

# Book Reviews\*

**Organic Compounds: Reactions and Methods. Volumes 21 and 22.** Edited by B. A. KAZANSKII, I. L. KNUNYANTS, M. M. SHEMYAKIN, and N. N. MEL'NIKOV (Moscow State University). Translated from Russian by BRIAN J. HAZZARD. IFI/Plenum, New York, N.Y. 1973. Volume 21: ix + 329 pp. \$40.00. Volume 22: xii + 366 pp. \$42.50.

These volumes are English translations of two of a Russian series of books which parallels the well-known "Organic Reactions" series. The format is very similar to that of "Organic Reactions," with each review having a section discussing the application of the reaction, its scope and mechanism, a section giving detailed experimental procedures, and a final section tabulating the examples of the reaction found in the literature. In general, the discussion sections are somewhat shorter than are found in "Organic Reactions" but are quite adequate.

The literature coverage is out of date, undoubtedly due to the fact that these are translations of reviews; the coverage of the Western literature stops about 1967 in most cases, with a few later references to the Russian literature. In spite of that fact, the books will be valuable introductions and literature sources for those interested in the topics covered. And for those of us who do not read Russian, the prices of these translations are entirely reasonable.

The reviews in Volume 21 are: The Oxidative Chlorophosphination of Hydrocarbons and Their Derivatives; the Catalysed Diene Condensation; and Methods of Synthesizing Allenic Compounds. The first two reviews are brief, with fewer than 100 references each. The last review provides a good discussion of synthetic routes to allenes. The table has 1151 entries, covering 800-900 different allenes, with 591 references.

The reviews in Volume 22 are: The Dakin-West Reaction; The Fluorination of Organic Compounds with Sulfur Tetrafluoride; and Isocyanates of Carboxylic and Sulfonic Acids and of Acids of Phosphorous and Their Sulfur and Selenium Analogs. The first review is very brief, with only 61 references. The fluorination review is very good and includes two preparations of SF<sub>4</sub>, handling procedures and toxicity data. The table lists 474 examples. The isocyanate review is an excellent introduction to and literature source for acid isocyanates. It provides exhaustive coverage of the literature up to July, 1969 (781 references), and lists well over 500 acid isocyanates.

Calvin R. Messing, *Borg-Warner Chemicals*

**Inorganic Biochemistry.** Edited by G. L. EICHHORN (National Institutes of Health, Gerontology Research Center). Elsevier Scientific Publishing Co., New York, N.Y. 1973. xxv + 1263 pp., 2 vol., \$110.00.

This book is the first comprehensive text in the emerging area of inorganic biochemistry. The combined effort of 45 authors, including the editor, have yielded a treatise which covers practically every important aspect of metal-ion involvement in a biological process. The work is a valuable reference source (4,700 references), but its cost will likely limit it to institutional libraries and prevent all but the most affluent of graduate students from owning it.

The editor has organized the two volumes (34 chapters) into eight separate sections. The first part is designed to introduce basic coordination chemistry to a reader unskilled in this area. In view of the highly specialized nature of the text and the large number of different physical methods referred to, the usefulness of the first section is questionable. A reader not grounded in the fundamentals of coordination chemistry would better satisfy his curiosity by consulting any one of a number of standard texts on the subject.

Parts II through VI deal with metal complexes which have proteins as ligands. The organization is good and proceeds in a logical manner from amino acid and peptide complexes to high molecular weight protein systems. Individual chapters are devoted to Carboxypeptidase A, Carbonic Anhydrase, the Siderochromes, Ferritin, Hemocyanin, Hemerythrin, the Kinases and numerous others. Where possible the editor has prefaced each section with a specific

chapter designed to review the important concepts referred to in the following chapters. As an example, Part VI which deals with redox behavior in inorganic biochemistry begins with a general chapter on redox reactions in coordination chemistry. The chapter on the physical and chemical properties of iron porphyrins is a helpful prelude to the section dealing with the cytochromes, peroxidases, hemoglobin, and myoglobin.

Section VII explores vitamin B<sub>6</sub> model complexes and various metal flavin systems while the final part, contributed by the editor, examines metal-nucleoside and nucleotide interactions.

Although a variety of different writing styles is encountered in the book, most chapters include a historical background, a section on special nomenclatures, and, where applicable, references to model compound studies.

