

Birch, R. B. Woodward, Karl Ziegler, E. L. Hirst, Sir Alexander Todd, L. Ruzicka, C. W. Shoppee, E. Schlittler, J. W. Cornforth, Karl Folkers, James Walker, Holger Erdtman, and A. Butenandt.

GEORGE H. COLEMAN
WAYNE STATE UNIVERSITY
DETROIT, MICHIGAN

GMELINS HANDBUCH DER ANORGANISCHEN CHEMIE. SYSTEM 32: ZINK, SUPPLEMENT VOLUME

Edited by the Gmelin Institute under the direction of *E. H. E. Pietsch*. Eighth edition. Verlag Chemie, GmbH, Weinheim Bergstrasse, Germany, 1956. xxxvi + 1025 pp. 191 figs. 17.5 × 25.5 cm. \$138.

This supplement volume presents the vast literature on zinc which has appeared from 1924 to 1949. The first volume of the eighth edition of the Gmelin Handbook, published in 1924, treated the element zinc and its compounds and alloys.

The length of this volume and the scope of coverage make it impossible to comment in any detail on any one part of this work. An entirely new 136-page chapter has been added on the geochemistry of zinc, which helps to clear up much controversial material on the origin of zinc deposits. The metallurgy of zinc, 132 pages, is fully presented. Included are the processes which precede the recovery of the metal itself, flotation, roasting, and the production of pure zinc by electrolytic processes. The preparation of the important zinc salts is presented in 40 pages.

A chapter, 124 pages, deals with the physics of the hexagonal metal, the directional effect and its influence on the properties including deformation and recrystallization behavior.

The material on the electrochemical behavior is very complete. It deals with normal potential values at different temperatures, the Leclanché and other primary elements, hydrogen and oxygen overvoltages on zinc and the behavior of zinc as cathode and as anode in various solutions. An additional 49 pages are devoted to the electrodeposition of zinc.

Included in the 68 pages devoted to the chemical behavior of zinc is a discussion of the self-inflammability and explosivity of zinc dust, its behavior in different atmospheres in the presence of water, and the corrosive attack on zinc by organic and inorganic acids.

Other subjects treated in this volume are: alloys, surface treatment, zinc ions, physiological damages, detection and determination, and finally a 255-page description of zinc compounds.

This volume is well written and arranged. By means of the 36-page index it is possible to turn quickly to any topic discussed. It provides a complete and reliable source of information and should be a welcome addition to the library of any researcher interested in zinc.

ROY I. GRADY
COLLEGE OF WOOSTER
WOOSTER, OHIO

GMELINS HANDBUCH DER ANORGANISCHEN CHEMIE. SYSTEM 28: CALCIUM

Teil, A, Lieferung 2. Eighth edition. Edited by the Gmelin Institute under the direction of *E. H. E. Pietsch*. Verlag Chemie, GmbH, Weinheim Bergstrasse, Germany, 1957. xii + 420 pp. 29 figs. 17.5 × 25.5 cm. \$55.68.

The present section, A 2, dealing with the occurrence of calcium, elemental calcium and calcium alloys completes Part A of System Number 28. A 1 giving the history of calcium was published in 1950, and B 1 dealing with the industrial manufacture and uses of calcium and its compounds was published in 1956. The final section of B, which will treat with the scientific findings relating to all calcium compounds in aqueous solution, is now in preparation.

The 313-page section on occurrence deals with the geochemistry of calcium and shows its wide distribution and its importance. Calcium has much to do with the chemical, physical, and biological behavior of soils.

The industrially important deposits of calcium are discussed in the economic geography section. More than 25% of all known minerals contain considerable amounts of the element.

The volume contains a chapter on the physiological hazards of calcium and its compounds and another on calcium alloys. When section B of the calcium volume is completed, a comprehensive, reliable, clear and systematic account of this important element will be available.

ROY I. GRADY
COLLEGE OF WOOSTER
WOOSTER, OHIO

COMPREHENSIVE INORGANIC CHEMISTRY. VOLUME 6: THE ALKALI METALS. HYDROGEN AND ITS ISOTOPES

Edited by *M. Cannon Sneed* and *Robert C. Brasted*, University of Minnesota. D. Van Nostrand Co., Inc., Princeton, New Jersey, 1957. viii + 234 pp. Figs. and tables. 16 × 23.5 cm. \$6.

THE PRESENT volume begins with a thoroughly satisfying survey of the descriptive chemistry of the alkali metals by John F. Suttle. Greater emphasis is placed upon the relationships of electronic and structural properties to chemical behavior in this chapter than in its predecessors, and the resulting treatment of this group of elements is both scholarly and stimulating. The study further departs from the general pattern of previous volumes with the more extensive use of thermochemical calculations or data, illustrative or necessary for the author's arguments.

