Book Reviews*

Organometallic Chemistry Reviews; Annual Reviews: Silicon–Lead. Edited by R. B. King (University of Georgia) and J. P. Oliver (Wayne State University). Journal of Organometallic Chemistry Library 14. Elsevier Scientific Publishers, Amsterdam and New York. 1984. vi + 536 pp. $152.00.

This volume is much like previous ones and gives those interested in Main-group 4 chemistry a relatively timely review of various aspects of silicon and lead chemistry. Unlike its immediate predecessors, there are no reviews of germanium or tin; in addition, chapters on the uses of organosilicon compounds in organic synthesis and on bonding and structure in organosilicon compounds are not included. There are no editorial comments about whether these will be forthcoming. The book consists of five chapters: (1) Silafunctional compounds: Synthesis and reactivity: Annual Survey covering 1981 by Joyce Y. Corey, 132 pp; (2) Silafunctional compounds: Synthesis and reactivity: Annual Survey covering 1982 by Joyce Y. Corey, 133 pp; (3) Silicon—The silicon–carbon bond: Annual Survey covering 1981 by G. L. Larson, 141 pp; (4) Organosilicon reaction mechanisms: Annual Survey covering 1981 by F. K. Cartledge, 71 pp; and (5) Lead: Annual Survey covering 1981 by J. Wolters and D. de Vos, 25 pp. There is also a 29-pp author index where each author of the cited works (there are almost 2000 references) is indexed. This work is exhaustive, but it is not critical in its approach. It is a prodigious task and very well done, as previous volumes have been. Its major drawback is the lack of any subject index. The reader must understand the organization of the chapters to adequately use the book. Recognizing that a sufficiently good subject index would probably delay publication for months, we, perhaps, should be grateful for what we have.

R. Damrauer, *University of Colorado at Denver*

Microcolumn High Performance Liquid Chromatography. Edited by Paul Kucera (Hoffmann–LaRoche Inc.). Elsevier Scientific Publishers, Amsterdam and New York. 1984. xvi + 302 pp. $63.50.

The rapid advancements being made in HPLC using very small columns make this book very timely. Each of the eight chapters is written by authors who are well-known in this area of chromatography. Throughout the book the emphasis is on principles and basic fundamentals rather than on a multiplicity of specific applications. However, necessary details such as the design and configuration of component parts are provided.

The book begins with an excellent chapter by G. Guiochon and H. Colin that describes the instrument specifications (sample volume, sample size, detector cell volume, detector time constant, etc.) and compares the advantages and fundamentals of micropacked columns and open-tubular columns. This chapter alone is sufficient reason for purchasing the book. The remaining chapters cover the design of microbore columns (P. Kucera), high-speed microbore chromatography (R. A. Hartwick and D. D. Dezaro), special techniques (P. Kucera and G. Manius), chemical derivatives (P. Kucera and H. Umagat), applications (P. Kucera and R. A. Hartwick), chromatography in columns of capillary dimensions (M. Novotny), and micro LC/MS coupling (J. Henion). When chapters are written by various authors there is inevitably some repetition, but this is not excessive. Although the numerous chromatographic equations in the book generally follow accepted practice, it seems a shame to continue using the fundamental resolution equation (p 78) that assumes equal peak width when an equally simple equation is available that requires no such restriction.

This book is highly recommended for anyone interested in the theory and practice of microbore liquid chromatography.

J. S. Fritz, *Iowa State University*

Chronicles of Drug Discovery. Volume 2. Edited by Jasjit S. Bindra and Daniel Lednicer. John Wiley and Sons Publishers, New York, NY. 1983. ix + 272 pp. $44.95.

There is a great deal of interest in historical accounts of development of new drugs entering the market place. The second volume of "Chronicles of Drug Discovery", like the first one, fills this need. This first chapter is an absorbing account of the trail and hard work that led to the discovery of the very successful antihypertensive drug, captopril. Most major pharmaceutical companies, worldwide, have one or more such angiotensin-converting enzyme inhibitors in clinical studies. The authors discuss the development of captopril as an example of a rare approach to drug design based on the knowledge of structure of the receptor site. The traditional approach based on systematic molecular modifications of known leads is demonstrated in subsequent chapters. The second chapter chronicles the development of the neuroleptic pimozide. There is a chapter on cefaclor, a cephalosporin, and three chapters on better absorbed semisynthetic penicillins. These are bacampicillin, pivampicillin, and pivmecillinam. Anthelmintic agent pyrantel and its congeners are discussed in Chapter 4. There are two chapters on the development of cancer chemotherapeutic agents doxorubicin (adriamycin) and nitrosoureas. Chapter 10 contains the chemical modifications of kenamycin which led to the broader spectrum antibiotic amikasin. The development of the latter was based on a biochemical understanding of the mechanisms of resistance shown by aminoglycoside resistant organisms. The last chapter presents the development of the fungicide clotrimazole.