Any effort which assembles and discusses in detail some of the many biological systems which have attracted the attention of the inorganic chemist is valuable. In this regard, "Inorganic Biochemistry" is the best effort to date.

James C. Dabrowiak, *Syracuse University*

## General Chemistry Textbooks

**Problems to Accompany "Chemistry."** By R. F. KIESEL and E. S. GORE. Allyn and Bacon, Boston, Mass. 1974. v + 319 pp. \$2.95.

A paper-bound volume that includes both problems and their answers, with detailed examples worked out, designed to accompany "Chemistry" by Busch, Shull, and Conley.

**Chemistry: A Modern Introduction.** By F. BRESCIA, S. MEHLMAN, F. D. PELLEGRINI, and S. STAMBLER. W. B. Saunders Co., Philadelphia, Pa. 1974. xvii + 644 + xxii pp. \$14.50.

A text "for highly motivated students who want to pursue careers that require a knowledge of college chemistry but whose previous education did not afford an opportunity for adequate study of chemistry"; an "Instructor's Guide" is available.

**Student's Guide to "Chemistry."** By D. BROOKS. W. B. Saunders Co., Philadelphia, Pa. 1974. xvii + 233 pp. \$4.50.

A paper-bound volume whose chapters include "performance objectives," summaries, and practice problems with their answers, designed to accompany "Chemistry: A Modern Introduction" by Brescia, Mehlman, Pellegrini, and Stambler.

**Chemistry and Man's Environment.** By EDWARD C. FULLER (Beloit University). Houghton Mifflin Co., Boston, Mass. 1974. xiv + 502 pp. \$11.95.

A book "For students who want to know more about their environment but who do not expect to spend their lives working as scientists"; a previous course in chemistry is not presupposed.

**Principles of Chemistry with Practical Perspectives.** By RUSSELL S. DRAGO (University of Illinois). Allyn & Bacon, Boston, Mass. 1974. xii + 755 pp. \$13.95.

A text "to provide material for a general chemistry course for science or engineering oriented students"; ending with two chapters on organic chemistry and one on biochemistry.

**Chemical Principles and Their Biological Applications.** By RAYMOND F. O'CONNOR (Santa Barbara City College). John Wiley & Sons, New York, N.Y. 1974. xiv + 413 pp. \$9.95.

A book for introductory chemistry for those who are not science majors, in which material from organic and biological chemistry is integrated throughout (stated to be a unique approach).

**College Chemistry.** By C. R. GOLDBERG and DAVID E. DILLARD (Brooklyn College). Macmillan Publishing Co., New York, N.Y. 1974. xviii + 634 pp. \$12.95.

A text designed for students with varied previous preparation, but who are preparing for more advanced levels of science.

**Chemistry.** By E. H. CORDES and R. SCHAEFFER (Indiana University). Harper & Row, New York, N.Y. 1974. xiv + 706 pp. \$12.95.

\* Unsigned book reviews are by the Book Review Editor.

An introductory text for students who have had high-school chemistry and who are pursuing a course of study leading to medicine, biology, or further work in chemistry.

**Chemical Principles, Second Edition.** By R. E. DICKERSON, H. B. GRAY, and G. P. HAIGHT, JR. W. A. Benjamin Inc., Menlo Park, Calif. 1974. xxii + 872 pp. \$12.95.

This new edition "differs from the first in a complete reorganization and rewriting of the chapters on chemical equilibrium."

**What is Chemistry? A Chemical View of Nature.** By JOSEPH NORDMANN (Los Angeles Valley College). Harper & Row, New York, N.Y. 1974. xiii + 706 pp. \$12.95.

A text "primarily for non-science majors" designed for a one- or two-semester course; each chapter is titled with a question, such as "What is the atmosphere?", "What are voltaic cells?", etc.

**What Chemists Do.** By JOSEPH NORDMANN. Harper & Row, New York, N.Y. 1974. xiv + 289 pp. \$5.95.

A soft-bound, nonrecyclable laboratory manual to accompany the author's textbook "What is Chemistry?"

**Fundamentals of Chemistry, A Learning-Systems Approach.** By ROD O'CONNOR (Texas A&M University). Harper & Row, New York, N.Y. 1974. xii + 752 pp. \$11.95.