Following an introduction concerned with the chemical and nuclear characteristics of the metals, the comparative chemistry and methods of preparation, as well as the properties of the principal compounds of the alkalis, are taken up.

Generous inclusions of phase and solubility diagrams lend distinction. The chapter is concluded with a brief résumé of the analytical chemistry of the metal ions.

The second chapter, a discussion of hydrogen and its isotopes, is a rather curious mélange of material, some irrelevant, some outdated, and some beyond comprehension. A few examples should suffice: One table (2.9, p. 212), a listing of ten maximum flame temperatures of various combinations of materials, lends nothing to the text subject of the reaction of hydrogen and oxygen and deals with hydrogen in only one case, the $H_2 - F_2$ temperature. The half-life of tritium is given as 31 years (12.46 y. is correct). Another table (2.4, p. 201) lacks an explanation of the data it contains.

This series, aided in part by this volume, will serve as a source of collateral reading in advanced inorganic chemistry courses. The practicing chemist in need of general information about parts of the periodic table may profit from ready access to these volumes.

EDWARD D. GOLDBERG
SCRIPPS INSTITUTION OF OCEANOGRAPHY
LA JOLLA, CALIFORNIA

A DICTIONARY OF SCIENTIFIC TERMS

J. H. Kenneth. Sixth edition. D. Van Nostrand Co., Inc., Princeton, New Jersey, 1957. xvi + 532 pp. 15.5 × 23 cm. \$12.50.

THIS is the latest edition of the work originated by I. F. and W. D. Henderson for terms used in biological sciences. The chief areas covered are anatomy, botany, cytology, embryology, genetics, physiology, and zoology.

For some 14,000 terms, ranging from abactinal to zymatic, there are included pronunciation, derivation, and a concise definition. In the main the spelling is that used in Britain. American usage is not overlooked.

This work should be in any chemical reference library which deals with the broad area of biochemistry.

M. G. MELLON
PURDUE UNIVERSITY
LAFAYETTE, INDIANA

MICRORECORDING: INDUSTRIAL AND LIBRARY APPLICATIONS

C. M. Lewis, Chief Librarian, New York Times, and *W. H. Offenhauser, Jr.*, Interscience Publishers, Inc., New York, 1956. xi + 456 pp. 16 × 23.5 cm. \$8.50.

THE preface says this book is intended to fill the needs of technical and nontechnical people alike. Accordingly, production aspects are presented broadly, not in detail. Uses and the problems of users get the full treatment. So, after discussing *why* people retain records, a whole chapter is devoted to the business and legal aspects of *how* to keep them. Microcopies enjoy the same copyright protection as originals; and a work issued

solely as a microrecord is equally eligible for protection.

A chapter on laying out a microrecording program is followed by five chapters on methods and equipment for making, enlarging, and reading all forms of microrecords. Chapter 9, Information Classification and Retrieval, is an intentional side excursion for bringing into perspective the actual and potential functions of microrecords in technical information service, even to controls for security-classified documents.

Finally, Chapter 10, Storage, considers both the long future view and the ever-present hazards of climate, natural and man-made disasters, and war. The book might survive an appendectomy, but it would be super-major surgery. After Appendixes A to I, the reader is a bit jolted to find that the next title is not "Appendix J" but "Index." Chapter 7 even has an appendix of its own. But separation from the main text adds ease of use to the unquestioned utility of these appendixes.

The index seems adequate and well done. Bibliographically the book is weak, qualitatively if not quantitatively. Appendix I, Selected References, offers only 17 entries. Chapters properly have their own bibliographies, with apparently random arrangement in each and no guides in the text to the arrangement. Many references are scattered as footnotes and do not appear in the bibliographies at all. Systematic treatment of references, all as footnotes or all as chapter bibliographies or all as one final bibliography but with some guidance in any case, would be a useful improvement in any forthcoming edition.

JULIAN F. SMITH

LENOIR-RHYNE COLLEGE
HICKORY, NORTH CAROLINA

QUANTITATIVE INORGANIC ANALYSIS

G. Charlot and Denise Bézier, *École Supérieure de Physique et de Chimie industrielles de Paris*. Translated by R. C. Murray. John Wiley & Sons, Inc., New York, 1957. x + 691 pp. 211 figs. 17 tables. \$15.

THE translation, clearly written, is from the third French edition (1955). The book deals with the entire field of quantitative inorganic analysis, including gravimetry, titrimetry, instrumental methods, micro and semimicro methods, trace analysis, gas analysis, various methods of separation, and determinations of the 65 principal elements. With such broad coverage a complete presentation in one volume is of course not possible, but the authors have done remarkably well in bringing together and organizing a large amount of important material in this field.

