
 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, Massachusetts. 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

Man (Chapter VIII—Processing and Handling of Polyethylenes), and the Salesman (Chapter IX—Uses and Applications of Polyethylenes and Chapter X—Statistical Summary).

The authors have endeavored to cover their subject thoroughly. An especial effort to include the most recent information on newer methods of polymerization is most gratifying. As a source book it should stand in good stead with the researcher, student or executive. It is especially good in its description of analytical techniques, test methods, and measurements of physical properties. The bibliography is exhaustive. Typography is good and errors are not readily apparent.

For the rapidly growing polymer in the market, this is an excellent addition to its rapidly growing literature.

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Nomenclature of Chemical Compounds. Edited by Coordination Committee of Documentation and Library Services, Committee on Nomenclature and Editorial Board of the Journal of Japanese Chemistry. Editors-in-Charge, Kenzo Hirayama, Dorothy U. Mizoguchi and Yuichi Yamamoto. Nankodo Publishing Co., Haruki-cho, Bunkyo-ku, Tokyo, Japan. 1957. x + 368 pp. 19 × 26 cm. Price, \$4.00.

Japanese chemists commonly use the English alphabet and spellings in the reproduction of the names of chemical compounds. Many take an active interest in the careful use of good nomenclature. This has been particularly true since World War II. To this end the Japanese Standing Committee on Nomenclature a few years ago sought permission to translate into Japanese the various chemical nomenclature reports and pamphlets distributed by the Committee on Nomenclature, Spelling and Pronunciation of the American Chemical Society and to publish these in translated form. With a green light from America and with the cooperation of the Japanese Ministry of Education and the UNESCO Office in Tokyo these steps were taken, except that the names themselves were not changed. The Japanese version of these various pamphlets appeared in 1954 in the form of a 250-page paper-bound book which has had an obvious good effect on Japanese chemical literature.

Now a more ambitious book on chemical nomenclature, the one being reviewed, has appeared. This resembles the earlier book inasmuch as it consists in large part of translated nomenclature reports and summaries, but the new book contains also an extensive expository commentary on certain rules, with additional examples, and it covers the field more widely.

The book covers reports of Commissions of the International Union of Pure and Applied Chemistry (the commentary mentioned above is on these IUPAC rules), reports of the Nomenclature, Spelling and Pronunciation Committee of the American Chemical Society, certain nomenclature compilations by *Chemical Abstracts*, and one unofficial report (on the naming of stereoisomers). Most of the reproduced reports are in the field of organic chemistry, but inorganic chemistry and biological chemistry are not neglected. One section is devoted to Electromotive Forces and Electrode Potentials.

In some instances the reproduction of nomenclature rules is interspersed with signed discussion, as in the sections on High Polymers, Steroids, Terpene Hydrocarbons and Labeled Compounds.

There are contributed articles on tropoids and azulenoids (azulenes) and appendixes on (1) Miscellaneous Chemical Prefixes, (2) Symbols, Signs, and Abbreviations, (3) Pronunciation of Chemical Words, (4) Japanese Transliteration of Chemical Words, and (5) How to Use *Chemical Abstracts*.

There is an index in Japanese and one in English.

Standard nomenclature rules are meant to be followed. Japanese chemists are to be commended for trying to do this and those responsible for this book deserve acclaim for their effective help. For the most part the information of the book is not new, but this information is assembled in a form which is likely to do much for chemical publication in Japan.

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Gmelin Handbuch der Anorganischen Chemie. Calcium Teil A. Geschichtliches, Vorkommen, Element, Legierungen. System-Nummer 28. E. H. ERICH PIETSCH, Editor. Verlag Chemie, G.m.b.H., Weinheim/Bergstr., Germany. 1957. xii + pp. 69-488. 17.5 × 25.5 cm. Price, \$55.68.

With the issue of this section of the 8th Edition of the Gmelin Handbuch, the volume designated as "Calcium, Part A" is completed. The sub-titles include: Historical—Occurrence—Element—Alloys. The same thorough and careful presentation of the subject matter that has brought the Gmelin Handbuch much deserved renown is visible once again in this section. A complete subject index is included, which replaces the partial indices accompanying previous sections.

The present volume begins, at page 69, with the occurrence of calcium in the cosmos and in meteorites. Following the extraterrestrial occurrence, the geochemistry of calcium is covered in the next 130 pages, in which its presence in the lithosphere, hydrosphere, atmosphere and biosphere is described.

Sources of deposits of fluor spar, gypsum and anhydrite, calcium phosphates and Iceland spar are recorded in the next 350 pages, with production statistics and general literature references appertaining to each of these minerals. The presentation in each case is according to continents and the countries composing them.

A list of the more important calcium minerals, with properties of chief interest is next presented, including sulfides, oxides and hydroxides, halides, nitrates, borates, carbonates, iodates, sulfates, phosphates and arsenates, vanadates and related compounds, antimonates, titanates, niobates, tantalates, molybdates, tungstates, silicates and salts of organic acids.

The formation and preparation of elementary calcium, together with its chief physical properties, its electrochemical and chemical behavior, the general reactions of calcium salts, the physiological effects, and the detection and determination of calcium make up the following approximately 100 pages; and the volume is completed with a discussion of the alloys of calcium with antimony, bismuth, lithium, sodium, potassium and beryllium.

The appearance of this volume marks one more milestone along the road to the much-to-be-desired goal of a completed eighth edition of Gmelin, long recognized as a discriminating and authoritative reference work in the field of inorganic chemistry. Dr. Pietsch, carrying on the task begun by R. J. Meyer, together with his sizable staff of scientific co-workers, are to be congratulated on bringing the ultimate conclusion of the task of revision of this great work one step closer to realization.

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A Guide to the Literature of Chemistry. Second Ed. E. J. CRANE, Director and Editor, The Chemical Abstracts Service, AUSTIN M. PATTERSON, Formerly Professor of Chemistry, Antioch College, Ohio, and ELEANOR B. MARR, Assistant Professor of Chemistry, Hunter College, New York. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1957. xiv + 397 pp. 15.5 × 23.5 cm. Price, \$9.50.

The revised second edition of this pioneer reference and text is welcomed by librarians and chemists. Because the past thirty years have seen so many new sources of literature, and loss of others, up-dating the reference section is important to keep this basic text alive and before the chemist. For the beginning chemist, in particular, whose development is so dependent on his learning to use the literature, this book is an important tool. It is refreshing that Miss Marr has been able to preserve this work of the pioneer literature chemists, Patterson and Crane. She has maintained their thoroughness and exactness in fact and enlivened the subject of searching chemical literature as an art which every chemist needs to learn. To this end she has pointed out many details, lack of which can be distressing to the uninitiated.

Research leaders and librarians should see that this book reaches their people. The importance of reading scientific