

of these reactions to determine their synthetic utility as well as their mechanism.

Acknowledgments. We thank the National Science Foundation and the National Institutes of Health for grants whose flexibility permitted us to discover these reactions, and the Petroleum Research Fund of the

American Chemical Society for funds to explore them in detail.

David L. Dean, Harold Hart*

Department of Chemistry, Michigan State University
East Lansing, Michigan 48823

Received November 5, 1971

Book Reviews*

Archaeological Site Science. By F. H. GOODYEAR (North Staffordshire Polytechnic). American Elsevier, New York, N. Y. 1971. viii + 282 pp. \$10.00.

This book is about the application of scientific technology, principally chemistry, to archaeological materials. It is written at an extremely elementary level and suffers from the fact that it gives only superficial general information, yet provides no leading references for the reader who wants to know more. It may be of some use to amateur archaeologists, but not to chemists.

The Nitrile Oxides. By CH. GRUNDMANN (Carnegie-Mellon University) and P. GRÜNANGER (Universita di Pavia). Springer Verlag, New York, Heidelberg, Berlin. 1971. viii + 242 pp. \$28.30.

The nitrile oxides, $R-C=N \rightarrow O$, contain one of the more obscure functional groups in organic chemistry, although their history is one of the longest, beginning in 1800 with the preparation of mercuric fulminate (the structure of fulminic acid corresponds to formonitrile oxide). They attracted little interest until recent decades, when the growth of the concept of 1,3-dipolar cycloaddition carried them into prominence as sources of unusual heterocyclic systems.

This book covers the subject with critical thoroughness. The bulk of the text deals with preparation and reactions, but there are chapters on history, physical and physiological properties, and applications. A valuable feature is an extensive set of tables recording reported examples of cycloaddition reaction of nitrile oxides. Both authors have long experience with nitrile oxides, and they have augmented the coverage with unpublished information from their own research. The book is heavily documented, and the references extend into 1970 (how far is not stated, but the preface is dated January 1971).

Subcellular Organization and Function in Endocrine Tissues. Edited by H. HELLER (University of Bristol) and K. LEDERIS (University of Calgary). Cambridge University Press, New York, N. Y. 1971. cxiii + 1011 pp. \$37.50.

This book is No. 19 of the Memoirs of the Society for Endocrinology, and is the proceedings of a symposium held in April 1970. The full texts of the papers with many illustrations and extensive references are given along with the following discussions verbatim. It will have a strong appeal to chemists and biochemists concerned with hormone biosynthesis.

Biopharmaceutics and Pharmacokinetics. By R. E. NOTARI (The Ohio State University). Marcel Dekker, Inc., New York, N. Y. 1971. xi + 319 pp. \$13.75.

This is a textbook for a course on the biological transport of drugs, for students and researchers in medicinal chemistry and related fields. The subject is presented at such a level that only an elementary knowledge of calculus is needed. There are references, problems, and a short index.

Synthetic Methods of Organic Chemistry. Volume 25. By W. THELHEIMER. S. Karger AG, Basel. 1971. xvi + 707 pp. \$71.05.

This, the final volume in the fifth series, contains the cumulative index for Volumes 21–25 (nearly 200 pages in itself!). A six-page section on "Trends" at the beginning alerts the reader to some

especially significant innovations in synthetic organic chemistry in the past year (1970–1971). The body of the text, a comprehensive compendium of conversions in organic synthesis, is as usual an invaluable aid to the organic chemist. Although the bulk of the references is from 1970, there is a substantial number from 1968 and 1969. The publishers have been concerned about the continually growing size of these annual volumes and have taken steps to keep them of manageable bigness, including the use of thinner paper. A short key to supplementary references for earlier volumes occurring in Volumes 21 to 25 concludes the book.

Physical Methods of Chemistry. Parts IIA, IIB, and V. Edited by A. WEISSBERGER and B. W. ROSSITER (Eastman Kodak Co.). Wiley-Interscience, New York, N. Y. 1971. Part IIA: xiv + 723 pp. \$32.50. Part IIB: xii + 425 pp. \$23.50. Part V: xiv + 603 pp. \$27.50.

The appearance of three more volumes in the series *Techniques of Chemistry* (successor to *Techniques of Organic Chemistry*) is a welcome event that will benefit a broad variety of chemists. Part II is titled "Electrochemical Methods" and contains nine chapters: Potentiometry: Oxidation-Reduction Potentials (S. Wawzonek); Potentiometry: pH Measurements and Ion-selective Electrodes (R. P. Buck); Conductometry (T. Shedlovsky and L. Shedlovsky); Determination of Transference Numbers (M. Spiro); Polarography (O. H. Muller); Cyclic Voltammetry, Ac Polarography, and Related Techniques (E. R. Brown and R. F. Large); Voltammetry with Stationary and Rotating Electrodes (S. Piekarski and R. N. Adams); Chronoamperometry, Chronocoulometry, and Chronopotentiometry (R. W. Murray); and Controlled-Potential Electrolysis (L. Meites). Part IIB contains six chapters: Electrochemical Synthesis (J. Chang, R. F. Large, and G. Popp); Organic Reactions in Electrical Discharges (B. D. Blaustein and Y. C. Fu); Photoconductivity in Organic Solids (R. C. Nelson); Organic Electroluminescence (D. M. Hercules); Zone Electrophoresis (S. L. Kirschner); and Electrodialysis (J. L. Eisenmann and F. B. Leitz). These two parts are separately indexed, an arrangement of much convenience to purchasers interested in only one volume.