The book is enjoyable reading. In these accounts many medicinal chemists will find inspiration in their quest for scoring a hit. It is expected that the next volume of "Chronicles of Drug Discovery" will also be received with interest.

O. P. Goel, *Warner-Lambert/Parke-Davis*

Annual Reports on the Progress of Chemistry. Volume 79. 1982. Section A. Inorganic Chemistry. Senior Reporter: J. D. Donaldson (The City University, London). Royal Society of Chemistry, London. 1983. xvi + 457 pp. £46.00.

Volume 79, Section A, of the "Annual Reports" focuses on the highlights of the inorganic chemistry that was published during 1982. As in previous years this survey is not designed to be comprehensive, but rather to pinpoint some of the more important new results of 1982 and cover relatively extensively the developments reported in the more popular areas of the field. The volume successfully meets these goals.

The text itself is divided into 13 chapters. Following the introductory remarks (Chapter 1) is a section devoted to the main-group elements (Chapters 2–6), a chapter dedicated to the early transition metals (Chapter 7), and three chapters which discuss the late transition metals (Chapters 8–10). The lanthanides and actinides (along with Sc and Y) are accorded a separate treatment (Chapter 11) as are the developments in radiochemistry (Chapter 12). The final chapter (Chapter 13) surveys the changes in and the economic health of the inorganic chemical industry.

The volume is well produced, up to the usual standards of the Royal Society. The terse prose style is guaranteed to succor the insomniac. The volume is highly recommended to all who wish to keep abreast of the major developments in inorganic chemistry.

John A. Morrison, *University of Illinois, Chicago*

Progress in Pesticide Biochemistry. Volume 2. Edited by D. H. Hutson and T. R. Roberts (Shell Research Ltd., Sittingbourne, United Kingdom). John Wiley and Sons, Chichester and New York. 1982. x + 226 pp. $52.00.

Researchers with interest in pesticide conjugation, pyrethroid photochemistry, and the uses of stable isotopes in pesticide biochemistry will find that this volume contains excellent reviews of work in those fields prior to 1982. There are five chapters about the biotransformation or phototransformation of chemical pesticides, while a sixth chapter describes an important technique in metabolic, analytical, and mechanistic studies of pesticides. By far the major focus on the volume is on the conjugation of pesticides and their primary metabolites, with individual chapters devoted to sugar (by V. T. Edwards, A. L. McMinn, and A. N. Wright), amino acid (by K. R. Huckle and P. Milburn), and lipophilic conjugates (by D. H. Hutson). The latter compounds have been recently discovered to play important roles in the conversion of pesticides to relatively nonpolar conjugates that are not so readily excreted. A fourth chapter describes the effects of various types of conjugation on biological activities of pesticides (by G. D. Paulson). Although conjugation usually decreases pesticidal activity, more pesticide conjugates are being identified that have increased activity. Recent information on the photochemistry of pyrethroids is summarized by L. O. Ruzo. Current and potential uses of stable isotopes in metabolic studies of pesticides are described by P. Hendley in another chapter. The emergence of noninvasive techniques such as cross-polarization magic-angle spinning nuclear magnetic resonance spectrometry will make the use of stable isotopes in pesticide biochemistry even more fruitful in the future. The two industrial scientists who organize and edit this series have added an experi-

*Unsigned book reviews are by the Book Review Editor.

mentally and academically useful volume to the pesticide biochemistry literature.

Karl J. Kramer, *U. S. Grain Marketing Research Laboratory, Manhattan, KS*

Progress in Pesticide Biochemistry and Toxicology. Volume 3. Edited by D. H. Hutson and T. R. Roberts (Shell Research Ltd., Sittingbourne, United Kingdom). John Wiley and Sons, Chichester and New York. 1983. x + 449 pp. $112.95.

