

methane, therefore suggests that the stability of **5** towards loss of isocyanate is kinetic. In *methanol*, **5** reacts with methyl isocyanide to give $[\text{Re}(\text{MeNC})_2(\text{dppe})_2]^+$ (ν_{CN} , 2080 cm^{-1}). Anal. Calcd: C, 57.8; H, 4.7; N, 2.4. Found: C, 57.5; H, 4.7; N, 2.9.

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References and Notes

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Book Reviews

Chemistry and Biochemistry of Amino Acids, Peptides and Proteins. Volumes 1–3 Edited by BORIS WEINSTEIN (University of Washington). Marcel Dekker, New York, N.Y. 1971. 1974. Vol. 1: x + 174 pp, \$23.50. Vol. 2: xi + 380 pp, \$23.50. Vol. 3: xi + 324 pp, \$27.50.

These are the first three volumes of a series intended to appear more or less annually. Three to five reviews are contained per volume. The scope is broader than that of *Advances in Protein Chemistry*, since it covers the whole field of amino acids and of biomolecules in which the peptide group is important as well as significant aspects of related organic chemistry.

The topics are generally highly specialized (e.g., gramicidin, isoxazolium salt synthesis of peptides, cycloserine, HF in peptide chemistry, optical analysis of amino acid derivatives by gas chromatography). In itself this is neither good nor bad; each reader will find chapters of interest, some too narrow and some very useful because of the abundant detail possible for restricted subjects. The most specialized chapters generally contain much description of experimental methods. This will be of value to a researcher planning the use of a technique new to him or her. The chapter on ACTH-active peptides gives a long section (60% of the total) on details of the chemistry and strategy of specific syntheses. The general reader is not likely to want this. The intending synthesizer would be well served by a summary and a list of references, which he will wish to consult anyway. The second major section of this review, on structure–function relations, is of general interest. In Volume 2 (to a lesser extent Volume 3) a certain haste of preparation is noticeable in typographical errors, missing lines, and cloudy text. One chapter is especially difficult to read with numerous confusing sentences. (This may be connected with the fact that Volume 2 was not published on schedule.) Otherwise this review is well-filled with an abundance of valuable data which would be arduous to gather.

V. J. Hruby has provided an extensive review of studies of conformations of peptides in solution, mainly of NMR with comparisons of results by other methods. This review is aimed at the biochemist relatively unversed in NMR, giving generally the conclusions drawn about conformation, rather than detailed interpretation of the spectra. In some cases, oxytocin and vasopressin, for example, extensive discussion of the NMR data is given with more NMR detail than for most peptides. The literature cited is immense, 617 references to 1972, with an addendum of 161 references (not discussed in the text) through 1973, including for the latter, the titles of the papers.

The chapter (by Scannel and Pruess) on naturally occurring amino acid and peptide antimetabolites discusses briefly the detection and general mechanisms of antimetabolite action; most of this chapter is a catalog listing the structure of the antimetabolite, its reversants,

source, mechanism, and, in some cases, stereochemistry, resolution, a reference to structure determination, or a review.

D. G. Brown's chapter on dioxygenases provides an overview of the organic chemistry of dioxygenase reactions, related nonenzymic reactions, and studies on the active sites of the enzymes. The summary deals with some directions of future research on mechanisms. Other reviews of general interest are on peptide alkaloids, γ -glutamyl peptides, and prebiotic syntheses.

The literature references are generally up to about 2 years (in some cases 3 years) prior to the date of publication.

This should be a useful series. Some topics will be of only modest interest to many, but a perusal will often be rewarding, and most readers will find reviews of much value.

Jake Bello, Roswell Park Memorial Institute

Chemisorption and Magnetization. By P. W. SELWOOD (University of California, Santa Barbara). Academic Press, New York, N.Y. 1975. ix + 172 pp. \$19.50.

This book is an extensive revision of a previous monograph on this subject, *Adsorption and Collective Paramagnetism*, published by Professor Selwood in 1962. Although a good deal of the material in the present book was contained in the earlier monograph, revisions and expansions in the present volume have changed its emphasis significantly. The use of magnetic methods of particle size determination in commercial catalysts and for the determination of surface bond number for a variety of adsorbates is the principal concern of this work.