A soft-bound introductory text that incorporates the pedagogical aids of statements of objectives, self-tests, and many problems with answers worked out in detail.

**Amino Acids, Peptides and Proteins, Volume 5.** Edited by R. C. SHEPPARD. The Chemical Society, London. 1974. xviii + 515 pp. £8.00.

This volume of the Specialist Periodical Reports reviews papers published in 1972 in general, but chapters on chemical structure and biological activity and on metal derivatives of amino acids, peptides, and proteins cover earlier work, particularly that of 1971. The last chapter is a reprint of new and revised recommendations of the IUPAC-IUB Commission on Biochemical Nomenclature. A list of abbreviations used is a welcome feature, and contains some surprises; in it one sees that g.l.c. means gas-liquid chromatography, but Glc means glucose, for example, and that BSA does not necessarily mean a make of motorcycle nor SDS a student activist organization.

**Electrochemistry, Volume 4.** Edited by H. R. THIRSK. The Chemical Society, London. 1974. ix + 349 pp. £9.00.

The latest volume in this series of the Specialist Periodical Reports reviews in some detail the subjects of membranes, organic electrochemistry, and fused salts, and also has chapters on electrode reactions in liquid ammonia, nickel hydroxide and related electrodes, and the electrochemical behavior of zinc and cadmium in alkaline solution. There is a true author index, but no subject index.

**Annual Review of Biophysics and Bioengineering, Volume 2.** Edited by L. J. MULLINS (University of Maryland). Annual Reviews Inc., Palo Alto, Calif. 1973. vii + 333 pp. Price not stated.

Of the eleven papers in this volume, at least three (Primary Processes in Bacterial Photosynthesis; Structure and Symmetry of Oligomeric Enzymes; Interpretation of Some Microelectrode Measurements of Electrical Properties of Cells) contain material of interest to chemists.

**The Chemistry of the Quinonoid Compounds, Parts 1 and 2.** Edited by SAUL PATAI. Wiley/Interscience, New York, N.Y. 1974. xiv + 1274 pp. \$39.00 each part.

This pair of volumes in the series "Chemistry of Functional Groups" is an impressive accomplishment. In 18 chapters from 26 contributors, the subject of quinones, which inevitably embraces much hydroquinone chemistry, is covered with expertise. The editor apologizes for the fact that two projected chapters did not materialize: "ORD and CD of Quinones" and "Quinhydrone and Semiquinone Systems." It is indeed a pity, but one must be the more grateful to those contributors who fulfilled their commitments. This pair of volumes also embraces quinone methides (quinomethanes), but quinone imines are only mentioned incidentally.

There is no statement about the cut-off date for review of the lit-

erature, but many 1972 references can be noticed. The usual extensive author and subject indexes appear at the end of Part 2. This is an obviously essential work of reference.

**Combustion Institute European Symposium.** Edited by F. J. WEINBERG (Imperial College). Academic Press, London. 1973. xviii + 740 pp. £12.00.

This volume contains the collected preprints of the papers delivered at the symposium held in 1973. There were 122 papers covering various aspects of the chemistry and kinetics of flames and burning. The papers are reproduced from typescript, but include figures and tables; there is no index.

**Energy, Structure and Reactivity.** Edited by DARWIN W. SMITH and WALTER B. MCRAE (University of Georgia). Wiley/Interscience, New York, N.Y. 1973. xix + 399 pp. \$14.95.

This book constitutes the Proceedings of the 1972 Boulder Summer Research Conference on Theoretical Chemistry. It is photoreproduced from typescript and contains a large number of short papers, with the discussions that followed each. There is no index, and what passes for a table of contents is in fact only a list of the subjects of the various sessions, and does not give the titles of the individual papers.

**Fogs and Smokes, Faraday Symposium No. 7.** The Chemical Society, London. 1974. 235 pp. £4.00.

The nineteen papers presented at a Symposium held in March, 1973, at Swansea are printed here along with the general discussions. There is no subject index.

**Second International Symposium on Polymer Characterization.** Edited by F. A. SLIEMERS (Battelle Columbus Laboratories) and K. A. BONI (Continental Can Co.). Wiley/Interscience, New York, N.Y. 1973. vi + 345 pp. \$14.95.