The book has two main parts. Part I (319 pages) is titled General Methods of Analysis, and consists of 33 chapters, most of which describe the types of chemical and physiochemical analyses in use today. A theoretical background for the various divisions of the subject is very

basically and solidly presented, starting with a chapter on precision of measurements and use of statistical methods, and continuing throughout the first part of the book. Three chapters deal with types of separation, one with sampling, one with dissolution and one with mineralization.

Part II (318 pages) presents methods for determining the 65 principal elements and many of their compounds. The authors have managed to give significant information on over a thousand different methods, together with one or more literature references to each. As an example, under analytical methods for iron are given 10 separations, 15 titrimetry processes, 2 potentiometric methods, 1 gravimetric method, 8 colorimetric methods, and a section on dissolution of iron compounds and alloys. Because of the large number of methods there is but little space for each, sometimes only a sentence or two, yet the reader is able to gain key information from this and from the accompanying references.

The appendix contains 100 common analytical conversion (gravimetric) factors but no logarithm tables, a specific gravity table (18 concentrated reagent solutions) an atomic weight table, and a section on literature sources.

Because of its size, and the large amount of material it contains, most college teachers will probably classify this book as a reference rather than as a text, and yet if an instructor feels that his students will benefit by having this extra information available to them, the book might serve very well as a text. It should be of considerable value as a reference to industrial analytical chemists.

V. R. DAMERELL

WESTERN RESERVE UNIVERSITY
CLEVELAND, OHIO

CHEMISTRY IN THE SERVICE OF MAN

Alexander Findlay, Emeritus Professor of Chemistry, University of Aberdeen. Eighth edition. Longmans, Green and Co., New York, 1957. xx + 326 pp. 29 figs. 36 plates. 14 × 22 cm. \$4.75.

THE first edition (1916) of this book was based on lectures delivered at Aberdeen in 1915; the seventh was published ten years ago. The author has been keenly aware of the need that the public appreciate the contributions of chemistry to agriculture, to the manufacturing industries, to the comfort and health of the people. This need is perhaps less urgent today than it was 40 years ago, for examples of chemistry in the service of man are now continually brought to the attention of the lay public in newspapers, magazines, and in advertisements in print, and by radio or television.

"Chemistry in the Service of Man" is intended to "appeal to the imagination and interest of the general mass of the population." It displays many applications of chemistry. It is not a textbook, but a book about chemistry for the lay reader. The lay reader, however, will understand this book better if he already knows some chemistry. It makes interest-

ing reading, but is not instruction in chemistry. In the reviewer's opinion, this need of 40 years ago has been superseded by a greater need, that the lay public understand better the methods of chemistry, how the science has developed, the nature and work of fundamental research, and the paths by which chemical ideas have developed until they are of service to man.

But it is true that this was not the aim to which the author addressed himself. He has written in a lively, delightful, and informative style of the ways in which chemistry can and has contributed to the welfare of mankind, of its value in developing the mind and in understanding this universe. In the final paragraph he writes "If I have written well and to the point in my story, this is what I myself desired." He has accomplished what he desired, and many readers of this book, in its eight editions, have had much pleasure from it.

WALTER B. KEIGHTON

SWARTHMORE COLLEGE
SWARTHMORE, PENNSYLVANIA

ORGANIC REACTIONS. VOLUME IX

Roger Adams, University of Illinois, Editor-in-Chief. John Wiley & Sons, Inc., New York, 1957. viii + 468 pp. 66 tables. 15.5 × 23.5 cm. \$12.50.

THIS is the ninth volume of the well-known series dealing comprehensively with selected organic reactions. The quality and usefulness established by the previous volumes have been maintained.

The chapters included in this volume are: (1) The Cleavage of Non-enolizable Ketones with Sodium Amide. The Haller-Bauer Reaction, by K. E. Hamlin and Arthur W. Weston; 36 pages, 96 references, 18 pages of tables.

(2) The Gattermann Synthesis of Aldehydes, by William E. Truce; 36 pages, 109 references, 14 pages of tables.

(3) The Baeyer-Villiger Oxidation of Aldehydes and Ketones, by C. H. Hassall; 34 pages, 164 references, 11 pages of tables.

(4) The Alkylation of Esters and Nitriles, by Arthur C. Cope, H. L. Homes, and Herbert O. House; 225 pages, 1080 references, 158 pages of tables.

(5) The Reaction of Halogens with Silver Salts of Carboxylic Acids, by C. V. Wilson; 56 pages, 108 references, 25 pages of tables.

(6) The Synthesis of β -Lactams, by John C. Sheehan and Elias J. Corey; 21 pages, 43 references, 3 pages of tables.

(7) The Pschorr Synthesis and Related Diazonium Ring Closure Reactions, by DeLos F. DeTar; 54 pages, 225 references, 20 pages of tables.

Most of the chapters review the literature through 1953, although a few important references of more recent date have been included. Professor DeTar is congratulated for covering the literature through June, 1956.

In keeping with the trend of the times,

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