The book contains brief introductory chapters describing the concept of chemisorption and quickly reviewing the pertinent theory of magnetism and its application to small particles of ferromagnetic material. The discussion of other experimental surface chemistry techniques has been left out of the present volume, perhaps because of the greater familiarity with these techniques of the present-day surface scientist. The discussion of experimental techniques for the study of chemisorption by magnetic methods is very complete and, along with the references contained in these chapters, should give experimenters new to this field an excellent background for performing measurements of this kind.

The remainder of the book is devoted to a systematic presentation of the available data for adsorption on nickel, and to a lesser extent cobalt and iron, as obtained by magnetic methods. At several points in this presentation, isolated comparisons are made and connections suggested between the magnetic data obtained on commercial catalysts and the results of "clean surface" experiments with analogous systems. In this author's opinion, more discussion could have been devoted to these connections and comparisons, in particular, for the

nickel-oxygen and nickel-hydrocarbon systems.

"Chemisorption and Magnetization" is a valuable review of an experimental technique which has added significantly to the understanding of chemisorption, written by the investigator most closely involved in the technique's development. It is a book with which surface chemists interested in chemisorption on transition metals should be familiar.

Steven L. Bernasek, *Princeton University*

Analytical Methods for Pesticides and Plant Growth Regulators. Edited by G. ZWEIG. Volume VII: Thin-Layer and Liquid Chromatography and Analysis of Pesticides of International Importance. By G. ZWEIG (Syracuse University Research Corporation) and J. SHERMA (Lafayette College). Academic Press, New York and London. 1974. xvii + 688 pp. \$45.00.

This book is the seventh in a series of books on pesticides (herbicides, insecticides, fungicides, etc.). Other volumes have described analytical methods applied to pesticides and some fundamental information, such as synthesis and usage of specific pesticides. The preface and table of contents of this book are so arranged that one immediately knows what information can be found in previous volumes and this volume. Volume VII is divided into two portions: a fundamentals of chromatography portion, and an analyses of pesticides portion by chromatography and other analytical techniques.

The chromatography portion has a chapter on the basic concepts and operation of thin layer chromatography (TLC) and a corresponding chapter on high-pressure liquid chromatography (LC). Both chapters are concise, well written, and accurate. One short-coming of the second chapter, fundamentals of LC, is that it has become somewhat out-dated in describing the state-of-the-art of LC. Basically that chapter is out-dated because from the time this volume was written, December 1973, to now, January 1976, the field of LC has grown exponentially and several new advances and applications are readily available now which were nonexistent then. But still, the fundamental concepts discussed in those two chapters give one a real appreciation for TLC and LC. With this background information on chromatography, understanding the second portion of this book, especially the chromatographic analyses of pesticides, is quite easy.

The second portion of this book contains 41 chapters each on a specific insecticide, herbicide, fungicide, or rodenticide. Each of these chapters gives the chemical structure of the pesticide, other common names and/or trade names, biological/chemical/physical properties, and a brief history. In those sections, specific species that are controlled by the pesticide and common dosage are given. Those chapters also describe methods of synthesis, and lastly methods of analysis (chromatography, titrations, ir, uv/vis) of the pesticide.

The analysis portion of the pesticide chapter is very detailed, thus giving the reader explicit information of the TLC and/or LC analyses of the material, the assay method(s), and other primary analytical methods of analysis. At the end of each chapter are included several references if one wants more information about any technology discussed within the chapter. In summary this book is quite informative with regards to TLC, LC, and general information on pesticides.

T. Carter Gilmer, *Eastman Kodak Company*

Recent Advances in Phytochemistry. Volume 9. Edited by V. C. R. NECKLES (University of British Columbia). Plenum Press, New York, N.Y. 1975. ix + 309 pp. \$27.50.