The title symposium was held in Seattle in August, 1972. There were 26 papers, each one reporting original research. They are presented with figures, tables, references, and, in some cases, photographic plates. There is no subject index.

**Organic Syntheses with Noble Metal Catalysts.** By PAUL N. RYLANDER (Engelhard Minerals and Chemicals Corp.). Academic Press, New York, N.Y. 1973. ix + 331 pp. \$22.50.

Many chemists will be surprised by the author's statement in his preface that "the field of catalysis of organic reactions by noble metals is in its infancy." He supports this claim by pointing out that "most noble metal-catalyzed reactions have been developed only within the last decade."

The intended audience consists primarily of those interested in synthesis, and the subject of reaction mechanism has been purposefully avoided. The author thus treats his subject descriptively, and in doing so he surveys a very large body of literature succinctly, with priority given to aspects of experimental interest. The eight chapters cover dehydrogenation, homogeneous hydrogenation, oxidation (with a separate chapter on osmium and ruthenium tetroxides), isomerization, oligomerizations and condensations, carbonylation and hydroformylation, and silicon chemistry. There are few tables, and they are small, but perhaps this situation is in part a result of the nature of the subject. The 15-page index, which lists specific compounds, is of much help in finding things, but it is still necessary to browse through an entire chapter to be sure of finding what one wants. The size of the bibliographies can be appreciated from the fact that the author index takes up 21 pages.

**Perspectives in Cancer Research.** Edited by GERALD P. MURPHY (Roswell Park Memorial Institute). Alan R. Liss, Inc., New York, N.Y. 1973. vii + 413 pp. \$20.00.

This book consists of 32 contributed review papers in honor of the 75th anniversary of the Roswell Park Memorial Institute. Some of the papers are in the area of clinical medicine, but the majority are concerned with aspects of biochemistry related to cancer, with chemotherapy, and with diagnosis.

**Residue Reviews, Volume 51.** Edited by F. A. GUNTHER and J. D. GUNTHER. Springer Verlag, New York, N.Y. 1974. ix + 189 pp. \$18.80.

This latest volume in this active series on the chemistry and related aspects of pesticides has two chapters on the broad-spectrum insecticide Diazinon (a monothiophosphate derivative of pyrimidine), one on physiological and biological effects of pesticide residues in poultry, and one on Guthion (azinthophosphomethyl, a dithiophosphate derivative of benzotriazinone). Much of the emphasis is on the organic chemistry involved.

**Rodd's Chemistry of Carbon Compounds, Second Edition, Volume III, Part B.** Edited by S. COFFEY. American Elsevier, New York, N.Y. 1974. xix + 519 pp. \$49.00.

This is the second part (of a projected three) of the volume devoted to aromatic compounds. It consists of four chapters: Benzoquinones and Related Compounds, Derivatives of Benzenoid Hydrocarbons with Substituents Containing a Single Nitrogen Atom, Aromatic Compounds of the Nontransition Elements, and Aromatic Compounds of the Transition Elements. The expansion of the subjects compared with original Volume III is evident. In particular, the chapter on benzoquinones has a ten-page appendix covering important material that appeared while the chapter was in press. This fact points up the unfortunate lack of any statement about when the contributors ceased scanning the literature before writing. The appendix contains references from the year 1972, but for the other chapters, one can only guess as to the latest reference.

The approach remains the essentially classical one of the first edition; emphasis is on preparation and reactions; the paragraphs on properties are very brief and without information on spectroscopic properties. Nevertheless, this work is an invaluable collection of information presented compactly and in a well-organized manner. An excellent subject index enhances its usefulness.

**Tables of Physical and Chemical Constants, 14th Edition.** Compiled by G. W. C. KAYE and T. H. LABY. Longman Inc., New York, N.Y. 1973. xi + 386 pp. \$12.00.

This work was first published in 1911, and in successive editions has outlived the original compilers. It is subdivided into four sections: General Physics (143 pp), Chemistry (108 pp), Atomic and Nuclear Physics (86 pp), and Mathematical Tables (27 pp). The section on chemistry now includes 14 pages on nmr and the Mössbauer effect, in addition to properties of elements, compounds, and solutions, bond characteristics, electrochemistry, thermodynamics, and miscellany. The emphasis is toward the inorganic, as shown by the fact that the table on properties of inorganic compounds has more columns of data than, and is twice as long as, that on organic compounds. The six-page table of properties of organic compounds is too short to be useful for any but the most elementary of purposes. On the other hand, the size of the book is much more convenient for handling than other compendia of similar data; the type is easy to read and the pages are of a substantial weight. Much has been done to keep the content up to date in accuracy and pertinence, and in this edition, all tabulated values have been expressed in SI units for the first time.