The editors added toxicology to the title of this series because numerous aspects of pesticide science may be classified as toxicology in the broadest sense and many of their invited papers contain toxicological subject matter. There are eight chapters in Volume 3 with a major portion (three chapters) dedicated to the mode of action and metabolism of fungicides and herbicides. Chapter 1 reviews the mode of action of systematic fungicides, including those compounds which interfere with membrane function, respiration and sterol, nucleic acid, chitin and protein metabolism (by P. Langcake, P. J. Kuhn, and M. Wade). The second chapter describes the metabolic fates of fungicides in plants (by J. W. Vonk). The modes of action of important classes of herbicides, including inhibitors of cellular development, photosynthesis, respiration, and biosynthetic processes, are discussed by A. D. Dodge. Chapter 4 covers oxidative processes in plants affecting detoxification and bioactivation of pesticides (by D. Cole). Methodologies are the topics of three chapters. Chapter 5 reviews the use of plant tissue culture in studies of pesticide metabolism and mode of action and in biological screening programs (by R. O. Mumma and G. H. Davidonis). Chapter 6 describes the array of procedures used for isolation and purification of small amounts of pesticide metabolites from biological sources (by W. Muecke). There are improved methods available for handling more polar conjugated metabolites such as droplet counter-current chromatography. The development of soft-ionization mass spectral systems to cope with a wide diversity of polar compounds encountered in pesticide studies is discussed by D. E. Games. Field desorption methods are now complemented with a variety of other processes such as secondary ion and fast atom bombardment mass spectrometry. The latter technique has recently provided spectacular results with polar compounds in excess of 3000 daltons. The last chapter lists available information on metabolism and kinetics in vivo and in vitro of pyrethroids in insects (by D. M. Soderlund, J. R. Sanborn, and P. W. Lee). Volume 3 continues the tradition of high-quality reviews provided by earlier volumes in this series. It is a valuable reference work for specialists in pesticide chemistry and toxicology.

Karl J. Kramer, *U.S. Grain Marketing Research Laboratory, Manhattan, KS*

Peptide and Protein Reviews. Volume 2. Edited by M. T. W. Hearn (St. Vincent's School of Medical Research). Marcel Dekker, Inc., New York. 1984. vii + 296 pp. $52.50.

According to the Instructions to Authors included on the final pages of this volume, "Peptide and Protein Reviews" is intended to be a continuing series covering "emerging areas of peptide and protein research". The current volume fulfills the stated intention with well-written sections on four interesting areas of protein research.

The first article deals with tubulins, with emphasis on structural features and the effects of divalent metal ions and drugs on its polymerization. The second article deals with the peptide neurotensin with emphasis on its tissue distribution and physiological activities. The third article deals with the termination step of ribosomal protein synthesis, describing its many interesting complexities in good detail. The final section describes the current status of research on the posttranslational processing of parathyroid hormone, its mechanism of action, and studies of structure–activity relationships among parathyroid hormone analogues. The subjects are covered in good detail with ample citations to original research publications and should be good sources of information to nonexperts wishing a better understanding of these subjects. The first two articles include citations through most or all of 1982, the third and fourth seem to have been completed earlier and with a few exceptions lack references after mid-1980.

The sections are all written in a straightforward, pleasing style and are interesting. There is some variation in the presentation of literature references and in the typeface and spacing of the different sections due to the photographic method of printing. It is unfortunate that this relatively fast and less expensive method of printing did not lead to more rapid publication or a lower price. Considering the highly selective subjects covered and the current price, I would recommend this book to major libraries but I am disappointed that it is too expensive for most personal or small libraries where it would otherwise be a good addition.

Gary E. Means, *The Ohio State University*

Chemistry Through Models. By C. J. Suckling, K. E. Suckling, and C. W. Suckling. Cambridge University Press, New York. 1980. xii + 321 pp. $13.95.

