

BOOK REVIEWS

A Short Guide to Chemical Literature. By G. MALCOLM DYSON, M.A. (Oxon.), D.Sc., Ph.D. (Lond.), F.R.I.C., M.I.Chem.E. Longmans, Green and Co., Inc., 55 Fifth Avenue, New York, N. Y. 1951. iv + 144 p. 13 × 19.5 cm. Price, \$2.00.

The originator of the Dyson cipher is good at packing much useful information into small space. He has done so again in his Short Guide, which is of pocketbook size. A full pocketbook it is! This book has been made small so that it can readily be carried about by the literature searcher who is likely to need it as he visits libraries or other working places. Also a small and "nonexhaustive" book has been written with the express purpose of keeping its price within the reach of all.

The main function of the book is to indicate to the student the general avenues of approach to the information contained in the literature of chemistry, with "examples only" given of publications in certain categories. However, the important sources of published chemical information seem to be thoroughly, if briefly, described.

This guide is divided into five main sections as follows: 1, General dictionaries and encyclopedias; 2, Chemical journals and periodicals; 3, Abstract journals; 4, Textbooks and special works of reference, including annual reviews; 5, Some works of reference on medicinal compounds.

The section on medicinal compounds, in which field the author has had much experience, has been included as an example of the literature of a borderline subject as far as chemistry is concerned.

A concluding chapter on "Making a Search of the Literature" will be quite helpful to beginners.

Appendixes are provided which are devoted to (I) some old and obsolete journals, (II) an example of an organic chemical search, and (III) a table showing volume number or numbers of the main chemical publications for each of their years of appearance.

The book is not without its mistakes, but what publication and what producer of publications is free from error? I shall mention only two. The *Journal of the American Chemical Society* and the *American Chemical Journal* both commenced publication in 1879, not in 1897, and *Chemical and Metallurgical Engineering*, which is described under that name and which has had a number of names during its career, has been called *Chemical Engineering* since August, 1946.

Author and subject indexes are included to add to the value of a good little book.

CHEMICAL ABSTRACTS
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Gmelin's Handbuch der anorganischen Chemie. Eighth Edition. E. H. ERICH PIETSCH (Editor). Gmelin-Institut in Clausthal-Zellerfeld. Verlag Chemie, G.M.B.H., Weinheim/Bergstrasse, Germany. 1950. 17.5 × 25.5 cm.

System-Nummer 10, Selen, A1, Die elektrischen Eigenschaften. iv + 122 pp. DM 28.00

System-Nummer 18, Antimon, A3, Bildung und Darstellung des Metalls, iv + 49 pp. DM 16.50

System-Nummer 28, Calcium, A1, Geschichtliches. i + 68 pp. DM 15.50

System-Nummer 35, Aluminium, A8, Die Ternären Legierungssysteme: Aluminium-Eisen-Kohlenstoff, Aluminium-Eisen-Silicium. ii + 136 pp. DM 30.00

System-Nummer 62, Gold, A1, Geschichtliches. i + 100 pp. DM 22.50

System-Nummer 68, Platin, A5, Die Legierungen der Platinmetalle: Ruthenium, Rhodium, Palladium. viii + 188. DM 43.00

The resumption of publication of new volumes of the Gmelin Handbuch is most cheering news. With the great flood of new information that is now appearing in the chemical journals busy teachers, research scientists and engineers

are finding it impossible to keep up with the literature. The only hope for the assimilation and exploitation of this new material lies in the continued and increased production of up-to-date comprehensive and critical bibliographies, compilations and reviews. Unfortunately, while large sums of money are being made available for the support of fundamental and applied research, scant progress has been made in properly subsidizing the collection, evaluation and classification of the new data into effective tables and compendia. It is particularly noteworthy, therefore, that Dr. Pietsch and his staff of the Gmelin Institut have succeeded against great odds in going on with the publication of the Handbuch. Their courage and fortitude deserve the applause and support of all scientists and technologists.

The Gmelin Handbuch der anorganischen Chemie, begun in 1817 and now in its eighth edition, has long been recognized as providing an excellent comprehensive and critical summary of the literature of inorganic chemistry. It should be the first source consulted when extensive and reliable information about an inorganic system is desired. Not only does this work present complete references to the original papers that have appeared up to the date of publication of the part of the Handbuch involved, but the summary of the available information is handled in a very well organized and selective fashion. This Handbuch should occupy first place on the inorganic list in all academic, research and engineering reference libraries. For workers in related fields such as physics, geology, agronomy, biology and medicine it is of great value as a basic reference.

