

Book Reviews*

Advances in Heterocyclic Chemistry. Volume 20. Edited by A. R. KATRITZKY and A. J. BOULTON. Academic Press, New York and London. 1976. ix + 324 pp. \$33.50.

This volume embodies the new policy for the series of bringing up to date chapters that appeared in earlier volumes. Covalent hydration (essentially the addition of water to C–N double bonds) is reviewed by Adrien Albert; much progress has been made since Volume 4 of this series (1965), in substantial part owing to application of NMR. The applications of the Hammett equation to heterocyclic systems since 1962 is reviewed by P. Tomasik and C. D. Johnson. The chemistry of 1,2,3,4-thiazotriazoles, originally reviewed in Volume 3, is brought up to date by A. Holm.

Two new subjects complete this volume. 1,2,4-Oxadiazoles, last reviewed elsewhere in 1965, are reviewed by L. B. Clapp; it is interesting to see the many pharmaceutical and agricultural uses to which members of this class have been put. Finally, nomenclature of heterocycles is discussed by A. D. McNaught, who does us the great service of reducing the IUPAC rules to a more readable discursive text and including the various alternative methods that are or have been used. An introductory section describes the origin and rationale of the various systems and points out the differences between the *Chemical Abstracts* system, designed solely for unambiguous indexing, and the IUPAC system, designed for communication in the literature and embracing a variety of alternatives.

Development of Iron Chelators for Clinical Use. Edited by W. F. ANDERSON and M. C. HILLER. National Institute of Arthritis, Metabolism, and Digestive Diseases, Bldg. 31, Rm. 9A03, Bethesda, Md. 20014. 1976. 277 pp. Free of charge.

This soft-bound volume is the proceedings of a symposium held at NIH in 1975. It consists of reports of original research, reproduced from typescript, and transcripts of the discussions that followed. Synthetic organic chemistry, biochemistry, and clinical screening are covered. A copy may be obtained gratis by sending a request to the Iron-Chelation Project Officer, at the above address.

High-Pressure Liquid Chromatography in Clinical Chemistry. Edited by P. F. DIXON, C. H. GRAY, C. K. LIM, and M. S. STOLL. Academic Press, New York and London. 1976. xxv + 224 pp. \$12.25.

This volume is the proceedings of a symposium held in England in 1975. It contains 29 papers, most of which are reports of original research and contain experimental details, tables, illustrations, and bibliographies. The Preface carries as a footnote an interesting comment on the abbreviation HPLC, which the editors favor for its convenient ambiguity; it can stand for either High Pressure, or High Performance, Liquid Chromatography. Happily, a plea for the demise of HELC, HRLC, HSLC, and LC is made.

Iminium Salts in Organic Chemistry. Part 1. Edited by H. BÖHME and H. G. VIEHE. Wiley/Interscience, New York, N.Y. 1976. xi + 631 pp. \$42.50.

This book is Volume 9 of the series "Advances in Organic Chemistry: Methods and Results", edited by E. C. Taylor. It consists of seven contributed chapters and was developed out of discussions among European chemists active in the area, who became concerned that the enormous progress in the subject during the last two decades may have escaped general attention.

The first two chapters deal with electronic structure and structure determination of $R_2C=N^+R_2$ ions. The exhaustive tables of spectrographic data that are included are an especially valuable feature. The third chapter is devoted to methyleniminium salts, formally derived from formaldehyde. An unfamiliar new term, "heterogeminal", is defined in this chapter; they are compounds of the type R_2CX_Y , where X and Y are heteroatoms, such as O, N, and S, and may be the same or different, and may be substituted. The unfortunate term

"aminal" is used, without explicit definition, for *gem*-diamines, a class of heterogeminal of significance as precursors of iminium salts.

The Vilsmeier–Haack acylation, which in the last 20 years has been extended by Arnold to embrace aliphatic as well as aromatic substrates, and which involves chloromethyleniminium chlorides as essential intermediates, is thoroughly treated in the fourth chapter. The following chapter covers the chemistry of the related dichloromethyleniminium salts, whose chemistry started so recently as 1959, and which have a potential for application in synthesis comparable to the Vilsmeier–Haack intermediate.

α -Haloamines, and the keteniminium salts formed from them by reaction with Lewis acids, are the subject of the next chapter. They are closely connected to the chemistry of ynamines. The last chapter is about "N-heteroiminium salts", by which term is meant iminium salts with O, N, or S attached to nitrogen. Nitrones are included under this rubric.

Both author and subject indexes are provided.

Organic Reactions. Volume 24. Edited by W. G. DAUBEN. John Wiley & Sons, Inc., New York, N.Y. 1976. ix + 431 pp. \$26.50.

The latest volume of this always welcome work contains four chapters: Homogeneous Hydrogenation Catalysts in Organic Synthesis (A. J. Birch and D. H. Williamson); Ester Cleavages via S_N2 -Type Dealkylation (J. E. McMurry); Arylation of Unsaturated Compounds by Diazonium Salts (C. S. Rondstedt); and Selenium Dioxide Oxidation (N. Rabjohn). These chapters have been contributed by chemists actively associated with the topics and include the usual detailed survey of scope, description of experimental methods, tabular survey of reported examples, and historical introduction and remarks on mechanism.

The first two of these chapters cover topics introduced in the last 25 years. Probably the least well known is ester cleavage by dealkylation, in which the alkyl group of an ester is attacked by a nucleophile such as iodide, yielding a carboxylate salt and alkyl halide. The Meerwein arylation, the subject of the third chapter, is only slightly older, having been reported first in 1939. The last chapter brings up to date a subject covered once before in *Organic Reactions* (Vol. 5, in 1949).

