are not stressed but their spirit dominates the chapter. One conclusion, derived from Onsager, is that Fick's laws are strictly applicable only to two component systems. This is an important message, since biochemists rarely work with two-component systems. The theory of multi-component systems is developed, but extraordinarily good data must be obtained to observe the effects described by the theory.

In the evaluation of this volume the words of the editorial preface seem most appropriate: "Every volume [of the Advances] has included some major landmarks in the development of the field, but contemplation of the achievements recorded here reminds us with particular vividness of the phenomenal advances made in the field since this series was begun."

The volume is closed with a most useful cumulative index to Vols. VI–X.

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High Polymers. Volume XI. Polyethylene. By R. A. V. Raff and J. B. Allison, Koppers Company, Inc., Pittsburgh, Pennsylvania. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1956. xi + 551 pp. 16 × 23.5 cm. Price, $16.00.

This book constitutes a review of the present state of knowledge concerning polymers of ethylene. In the words of the authors, "the vast and expanding literature of the polyethylenes has not . . . . been presented elsewhere in an organized form." The authors are assured of a large and grateful audience for this reason at least.

Following the trend of the more recent monographs on growth chemicals, the treatment is shallow, but the coverage is broad. This will increase its interest to the technical director, production man and university faculty, while possibly disappointing the research worker more interested in depth treatment of his own specialty.

The authors provide substance for the Historian (Chapter I), the Chemist (Chapter II—Ethylene; Chapter III—Polymerization of Ethylene; Chapter IV—Modified Polyethylenes), the Physicist (Chapter V—Molecular Structure of Polyethylenes), the Engineer (Chapter VI—Properties of Polyethylenes), the Analyst (Chapter VII), the Production