The present eighth edition was initiated in 1922 and volumes appeared at frequent intervals until the project was interrupted by the last World War. The Gmelin Institut has been able to resume the undertaking and now hopes to complete the edition within the next 10 or 12 years. This will give complete coverage of all the chemical elements, including those recently synthesized by nuclear reactions. The original plan for the eighth edition will be continued, the complete Handbuch being organized into 71 system-numbered volumes, with many of these appearing in several parts. The system is simple and easily learned. The practice of giving references right in the text when the data are presented makes it very convenient for the reader to follow the chronology and to find the original papers. Supplementary volumes summarizing the patent literature are also being prepared. Particular attention is being given to the borderline areas between inorganic chemistry and related fields.

One outstanding feature of this excellent compendium is that not only are all of the papers published since the appearance of the seventh edition being reviewed but, in addition, the staff is re-examining all of the earlier references and are re-evaluating them in the light of our present theories and understanding. This policy should go far toward eliminating earlier errors, such as are often perpetuated through numerous revisions of other handbooks when new material is merely added to the old treatment.

The six new parts that are now available uphold the high standards of the earlier volumes. In general the terminology and sentence structure are kept simple and straightforward so that even those with limited ability to read German should find no great difficulty in consulting this source. The paper is of good quality and the printing is well done. Each part carries a terminal date indicating that the coverage is complete up to that time. The system used in the organization of the Handbuch and a complete list of the completed volumes and those to be published are clearly outlined in a supplementary pamphlet prepared by the Gmelin Institut. Another booklet summarizes the abbreviations and symbols that are employed.

We are deeply indebted to Dr. Pietsch and his staff for their work and hope that they are given generous support for the completion of this important project. We wish them success in the early completion of the eighth edition of the Handbuch.

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A. W. LAUBENGAYER

Phase Microscopy Principles and Applications. By ALVA H. BENNETT, HAROLD OSTERBERG, HELEN JUFNIK, OSCAR W. RICHARDS, Research Laboratory, American Optical Company, Stamford, Connecticut. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1951. xiii + 320 pp. 15.5 × 23.5 cm. Price, \$7.50.

This is the first book devoted to the microscopical applications of the phase contrast method of illumination and observation, developed by F. Zernicke about 1934. From then down to the present numerous publications and instruments give evidence that this technique is the subject of active experimentation. Although the authors discuss in detail the apparatus of various makers, the diversity of construction and principles employed indicates that definitive design has not been reached.

The optics of phase contrast microscopy is discussed in considerable detail, and in the appendix a more advanced treatment deals with diffraction theory, so the book has some very solid material for physicists. On the other hand, the sections on preparation and mounting are of general value to all microscopists, and those on applications in biology, medicine and industry, with an extensive bibliography, show the uses of this important method of enhancing contrast, with photographic illustrations. Admitting the possibility of loss of quality in reproduction, one wonders whether in all cases the more conventional methods, particularly annular bright-field illumination, are as inadequate as they appear. Certainly phase contrast is not a solution for all cases of poor visibility, nor is it to be used reliably by microscopists who have not exploited the fullest possibilities of other methods, particularly when "unknown" structures are to be interpreted. Study of familiar and structurally simple test objects, with close control of refractive index of mountant, has been too much neglected in the development and testing of new apparatus, both by designers and by users, and the latter will do well to perform such experiments to familiarize himself with the image variations resulting from different adjustments of phase and amplitude *versus* refractive indices of specimen and mountant.

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Structure Reports for 1947-1948, Volume 11. By A. J. C. WILSON, General Editor, C. S. BARRETT (Metals), J. M. BIJVOET (Inorganic Compounds), and J. MONTEATH ROBERTSON (Organic Compounds), Section Editors. N. V. A. Oosthoek's Uitgevers MIJ, Domstraat 1-3, Utrecht, The Netherlands. 1951. x + 779 pp. 17.5 × 25 cm. Price, 55. guilders.

The important service rendered by *Strukturbericht* is now to be provided by *Structure Reports*, initiated by a Commission of the International Union of Crystallography and Supported by UNESCO, Research Associations and Industrial organizations of Great Britain and of the United States of America. This volume carries an appropriate preface by P. P. Ewald to whom we are primarily indebted for *Strukturbericht*.