The index of chapter titles for the series has now grown to six pages. Author and subject indexes for this volume conclude the volume.

Slow Viruses. By D. H. ADAMS and T. M. BELL. Addison-Wesley Publishing Co., Inc., Reading, Mass. 1976. x + 214 pp. \$19.50 hardbound; \$7.50 softbound.

Slow viruses are defined by the authors as those that replicate slowly, and thus give rise to a special group of diseases, including multiple sclerosis and scrapie. This slim volume is a review of them that ranges from the biochemical to the clinical, and thus does not include material that is strictly chemical. There are a limited bibliography and a subject index. It is an easily understandable introduction to the general field.

Vapor-Liquid Equilibrium Data Bibliography. Supplement I. By I. WICHTERLE, J. LINEK and E. HÁLA (Czechoslovak Academy of Science). Elsevier Scientific Publishing Co., New York and Amsterdam. 1976. vii + 333 pp. \$39.95.

The parent work was published in 1973 and included published material through 1972. This Supplement carries the survey through December, 1975, and includes some references from the earlier period that had been overlooked. The work is a vast table of computerized data with a list of 1029 references. The formula-index arrangement makes it easy to find desired information. There are also five-pages of errata to the parent work. It is obviously a work of much value for chemists concerned with distillation problems, especially as they are encountered in industrial applications.

* Unsigned book reviews are by the Book Review Editor.

Crystallographic Computing Techniques. Edited by F. R. AHMED (National Research Council, Canada). Munksgaard Publishers, Copenhagen. 1976. 503 pp. \$57.00.

This book collects together papers presented at the International Summer School in Crystallographic Computing held in Prague in the summer of 1975. It contains a good mix of papers, some trivial, some useful, on the general topics (i) the applications of direct methods to the solution of crystal structures, (ii) computational aspects of protein crystallography, and (iii) a catch-all category of miscellaneous computational techniques. Included are discussions of strategies of finding a successful trial structure, of Patterson search techniques for protein structures, of refinement techniques for protein structures, of graphic displays, of integrated computing systems, of the role of the mini-computer in crystallography, and of data banks. Certain important topics, e.g., data collection strategies, are omitted.

Books on computing techniques have the inherent disadvantage that one cannot use the information to advantage unless he has the appropriate computer programs. Thus information contained in the present book will be of use primarily to the crystallographic specialist who already possesses a program library. For the nonspecialist engaged in the use of single-crystal diffraction methods for chemical or analytical purposes, the book will provide some rather indigestible background but, more importantly, it will provide useful references and an indication of whom to contact for computer programs of a given type. In this regard failure to include a subject index is a grave error.

Since this book is very similar in approach to its predecessor, "Crystallographic Computing" (1970), perhaps its usefulness to the reader can be judged by the frequency with which he has consulted that earlier work.

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Organic Structural Analysis. By J. B. LAMBERT (Northwestern University), H. F. SHURVELL (Queen's University), L. VERBIT (SUNY at Binghamton), R. G. COOKS (Purdue University), and G. H. STOUT (University of Washington). Macmillan Publishing Co., Inc., New York, N.Y. 1976. xii + 596 pp. \$22.95.

This book will find use both as a text for courses on the advanced undergraduate and beginning graduate levels and as a handbook of useful spectroscopic information for the practicing chemist. The book is divided into five parts: Nuclear Magnetic Resonance Spectroscopy (144 pp), Vibrational Spectroscopy (IR and Raman) (163 pp), Electronic Spectroscopy (UV, Visible, ORD, and CD) (84 pp), Mass Spectrometry (123 pp), and X-Ray Crystallography (47 pp). Each of these consists of a number of chapters dealing with individual topics in the field, beginning with a brief introduction to the basic principles

followed by a discussion of the experimental techniques and instrumentation involved. Specific chapters then deal with advanced applications and the solution of structural problems in the area. Examples from the current literature are used extensively to illustrate the principles being discussed. For example, the NMR section includes chapters on the following topics: Introduction, Experimental Methods, The Chemical Shift, The Coupling Constant, Multiple Resonance, Rate-Dependent Phenomena, and Relaxation Phenomena.

A well-prepared table of contents as well as a good index make it possible to use this book for general reference as well as classroom purposes. In addition, each chapter is followed by a brief bibliography divided according to topic headings. Many of the tables and illustrations reference the original research being discussed, but, unfortunately, footnotes have not been included in the text. A major shortcoming is the lack of a more detailed coverage of carbon-13 NMR. An entire chapter could easily have been devoted to this important and timely area.

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Peptide Synthesis. By M. BODANSZKY (Case Western Reserve University), Y. S. KLAUSNER (The Hebrew University of Jerusalem), and M. A. ONDETTI (The Squibb Institute for Medical Research). John Wiley & Sons, New York-Toronto. 1976. xiv + 208 pp. \$19.50.

In the preface to this second edition of the chemistry of peptides, the authors have described the necessity for updating the first edition because of the rapid expansion of the body of knowledge surrounding peptide chemistry. The book is mainly intended for students or inexperienced would-be peptide chemists, but is also of value to the peptide expert as a quick review. Because of its size, this volume cannot be considered an exhaustive treatise of the subject, but by the same token, the authors have culled from the voluminous literature most of the important and useful aspects of the art.

The topic is covered in eight chapters; a chapter on the synthesis of biologically active peptides from the first edition has been deleted, and a new chapter on solid-phase synthesis added which is a welcomed improvement. The other chapters deal with protecting groups, formation of the peptide bond, racemization, problems of synthesis, and, finally, strategy and tactics of peptide synthesis in which the beginner will find the area of greatest concern.

The volume is easily read and understood and is an excellent volume though limited in detail.

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