This work, subtitled "Concepts and Applications of Modelling in Chemical Science, Technology and Industry", is almost certain to give the average reader a somewhat more expanded idea of what constitutes a model, and, through numerous illustrations, the indispensable role that modelling plays in a wide range of chemical applications. The book consists of eight chapters. The first discusses in a somewhat general and philosophical sense what a model is, its relation to the prototype (the thing being modelled), and why modelling, as opposed to the alternative of working directly with the prototype, is an inescapable necessity in a scientist's approach to understanding a complex system. The second chapter describes the stepwise process of using models, being the recognition of the problem, formulation of questions to be asked, the construction of and experimentation with the model, and the analysis of results and their implications. The ideas laid down in the first two chapters are amply illustrated in subsequent chapters with a close scrutiny of models used in specific situations that are especially relevant to chemists. A quite natural progression takes place from microscopic models of atoms and small molecules through biological systems and on to large-scale physical models used in industrial plant design. Those examined in detail include such diverse models as the Hammett equation for free energy relationships, quantum mechanical models of molecular structure, hard and soft acids and bases, electrolyte theories, transition-state theory of reaction kinetics, Woodward and Hoffman orbital correlation diagrams, model synthetic compounds, and model primordial Earth environments used in the study of chemical evolution, to mention only a few. The present work should be relevant to chemists both in academic and industrial settings, to those in the business of model building in their own scientific pursuits as well as those who think about how scientists think.

Scott H. Northrup, *Tennessee Technological University*

Bioenergetics and Linear Nonequilibrium Thermodynamics. The Steady State. By S. Roy Caplan and Alvin Essig. Harvard University Press, Cambridge, MA. 1983. ix + 435 pp. $37.50.

This book presents a quite elaborate treatment of the concepts and utility of nonequilibrium thermodynamics, particularly as applied to biological processes such as passage through membranes, energy coupling, and transport phenomena. The book begins with a very useful comparison of equilibrium and nonequilibrium thermodynamic treatments and proceeds to develop various approaches to entropically driven irreversible processes. To some extent the authors have tried to walk a tightrope between a mathematically rigorous treatment and a simpler but more conceptual approach focusing on applications to specific biological processes. One must suppose that the goal of the authors was to develop a volume of utility to a wide audience of diverse mathematical backgrounds. In the opinion of this reviewer, the overall result is somewhat less than satisfactory for those not well grounded already in the concepts of nonequilibrium thermodynamics. The level appears too high for a newcomer and lacking in sufficient mathematical rigor to serve as an educational text in this area. On the other hand much of the book is clearly written and the choice of topics is excellent. Symbols are clearly defined, and a good list of supplementary references is provided.

David G. Whitten, *University of Rochester*

Instrumental Liquid Chromatography. A Practical Manual On High-Performance Liquid Chromatographic Methods. Second Completely Revised Edition. Journal of Chromatography Library. Volume 27. By N. A. Parris (E. I. du Pont de Nemours & Co.). Elsevier Science Publishers, Amsterdam and New York. 1984. xiv + 432 pp. $86.50.

This is a second edition of a book which was first published in 1976. The author keeps the same format as the first edition, but nearly one-half of the material has been revised to reflect the recent advances in column technology and chromatographic systems. The book is practically oriented and is well suited to both the experienced and inexperienced chromatographer because it provides many details in the operational aspects of chromatography which are often neglected in other similar texts.

The book is divided into four sections; the first covers the basic principles of chromatography and instrumentation. The chapters are concisely written yet they include most of the important aspects of the column support material, instrumentation, and detectors. Additional detail can be found in other more comprehensive texts. The last chapter in this section discusses the impact of computer technology on liquid chromatography automation. Unfortunately, this rather brief chapter gives only cursory treatment to a few selected topics such as selection and optimization of separation conditions and unattended operation but neglects other equally important topics such as peak area determination,

limitation of computer-based data analysis, and quality-control systems. Thus, the reader does not get an overall view of the important and practical considerations of liquid chromatography and computer technology.

The next two sections of the book discuss the factors influencing chromatographic selectivity and the uses of liquid chromatographic procedures. These are, by far, the most informative parts of the book; they contain a wealth of information on methods of separation, mobile phase selectivity, applicability of the various types of stationary phases, qualitative and quantitative analysis, trace analysis, and preparative liquid chromatography. However, considering the antiquity of liquid-coated stationary phases, it is curious that a 10-page chapter and an appendix are devoted to this topic.

The last section lists references to applications published from 1979 to 1982. Although somewhat limited and out of date, it does provide the uninformed reader some sources of information on a specific application.

Overall, the book is well written, and, because of its practical emphasis, it is highly recommended for both the aspiring and experienced chromatographer.