**Transport Phenomena Through Polymer Films.** Edited by CHARLES A. KUMINS (Tremco Manufacturing Co.) Wiley/Interscience, New York, N.Y. 1973. v + 176 pp. \$10.00.

This constitutes the collected papers of a symposium held at the 164th National Meeting of the American Chemical Society (August–September 1972) and is published as a supplement to the *Journal of Polymer Science*. The fourteen papers appear to be accounts of original research. There is an inadequate subject index and an "author index" that includes only the names of the thirty contributors, rather than the authors whose work is referred to.

**Applications of Laser Raman Spectroscopy.** By S. K. FREEMAN (International Flavors and Fragrances, Inc.). John Wiley & Sons, New York, N.Y. 1974. xi + 336 pp. \$17.50.

"Applications of Laser Raman Spectroscopy" is a book written by an organic chemist and aimed at the investigator wishing an extensive, up-to-date collection of Raman spectra of various organic functional groups. In addition, the author has included chapters on the Raman spectra of biological materials and the application of laser Raman spectroscopy to the study of air and water pollution. This book should be a welcome addition to the library of those in-

vestigators working in the associated fields and those searching for a convenient reference book. As stated by the author, the purpose of the book is to demonstrate the value of laser Raman spectroscopy as it applies to problems in chemistry and allied fields. It is this reviewer's opinion that the book ably satisfies this goal.

The first chapter is a brief discussion of the Raman effect and how it fits into the "spectroscopy picture." This chapter is not a treatise on the Raman effect, and those readers familiar with the basis for the effect could omit this part of the book. The only fault this reviewer finds with the book is the discussion on instrumentation in Chapter 2. Freeman's brief discussion of the Raman systems is incomplete and would be of little aid to those persons wishing to make recommendations as to equipment requirements for possible purchase. (This is a situation many of us find ourselves in from time to time.) The book by M. C. Tobin ("Laser Raman Spectroscopy," Wiley, 1971) or the tutorial article by this reviewer (*Amer. J. Phys.*, 40, 1389 (1972)) should assist those wishing aid with their equipment recommendations.

The text is well planned and is conveniently chaptered according to the various functional groups, *i.e.*, amines, alkynes, nitriles, carbonyls, ethylenic double bonds, aliphatic and aromatic ring systems, and sulfur-containing compounds. This reviewer found few typographical errors, perhaps the most serious being a mislabeling in Figure 1.6. An interchange of the labels  $\nu_2$  and  $\nu_3$  in Figure 1.6 should rectify the problem.

David F. Edwards, Colorado State University

**The Chemistry of Electrode Processes.** By ILANA FRIED (Department of Inorganic and Analytical Chemistry, The Hebrew University, Jerusalem). Academic Press, London and New York. 1973. x + 225 pp. \$13.75.

This book consists of six chapters and a seven-page subject index. The chapter titles are (1) Introduction; (2) The Galvanic Cell, Basic Definitions and Concepts; (3) Electrode Kinetics; (4) The Electrode-Solution Interphase at Equilibrium; (5) Techniques of Measurements; and (6) Some Technological Aspects of Electrodes.

The stated aims of the book are to present an introduction to the field of "electrode processes"—the subject dealing with the transfer of electric charge between a solid and a liquid phase—and "to enable the reader to use the more advanced literature intelligently." The reader is assumed to be "conversant with thermodynamics, basic kinetics and the basic concepts of conductance" but not to be necessarily familiar with electrochemistry. The "more advanced literature" is contained in a bibliography of 23 books. It would not be consistent with the pedagogical purpose of this book to provide citations of the primary literature, and none are provided.