Part V is titled "Determination of Thermodynamic and Surface Properties," and contains ten chapters: Temperature Measurement (J. M. Sturtevant); Determination of Pressure and Volume (G. W. Thomson and D. R. Douslin); Determination of Melting and Freezing Temperatures (E. L. Skau and J. C. Arthur, Jr.); Determination of Boiling and Condensation Temperatures (J. R. Anderson); Determination of Solubility (W. J. Mader and L. T. Grady); Determination of Osmotic Pressure (J. R. Overton); Calorimetry (J. M. Sturtevant); Differential Thermal Analysis (B. Wunderlich); Determination of Surface and Interfacial Tension (A. E. Alexander and J. B. Hayter); and Determination of Properties of Insoluble Monolayers at Mobile Interfaces (A. E. Alexander and G. E. Hibberd).

These volumes contain a vast amount of information of great practical value to organic, inorganic, analytical, and biological chemists, and maintain the character and quality of the series.

Preparative Inorganic Reactions. Volumes 6 and 7. Edited by W. L. JOLLY (University of California). Wiley-Interscience, New York, N. Y. 1971. Volume 6: 254 pp. \$17.50. Volume 7: 218 pp. \$17.50.

The volumes in this series have a curious format, devoid of preface, foreword, or introduction, so that the reader has no way to tell what the intended purpose and function of the books might be;

* Unsigned book reviews are by the Book Reviews Editor.

there is not even a dust jacket that might have indicated the aims. The chapters themselves are devoted more to *compounds* rather than *reactions*: Complexes of Macrocyclic Ligands (Lindoy and Busch); Sulfanuric Compounds (Moeller and Dieck); Heterocyclic Compounds of the Group IV Elements (Yoder and Zuckerman); Inorganic Derivatives of Germane and Digermane (Van Dyke); Polyhedral Boranes and Heteroatom Boranes (Scholer and Todd); Metal-Metal-Bonded Halogen Compounds of the Transition Metals (Fergusson); and Complexes of Dinitrogen (Leigh). They contain many small tables that emphasize physical properties of compounds, but tables emphasizing preparative aspects, such as yields, are scarce, a curious situation in view of the title.

The chapters are competently written and are valuable reviews, with very extensive bibliographies. Unfortunately, no indication is given about how up to date they are (some 1970 references can be found however). Each volume has an author index, a subject index, and a cumulative index of chapter titles of previous volumes.

Oxidation: Techniques and Applications in Organic Synthesis. Volume 2. Edited by R. L. AUGUSTINE (Seton Hall University) and D. J. TRECKER (Union Carbide Corporation). Marcel Dekker, Inc., New York, N. Y. 1971. x + 204 pp. \$17.50.

A review of Volume 1 of this two-part work appeared in the April 7th, 1971, issue of this Journal (p 1830), and the general remarks made there apply equally to Volume 2. The book contains four chapters: Sulfoxide-Carbodiimide and Related Oxidations (J. G. Moffatt); Photosensitized Oxidations (W. R. Adams); Epoxidation of Olefins by Hydroperoxides (R. Hiatt); and Metal-Ion Catalyzed Oxidation of Organic Substrates with Peroxides (A. R. Doumaux, Jr.). All of these subjects are ones that were introduced or came to prominence in the immediately past decade, and the comprehensive, critical reviews of them are very timely. The date to which the literature is covered is not stated, but the Preface is dated July 1970, and some references for 1970 are included. There is an author index and a subject index.

Encyclopedia of Industrial Chemical Analysis. Volume 13. Edited by F. D. SNELL and L. S. ETTRE. Wiley-Interscience, New York, N. Y. 1971. xiv + 607 pp. \$45.00 (single volume); \$35.00 (series subscription).

This volume covers Fluorine to Glycols, and includes extensive sections on fumigants, fungicides, furan and derivatives, noble gases, gasoline, etc.

Dictionary of Organic Compounds. Fourth Edition. Seventh Supplement. Edited by J. B. THOMSON. Oxford University Press, New York, N. Y. 1971. 272 pp. \$29.00.

This supplement follows the pattern of earlier ones and is composed largely of material published in the preceding year (1970), plus corrections and additions to previous volumes. It is, of course, an essential addition for libraries holding the previous volumes.