James W. Webb, *Illinois State University*

Progress in Inorganic Chemistry. Volume 31. Edited by S. J. Lippard (Massachusetts Institute of Technology). John Wiley and Sons. New York. 1984. v + 474 pp. $65.00.

The present volume of "Progress in Inorganic Chemistry" consists of five reviews, the diversity of which nicely illustrates the tremendous breadth of contemporary inorganic chemistry. In Chapter 1 Horrocks and Albin review luminescent lanthanide complexes and the application of these results to the study of proteins and enzymes. Both inorganic spectroscopists and physical biochemists will probably profit from this very thorough review. In the second chapter Toscano and Marzilli review recent developments in vitamin b12 chemistry with a very welcome focus on studies of the cobalt–carbon bond. Particular emphasis is placed on recent results obtained on well-defined model compounds. Chapter 3 is a review of bridging alkylidene complexes, a subset of one of the most intensively studied and heavily reviewed areas in inorganic chemistry. The topic has rapidly matured to the stage where such a specialized topic is warranted. The author of this chapter has apparently never published a paper in the topic under review. The fourth review by Jardine concerns the reactivity of $RuCl_2(PPh_3)_3$ whose chemistry has developed in parallel with that of $RhCl(PPh_3)_3$ which was reviewed by the same author in Volume 28 of this series. The fact that the present review encompasses 383 references without being exhaustive illustrates the magnitude and importance of this topic which is really dedicated to the derivative chemistry of a single metal complex. Similar specialized reviews on compounds such as Vaska's complex and $Pt(PR_3)_4$ would also be welcome. In the last chapter in this volume, Gerloch and Wooley discuss and defend the Angular Overlap Model as a tool for the analysis of the bonding in coordination compounds. This is a well-written and lively review. The discussion emphasizes the interplay between the theoretical calculations and physical measurements.

This volume is a welcome addition to one of the most distinguished review series in inorganic chemistry.

Thomas B. Rauchfuss, *University of Illinois—Urbana-Champaign*

Biochemistry of Selenium. By Raymond J. Shamberger (The Cleveland Clinic Foundation). Plenum Press, New York. 1983. xi + 334 pp. $42.50.

This timely monograph comprises Volume 2 of the series "Biochemistry of the Elements" and is the first exclusive treatment of the biochemistry of this interesting element. Chemists and biochemists will find this to be an excellent reference source for almost all aspects of the biochemical behavior of this micronutrient. After introducing most of the interesting low molecular weight and macromolecular forms of selenium, including organoselenium compounds, selenoamino acids, and selenoproteins, Shamberger treats selenium deficiency diseases in animals, the interesting question of selenium metabolism, the toxicity of selenium and selenium in health and disease. Of particular interest to chemists are a chapter comparing the biochemistry of selenium and sulfur, a chapter dealing with biological interactions of selenium with other substances, e.g., cadmium and mercury, and a chapter describing various synthetic forms of selenium and their chemotherapeutic uses. Other chapters summarize the environmental occurrence of selenium and analytical methods of selenium determination. Somewhat surprising is the lack of a thorough treatment of physical methods used in selenium biochemistry.

This book will be an excellent reference source for searching the literature for all aspects of selenium biochemistry. For someone interested in a critical review of that literature, this book will not serve that purpose. The work is simply reported with little or no in-depth analysis or examination of results. Also disappointing to this reviewer were the excessive number of mistakes, misspellings, and grammatical errors found in what appears to be a high-quality publication. One would have hoped that the editorial process would have functioned more efficiently.

J. D. Odom, *University of South Carolina*

Ion-Selective Electrode Reviews. Volume 5. Edited by J. D. R. Thomas (UWIST). Pergamon Press, New York. 1984. v + 292 pp. $84.00.