Chapter 1 (8 pp) points out the relevance of electrochemistry to basic science and to technology and concludes with a very brief review of the history of electrochemistry. Chapter 2 (56 pp) reviews material ordinarily found, perhaps in a trifle more elementary form, in textbooks of physical chemistry. Chapter 3 analyzes the roles in electrode kinetics of mass transport, electron transport, accompanying chemical reactions, and adsorption or crystallization. "Real electrode reactions" (p 61) in which a chemical step may intervene between two electron transfer steps (ece) are considered very briefly, indeed. Chapter 4 (44 pp) is an exposition of double layer theory and the influence of adsorption on electrode kinetics. Chapter 5 (47 pp) presents the principles of cell design, the measurement of double layer capacity, the techniques of polarography, cyclic voltammetry, current/potential-step methods, and electrochemistry with spectroscopy. Chapter 6 (57 pp) considers the applications of electrochemistry in analysis, electroplating, corrosion, batteries and fuel cells, and synthesis (chlor-alkali, fluorine and fluorination, electrowinning, and electrorefining).

The expository style is very good. The summarizing statements which serve as abstracts after each chapter are pedagogically sound. The emphasis throughout is on theoretical principles and mathematical analysis; the chemistry, except for Chapter 6, is largely encompassed in the familiar  $Ox + ne = Red$ . (Radicals and ion radicals are not mentioned or indexed.)

The author, by providing a very readable short book at a consistent level, has spared the reader the chore of assembling the material covered from a variety of sources in which it is treated at varying levels of complexity. The reader who is seeking a broad ac-

quaintance with the field of electrochemistry and finds anything but the substances Ox and Red unnecessarily distracting may not have been inclined to find virtually the same material (except for Chapter 6) included as the introductory sections of recent books on organic electrochemistry.

One gets the impression that the prototype reader has not spent much time outside his office, laboratory, and home nor has he wasted his time reading semitechnical articles about pollution problems, energy conversion, dimensionally stable anodes, fluorinations at carbon, etc. He is presumably comfortable with the derivation of the Butler-Volmer equation (p 44 ff.) and is comforted with the feeling that there is nothing fundamentally intellectually stimulating in the problems of electrochemical production. "It is instructive to compare laboratory and factory operations with those of kitchens in homes and those in big restaurants." This sheltered reader will find this book a very useful peephole into the world of electrochemistry and may have his curiosity whetted. Thus, the book can serve its stated purpose.

There are minor spelling errors (Tailor series, p 53), many of which arise from a cavalier use of the letter "ell": berilium and galium (p 182); alluminate (p 188); J. R. Williams (p 217). "Stechiometry" (p 62) and a repeated sentence (p 156) are not serious; a practicing chemist is, however, appalled at "diestuffs" (p 154).

Manuel M. Baizer, *Monsanto Company*

**Homogeneous Nucleation Theory.** By F. F. ABRAHAM (IBM Research Laboratory). Academic Press, New York and London. 1974. xiv + 263 pp. \$23.00.

This book is a very good review of homogeneous nucleation phenomena, considered from a macroscopic as well as microscopic standpoint. The manner in which fundamental thermodynamic formulas are established is very concise and efficient. However, it seems to be more useful to those who are already familiar with these problems rather than to the complete neophyte, who would find better interest in a more conventional approach.

A good introduction is given to the Lothe and Pound theory and the controversy around it in relation with the experiments. It is shown that some liquids follow the Lothe-Pound prescription while some others follow the Becker-Döring prescription. This is related to the kind of molecular bindings.

In my opinion, the most interesting part of this book is Chapter 9, where Monte Carlo methods are used to calculate the free energies of small argon clusters. This is a very promising approach, which gives exact results in the case of monoatomic substances with central forces. For liquid clusters, the results are in favor of Lothe-Pound theory. It would be interesting to make such calculations for crystalline clusters of small size, and compare the results with those obtained by normal mode analysis, which are in good agreement with the capillarity approximation. Also I am not in total agreement with the definition of a cluster. The volume specification is not sufficient. In Mayer's definition of a cluster, it must be possible to go from any atom to any other one by following only first-neighbor bonds. In the snapshot pictures given, it appears frequently that the atoms are separated into two groups, which really form two subclusters. That might introduce an error in the free energies calculated.

Alain Bonissent, *Université d'Aix Marseille III—Centre Scientifique Saint Jérôme*

**Magnetochemie: Grundlagen und Anwendungen.** By ALARICH WEISS (Institut für Physikalische Chemie der Universität Münster) and HELMUT WITTE (Eduard-Zintl-Institut der Technischen Hochschule Darmstadt). Verlag Chemie GmbH, Weinheim/Bergstr. 1973. ix + 281 pp. DM 59.