ULV Application and Formulation Techniques. By W. MAAS N. V. Philips-Duphar Crop Protection Division, Amsterdam, The Netherlands. 1971. 164 pp. \$10.00.

For the benefit of the uninitiated, the acronym ULV stands for "ultra low volume" and refers to a technique for applying liquid pesticide formulations as a spray of very fine droplets in a volume of less than 5 liters/hectare (0.5 gal/acre). In this balanced, well-documented review (343 references), Dr. Maas covers equipment, application techniques, solvents, formulations, field trials of specific pesticides against specific pests, a review of field testing techniques, and a summary of world-wide experience with ULV techniques. The chapters on solvents and formulations are likely to appeal especially to chemists with interests in pesticides.

David W. Emerson, *University of Michigan at Dearborn*

Biochemical Endocrinology of the Vertebrates. By E. FRIEDEN and H. LIPNER (Florida State University). Prentice Hall, Englewood Cliffs, N. J. 1971. xii + 164 pp. \$8.95 cloth; \$4.95 paper.

This book is a compilation of facts. Few readers will catch through its dry, short paragraphs even a glimmer of the excitement

which has been associated both with the discovery of the various hormones and the elucidation of their physiology and structures. This is a great pity because, to many of us, the biochemistry of endocrinology has been one of the most romantic subspecialties of the field, from the problems encountered by Kendall in the early thyroxin work to the recent, intensely competitive race to characterize calcitonin.

The crux of the problem of the Frieden-Lipner book, in my opinion, is that, for the nonspecialist, it does not read well enough to hold interest or give sound broad concepts. For the specialist it is neither complete nor up to date enough. As an example of the latter point, the authors have chosen to illustrate the chapter on parathyroid hormone with the 83 amino acid sequence proposed in 1966 rather than today's generally accepted 84 amino acid sequence. While choices will have to be made as to what material will and will not be included in a slim volume on a large subject, some of the author's choices appear rather arbitrary. Thus prostaglandins have been "tentatively excluded as bona fide hormones," but space has been devoted to listing reasons why phosphate is an important element in the body. In the same vein, in spite of the title, ecdysone, in insect hormone, has been included in the book, but no effort has been made to suggest that one does not find the same distribution of the various adrenocorticoids in all vertebrates. Somehow the book is too reminiscent of the summarizing notes commonly used to cram for a final exam.

Daisy S. McCann, *Wayne County General Hospital, Eloise*

Advances in Chemoreception. Volume I. Communication by Chemical Signals. Edited by J. W. JOHNSON, JR. (Georgetown University), D. G. MOULTON (Monell Chemical Senses Center and Veterans Administration Hospital, Philadelphia, Pa.), and A. TURK (The City College of the City University of New York). Appleton-Century-Crofts, Educational Division, Meredith Corp., New York, N. Y. 1970. x + 412 pp. \$21.00.

This is the first volume of a new series which is to be devoted to various aspects of chemoreception. There are twelve chapters and a concluding section in this volume: Introduction (E. O. Wilson); Defining "Communication" (G. M. Burghardt); Purity, Identification and Quantification of Pheromones (P. Z. Bedoukian); Chemical Communication in Insects: Behavioral and Ecological Aspects (C. G. Butler); The Role of Chemicals in Termite Communication (A. M. Stuart); Responses of Olfactory and Gustatory Receptor Cells in Insects (B. Stürckow); Researches on Trail and Alarm Substances in Ants (A. Gabba and M. Pavan); Chemical Communication in Fish (J. E. Bardach and J. H. Todd); Chemical Perception in Reptiles (G. M. Burghardt); The Role of Pheromones in Mammalian Reproduction (W. K. Whitten and F. H. Bronson); The Role of Skin Glands in Mammalian Communication (R. Mykytowycz); Man's Ability to Perceive Odors (T. Engen); and Communication by Chemical Signals: Conclusion (J. Le Magnen).

The individual chapters are well-written, well-referenced, stimulating reviews. The bibliographies appear to be complete through 1968, with a few 1969 and 1970 references. Neither the subject matter nor the general orientation of the chapters overlaps significantly with several other books in this general area which have appeared recently ("Chemical Ecology," Sondheimer and Simeone; "Chemicals Controlling Insect Behavior," Beroza; "Control of Insect Behavior by Natural Products," Wood, Silverstein, and Nakajima).

The emphasis in this book is biological, not chemical. The anatomy, histology, endocrinology, and physiology of the emitters and receivers of chemical signals, and the ecological, ethological, and evolutionary significance of chemical communication systems comprise the chief areas of concern. There is very little discussion of the isolation, characterization, synthesis, or biogenesis of the materials utilized as messenger compounds. Any organic chemist contemplating a shift into this area of research will find the chapters dealing with chemical communication in fish, reptiles, and mammals particularly useful. These areas are ripe for the involvement of organic chemists and are certain to yield results as fascinating and as potentially useful as those which have emerged from studies on insects during the past decade.

Michael M. Martin, *University of Michigan*