This volume continues this series of reviews covering recent developments in selected areas of ion-selective electrode (ISE) methodology. The four principal chapters in the present volume include Neutral Carrier Based ISEs by W. Simon and co-workers, Reference Electrode and Liquid Junction Effects in ISE Potentiometry by A. K. Covington and M. J. F. Rebelo, Ion Transfer Across Water/Organic Phase Boundaries by J. Koryta, and Carbon Substrate ISEs by D. Midgley and D. E. Mulcahy. All of the chapters are thorough in scope, offering a useful mix of theoretical and experimental considerations. Of particular note are the welcome sections on neutral carrier liquid membrane and carbon based ISEs which include concise but extensive surveys of the diverse applications of these important electrode classifications. Also, the chapter on reference electrode design and usage provides an insightful summary of this often neglected but essential topic; the author's comments on proper reference electrode strategies are especially relevant as the practical applications of ISEs other than the glass pH electrode proliferate in areas such as clinical analysis. Last but not least, the volume concludes with the fifth installment of Recent Titles—an extensive but well-organized listing of the more important recent publications in the field of ISEs. For a multiauthor book of this nature, the references are remarkably current—up to 1981–1982 for the review chapters and 1983 for the literature survey.

Richard P. Baldwin, *University of Louisville*

Advances in Protein Chemistry. Volume 35. Edited by C. B. Anfinsen, J. T. Edsall, and F. M. Richards. Academic Press, New York. 1982. VII + 439 pp. $62.00.

The "Advances in Protein Chemistry" series has been a major factor in the education of protein chemists. The latest volume of this series contains reviews on protein stability by P. L. Privalov, c-type cytochromes by T. E. Meyer and M. D. Kamen, calmodulin by C. B. Klee and T. C. Vanaman, and parathyroid hormone by J. T. Potts, H. M. Kronenberg, and M. Rosenblatt.

The review by Privalov continues his discussion on protein stability (begun in Volume 33 with proteins constituting a single cooperative system) with a treatment of more complex proteins. The treatment is largely thermodynamic, with special attention to calorimetric studies of protein denaturation. Much of the discussion deals with the myosins and collagen, i.e., with coiled coils. The rest deals with proteins containing several globular domains. The question of independently melting domains and cooperativity within domains is discussed on the basis of scanning calorimetry data for several proteins. Thermodynamic data on denaturation are correlated with results of enzymic cleavage experiments. The thermodynamics of collagen is related to the amino acid composition, conformation, and H bonding (internal dynamics), H exchange, and participation of water. Privalov discusses protein thermodynamics in relation to general ideas on protein structure and hydration.

The review on New Perspectives on c-Type Cytochromes first discusses evolutionary aspects of the cytochromes and their biochemical history. Then the structures of the hemes are described, followed by amino acid sequences, genetic relationships, 3-dimensional structures, redox potentials, binding of small ligands, and biological functions of the cytochromes. The properties of cytochrome *c* of mitochondria and chloroplasts and of a variety of organisms are discussed in some detail.

The review on the family of calcium-binding proteins, the calmodulins, touches on their history and then discusses isolation and purification, followed by their distribution in the eukaryotes, in tissues and subcellularly, and regulation of their levels in normal and in disease states. The amino acid composition of the calmodulins are discussed and are compared with that of troponin c, which is important in muscle function. The spectroscopic properties and conformation are described, as well as calcium binding, and the effect of the latter on the former. Then there are discussed the interactions of calmodulin with target proteins, the regulation of enzymes and other proteins, including muscle proteins, other motile activities (e.g., of cilia), cytoskeletal function, cyclic nucleotide metabolism, intermediary metabolism, calcium transport, and protein phosphorylation.

The review of parathyroid hormone is another chapter in the physiological calcium story, the hormone being involved in homeostasis of calcium in extracellular fluid. The review deals with the physiology of the hormone's action, isolation, amino acid and gene sequences, biosynthesis and regulation, the processing of the precursor, metabolism, pos-

sible physiological roles of cleavage fragments, mechanism of action, and structure–function relationships.

Jake Bello, *Roswell Park Memorial Institute*

Determination and Measurement of Hazardous Gases. Edited by C. F. Cullis (City University, London) and J. G. Firth (Occupational Medicine and Hygiene Laboratories, Health and Safety Executive, Great Britain). Heinemann Educational Books Ltd., London. 1981. ix + 226 pp. $35.00.

The problem of rapid and sensitive detection of toxic gases in the work place continues to be a great challenge for analytical chemists. In the U. S. chemical industry there are now more than 28 000 different toxic substances in regular use. These substances pose immediate explosive and toxic hazards as well as long-term hazards at trace and ultratrace levels. To provide an acceptably safe work environment, several types of monitors are required, ranging from small personal monitors based on visual color changes to remote measurement systems utilizing spectroscopic techniques.