The publication schedule for *Structure Reports* is not chronological. The present volume covers the literature of the two years prior to the organization of the Editorial Board. Volumes 8 to 10 will fill in the gap between volume 11 and *Strukturbericht* 7 and presumably will appear from time to time with subsequent issues.

Structure Reports is intended to describe all structure determinations which have been published in the period indicated and to give all the structural data embodied in the articles so completely that recourse to the original should not be necessary. In many instances additional information has been supplied and on occasion suggestions of an alternative interpretation of the author's data have been made. Pertinent references to prior literature (some to subsequent papers) are given.

The arrangement of subject matter is on the whole very satisfactory. In the section on metals and alloys the systems are in alphabetical order so that no index is required. The arrangement of the papers in the section on inorganic compounds follows a rather casual grouping of substances related chemically or structurally. The papers on the

structure of minerals are scattered throughout this section although it would seem advantageous to the mineralogist to have these listed together. A somewhat more systematic order is found in the organic section where the main groups are aliphatic compounds, polymers, cyclic compounds, aromatic compounds and proteins. Subject and formula indices are provided for the inorganic and organic sections. Some improvements in the indexing could undoubtedly be made and perhaps this could be accomplished by the eventual publication of a master index for *Structure Reports* and *Strukturbericht*.

The vast majority of the papers are X-ray investigations, most of which are primarily concerned with crystal structure. In the organic section, however, there is considerable emphasis on the determination of molecular structure and on the association of molecules in crystals, polymers and micelles. One finds here several electron diffraction studies of molecular structure, but none of the papers on structure determination from Raman spectra are represented. This omission is probably due to the traditional preoccupation of *Strukturbericht* with crystal structures. The growing importance of X-ray analysis in the determination of molecular and complex ion structures points to the advisability of including all other physical means of molecular structure derivation, especially since the results of these different methods are not always in agreement.

It seems almost ungracious to request an extension of the work of the editors who have already given so much. No better statement of my opinion can be given than the final paragraph of Ewald's preface.

"Crystallographers, chemists, physicists and metallurgists in laboratories all over the world who will soon be profiting by the existence of these Reports should not forget what they owe to the patient, meticulous and expert abstractors and editors, who have often set aside their own interests in order to build up this work for the common good of all their fellow workers. Let us send off this Volume with this note of thanks."

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ROLAND WARD

Radioactivity Applied to Chemistry. Edited by ARTHUR C. WAHL and NORMAN A. BONNER, both at Washington University, St. Louis. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1951. xv + 604 pp. 16 × 23.5 cm. Price, \$7.50.

There are few tools as helpful to a research worker as a comprehensive and well organized survey and bibliography of the broad field in which he is working. "*Radioactivity Applied to Chemistry*" is such a volume for all persons interested in the past accomplishments and future potentialities of radioactive nuclides as aids in the solution of chemical problems.

The book starts with 320 pages devoted to a survey of the principles and ideas involved in the application of radioactivity to different fields, including chemical kinetics, structural chemistry, self-diffusion studies, chemical analysis, surface determinations, and a variety of others. These ten chapters are plentifully illustrated by examples from the literature. They should be particularly valuable in helping new workers in the field to establish a perspective as to what has been and can be done. At the same time they will serve the expert as a reference source for a variety of information ranging from the equilibrium distributions of isotopes in different reactions, to the equations for the kinetic analysis of isotope exchange reactions, to the behavior of carrier-free tracers. Of especial value to the expert will be Part II which consists of 18 well classified tables (180 pages) designed to summarize and give references for all the chemical investigations with radioactivity from its discovery to the end of 1949. These tables include the most significant numerical results from some 1500 papers.

Certain topics related to the subject of the book are specifically excluded from detailed treatment because of the necessity for confining its size to reasonable limits. These include the applications of stable isotopes, the extensive chemistry of fission product analysis, the field of chemical effects of radiation, and the techniques of radiochemistry.

To read this book with profit one must be trained in chemistry and familiar with the elementary concepts of radioactivity. It will whet such a reader's imagination as

to how, in principle, he may apply radioactive materials to his own problems. If he decides to test his ideas in the laboratory and is not experienced in the field he will have to gain supplemental information elsewhere about techniques, instrumentation, and radiological safety practices.

Twelve authors, including the two editors, have contributed to this volume. Their personal experience in the fields which they cover varies, but each has done a careful and useful job. The sum of the parts is a well integrated self-consistent product.

In addition to its value as a reference book the volume is suitable for use as a text in a course or seminar at the senior or graduate level.