This introduction to magnetochemistry is concerned primarily with magnetic susceptibility. The authors state their intention to develop the basic physical principles of measurement techniques, diamagnetism, paramagnetism, and cooperative phenomena, and to prepare the reader to understand more specialized monographs. The introductory chapter on the physical basis of magnetochemis-

try (13 pp) serves to establish nomenclature and provide a handy summary of formulas. The authors presume an elementary knowledge of physics. The chapter on measurement techniques (47 pp) discusses, e.g., the Schaukel and the Neckenbürger methods as well as the more common Gouy and Faraday methods. The physical bases for diamagnetism and paramagnetism and the experimental results for numerous substances are treated in 43 and 80 pages, respectively. A 30-page chapter on cooperative phenomena, which includes a more extensive than usual treatment of metals and alloys, is followed by 28 pages of examples of the application of magnetochemistry to chemical problems. A seven-page appendix surveys the dimensions and units of electrical and magnetic quantities in both cgs and MKSA systems.

The book contains a 3-page bibliography of textbooks and monographs, 120 figures, 78 tables, and 321 references. The large amount of information presented in the figures and tables makes the book quite useful even for the person who does not read German fluently. Those who use magnetic methods will want their own copy. It deserves the wider audience that an English translation would provide.

Gareth R. Eaton, *University of Denver*

**Organotin Compounds. Volume 3.** Edited by ALBERT K. SAWYER (University of New Hampshire). Marcel Dekker, Inc., New York, N.Y. 1972. xiii + 452 pp. \$35.00 (individually); \$25.00 (subscription).

This is the third volume of a series dealing exclusively with organotin compounds. The present volume is concerned not only with the synthesis of organotin compounds, but also contains chapters on their application as well as one dealing with the analysis of these compounds. The chapters are concluded by a list of references which is rather complete for the years 1960-1970; thus the book connects well with Ingham, Rosenberg, and Gilman's exhaustive review of this subject (*Chemical Reviews*, **60**, 431 (1960)). In all, the book contains six chapters. The generous use of tables contributes to the clarity of the presentation of the material.

M. Gielen and J. Nasielski wrote the chapter on "Organotin Compounds with Sn-C Bonds without Sn-Sn Bonds." This is the largest contribution of this volume. It gives a good and very useful record of the different methods available for the preparation of Sn-C bonds. By far the most valuable aspect of this chapter is the discussion of the mechanisms governing the making or breaking of Sn-C bonds of organotin compounds of different types. It is written on a high level of sophistication and is, to this reviewer's knowledge, the best one available on this subject. The editor, Albert K. Sawyer, contributed a chapter on "Organotin Compounds with Sn-Sn Bonds." A chapter on "Organotin Compounds with Tin-Other Metal Bonds" by M. J. Newlands concludes the preparative part of this volume. A brief part of this contribution deals with compounds containing tin-"typical element" bonds, "typical elements" being those in groups Ia, IIa, IIb, IIIa, and IVa. The second part of this chapter consists of an excellent and very timely review of compounds with tin-transition metal bonds; this is followed by two chapters concerned with the application of organotin compounds. Most useful and very relevant is the contribution "Application and Biological Effects of Organotin Compounds" by J. G. A. Luijten. This reviewer would have wished that the chapter on "Organotin Polymers," authored by Malcolm C. Henry and Wenzel E. Davidsohn, would have been more critical. The final chapter by C. R. Dillard gives an account of the status of the analysis of organotin compounds. After a brief section on wet analytical procedures, the instrumental methods including ir,  $^{115}\text{Sn}$ ,  $^{117}\text{Sn}$ ,  $^{119}\text{Sn}$ , and Mössbauer spectroscopy are discussed on a total of six pages, which is possibly too little to be of real value. Regrettably there is no mention of mass spectrometry as an analytical tool in organotin chemistry.

In conclusion this reviewer feels that this is a useful book. It is indispensable for libraries of universities and research institutes; the excellent chapter on Sn-C compounds should make it, in spite of its high price, highly desirable to own for the individual researcher active in this field.

H. Zimmer, *University of Cincinnati*