This volume represents the Proceedings of the Fourteenth Annual Meeting of the Phytochemical Society of North America held in August 1974, at Western Carolina University. Of the eleven chapters in this volume, more than half cover topics of interest to the chemist. Chapters on hallucinogenically used plants, crop plant chemistry and folk medicine, and contact allergy from plants are well written but not chemically oriented. One of the outstanding features of this volume is the chapter on the chemistry and metabolism of the cannabinoids, which summarizes the methods for synthesis of cannabinoids and related marijuana components. Furthermore, this section has a detailed discussion of the metabolism of constituents of marijuana, which had been administered by a variety of methods.

The chapters on the chemistry of tumor-inhibitory natural products and antimicrobial agents from higher plants are detailed and informative. The chapters on plant neurotoxins (lathrogens and cyanogens) and the insect antifeedant, azadirachtin, also provide in-depth

coverage of these topics. Finally, the chapter on the biogenesis of indole alkaloids may be the most significant contribution in this volume. In this chapter, A. Ian Scott, of Yale University, explores the biosynthesis of strychnine, biogenetic-type synthesis of the indole alkaloids, evolution of a regio- and stereospecific model, and stereochemical and structural relationships within alkaloid families.

In summary, this volume, which has an excellent index, seems quite worthwhile, especially to natural product chemists.

Wilbur H. Campbell, *State University of New York College of Environmental Science and Forestry—Syracuse*

Scandium: Its Occurrence, Chemistry, Physics, Metallurgy, Biology and Technology. By C. T. HOROVITZ (Editor, University of Stuttgart), K. A. GSCHNEIDNER, JR., G. A. MELSON, D. H. YOUNG-BLOOD, and H. H. SCHOCK. Academic Press, London. 1975. xvi + 598 pp. \$42.50.

As the title correctly indicates, this is a comprehensive treatise on the element scandium that has been prepared by a team of experts. It presents all aspects of this first transition element with encyclopedic coverage of the international literature and a critical assessment of the accuracy and validity of the information.

Scandium has found little use in technology, but it has been studied in considerable detail and breadth, particularly in the last two decades. It has become available in reasonable quantity as a by-product of the processing of uranium ores where it occurs at a concentration of less than 1000 ppm. Although it does not occur in nature with the lanthanide elements, its similarity to these elements is evident in all of the chapters of this book.

The topics covered extend from the discovery and history of scandium (Mendeleev's "eka-boron") through the occurrence, chemistry, metallurgy, biochemistry, and toxicology of this element. Of particular use is the list of institutions and their addresses where scandium has been studied and also a list of sources of standard and reference samples and scandium chemicals of high purity. The authors are to be complimented for a good job of summarizing large amounts of information in tables that are clearly referenced for ease in follow-up. Organic chemists have found this relatively obscure element to be of interest in its cyclopentadienyl compounds but more extensively in coordination compounds.

This is a welcome volume that will be a valuable addition to any scientific library.

Adrian H. Daane, *University of Missouri-Rolla*

Liquid Crystals and Plastic Crystals. Volume 2. Physico-Chemical Properties and Methods of Investigation. By G. W. GRAY and P. A. WINSOR (University of Hull). Ellis Horwood Publisher, Chichester, England. 1974. vi + 314 pp. \$32.50.

Contrary to the title, the book discusses only the physico-chemical properties of liquid crystals and methods of their investigation, and it ignores plastic crystals altogether. In fact, the only place I could find the words "plastic crystals" was in the title.

The book is nicely structured according to the various methods which have been used in the study of liquid crystals. Furthermore, the properties observed by each method of study are separated according to whether or not the liquid crystals are amphiphilic. This separation adds to the readability of the book. Each chapter has been written by a different author who is a well-known specialist in that particular area of study.

As a reference source, the book has limitations in that there was apparently a rather long delay between the time most of the chapters were written and the time the book appeared in print. The latest references in some of the chapters (most of which are well-written) are from 1970 or 1971 whereas the printing date of the book is 1974. This particular problem, however, does not detract from the book for the reader who is interested in getting an overview of research in the field of liquid crystals. The material in each chapter is for the most part aimed at the person who has little acquaintance with the method of investigation discussed. For example, the chapters on optical phenomena and x-ray diffraction in liquid crystals are easily read by someone not particularly acquainted with either of these experimental techniques.

In conclusion, I strongly recommend the book for anyone interested in the field of liquid crystals.

J. William Doane, *Kent State University*