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JOHN E. WILLARD

Substances Naturelles de Synthèse. Volume II. By LÉON VELLUZ, Docteur es Sciences Physiques. Masson et Cie, Éditeurs, 120, boulevard Saint-Germain, Paris 6^e, France. 1951. 138 pp. 16 × 23.5 cm. Price, 1250 fr.

This book is the second of a series of volumes concerned broadly with the synthetic preparation of natural products and consists of three sections.

The first section, entitled "Preparations," deals with muscle adenylic acid, DL-aspartic acid, deoxycorticosterone, DL-lysine, DL-methionine, progesterone, L-threonine and L-thyroxine. In each case, after a short appreciation of the biochemical significance of the compound, the available methods of synthesis are summarized and the synthetic method of choice is described with notes on the preparation of special reagents and full references to the original literature. The second section, entitled "Methods," consists of a review of the Oppenauer reaction, its variations and applications, particularly in the steroid series, and a review of carbonyl reagents and techniques for the separation of carbonyl compounds. The third section entitled "Practical Notes," deals with "carbonyl reagents" and ketonic operations, *i.e.* techniques for the isolation of ketonic derivatives and their decomposition by hydrolysis or displacement. The first section provides information conveniently brought together on a number of selected compounds, and will be of limited appeal; the second and third sections, despite some overlapping, will be of general utility and value and should secure a wide sale for the book.

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C. W. SHOPPEE

BOOKS RECEIVED

January 10, 1952—February 10, 1952

TURNER ALFREY, JR., JOHN J. BOHRER, AND H. MARK.
"Copolymerization. Volume VIII. High Polymers."

Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1952. 269 pp. \$6.80.

E. S. GUZMAN-BARRON (edited by). "Modern Trends in Physiology and Biochemistry." Woods Hole Lectures Dedicated to the Memory of Leonor Michaelis. Academic Press, Inc., 125 East 23rd Street, New York 10, N. Y. 1952. 538 pp. \$8.50.

ALFRED BURGER. "Medicinal Chemistry—Chemistry, Biochemistry, Therapeutic and Pharmacological Action of Natural and Synthetic Drugs." Volume II. Interscience Publishers Inc., 250 Fifth Avenue, New York 1, N. Y. 1951. Pages 579–1084. \$10.00.

HOWARD D. HARTOUGH. "Thiophene and Its Derivatives." Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1952. 533 pp. Price, \$16.50, Sub. Price, \$15.00.

CLAUDE S. HUDSON AND SIDNEY M. CANTOR (edited by). "Advances in Carbohydrate Chemistry." Volume 6. Academic Press, Inc., 125 East 23rd Street, New York 10, N. Y. 1951. 442 pp. \$8.50.

ALFONS KLEMENC. "Anorganische Chemie auf physikalisch-chemischer Grundlage." Springer-Verlag, Molkerbastei 5, Vienna, Austria. 1951. 430 pp. \$5.70.

COSMO G. MACKENZIE (edited by). "Biological Antioxidants." Transactions of the Fifth Conference, November 30–December 1, 1950, New York, N. Y. Josiah Macy, Jr., Foundation, 565 Park Avenue, New York 21, N. Y. 1951. 229 pp. \$3.75.

FRANZ X. MAYER AND ALFRED LUSZCZAK. "Absorptions-Spektralanalyse." Walter de Gruyter and Co., Berlin W 35, Genthiner Strasse 13, Germany. 1951. 238 pp. DM 14,—

E. H. RODD (edited by). "Chemistry of Carbon Compounds." Volume 1, Part A. "General Introduction and Aliphatic Compounds." Elsevier Publishing Company, 402 Lovett Boulevard, Houston, Texas. 1951. Pages 1–778. Sub. Price \$18.00., List Price 15 per cent higher.

B. ROSEN (edited by). "Données Spectroscopiques Concernant les Molécules Diatomiques." Hermann and Cie, 6 Rue de la Sorbonne, Paris V^e, France. 1951. 361 pp. Francs 4,800.—

JAMES B. SUMNER AND KARL MYRBACK (edited by). "The Enzymes. Chemistry and Mechanism of Action." Volume II, Part 2. Academic Press Inc., 125 East 23rd Street, New York 10, N. Y. 1952. Pages 791–1440. \$14.00.

K. VENKATARAMAN. "The Chemistry of Synthetic Dyes." Volume I. Academic Press Inc., 125 East 23rd Street, New York 10, N. Y. 1952. 704 pp. \$14.50.