This book provides a good introduction to the many detection problems associated with industrial hygiene, the methods currently used, and a frank evaluation of the adequacy of those techniques. By reading this book, you will find that many of the instrumental methods are not yet sensitive enough to measure toxic gas concentrations at the low levels at which they still constitute a significant chronic exposure hazard. If you are an analytical chemist interested in developing new instrumental methods and pushing down limits of detection, this book will provide you with some worthy challenges. More importantly, the book will put the problem in proper perspective for you; e.g., you cannot strap a Fourier transform infrared spectrometer to your worker. You may have to be more clever and even resort to a little chemistry!

There are two chapters that deserve special mention. The first chapter of the book contains a brief, but very interesting, history of occupational exposure to hazardous gases and of legal developments, beginning with the recommendation by Pliny the Elder in the first century A. D. to wear protective masks during the grinding of cinnabar (mercury ore) and the smelting of lead. The final chapter discusses the all-important subject of instrument calibration and the preparation of standard atmospheres. There is also a useful chapter that treats the statistical aspects of air sampling. The book contains many useful figures and tables and there are references for each chapter. This is an invaluable book for individuals concerned with occupational exposure to explosive and toxic chemicals and should be of interest to most analytical chemists.

John W. Birks, *University of Colorado*

Physical Chemistry. Second Edition. By Ira N. Levine (Brooklyn College, City University of New York). McGraw-Hill, New York. 1983. xix + 890 pp. $32.95.

This is the second edition of an excellent text designed for a standard undergraduate course in physical chemistry. The order of topics of the first edition has been retained: thermodynamics, kinetic–molecular theory and transport processes, reaction kinetics, quantum mechanics and its application to atomic and molecular systems, statistical mechanics, and reaction rate theories.

The author says in the preface that he has "aimed at a treatment that is as accurate, as fundamental, and as up-to-date as can be readily presented at the undergraduate level". By and large, I believe he has achieved these aims. The explanations in this text are of sufficient depth so that it is possible for a student to acquire a real understanding of basic physical chemistry. On the other hand, the amount of advanced mathematics that is used is minimal, and there are helpful discussions of mathematical topics in appropriate places in the text. An average student who has successfully completed a standard two-semester sequence of calculus courses should be able to handle the mathematical aspects of the text material. Throughout the text, there are very useful references to current data, to current applications of the material, and to further discussions of the topics considered. In addition, in many places in the text, the author has anticipated typical student difficulties. For example, in the discussion of osmotic pressure, the author speaks to the common student misconception that the osmotic pressure of a solution is the pressure in that solution.

The author states in the preface that "the changes in the second edition are mainly directed toward making it easier for students to learn the material". In this regard there are definite, but limited, improvements in the second edition. Unfortuntately, this edition still has too much written information per page, and too few illustrations and worked examples. It would also be of great benefit to a student if, with regard to each topic, there was a more extensive introductory discussion of what is going to be discussed, and the importance of that material.

Perhaps some teachers will look at the imposing format of this text and conclude that the level of presentation is too high for their course. If this is the case, I would urge reconsideration. This text does an excellent job of explaining physical chemistry at a conceptual and mathematical level that is appropriate for a standard undergraduate physical chemistry course, and, with a reasonable amount of effort, an instructor could compensate for its deficiencies in the area of student learning aids.

Julien Gendell, *Oakland University*

Surface Electrochemistry: Advanced Methods and Concepts. Edited by T. Takamura (Tokyo Shibaura Electric Company) and A. Kozawa (Union Carbide Corporation). Japan Scientific Societies Press. 1978. 249 pp. $35.00.

Electrochemistry is almost always concerned with surfaces, of varying structure and location, and this book contains six chapters, by different authors, related only by falling within this broad category. In general, these are specialized technical review articles, not particularly suited for tutorial purposes. They give in-depth surveys of particular fields of contemporary research, with extensive bibliographies emphasizing Japanese work (one of the stated aims of the planners, the U.S. branch of the Electrochemical Society of Japan) and elucidating the problems on which work continues. Each chapter should be found very useful by a particular group of researchers, or by those starting research in the area covered.

Electrochemistry is of increasing importance in many biological contexts: The article by Kobatake, Kurihara, and Kamo deals with the electrochemistry related to taste reception. After some general discussion of theories of membrane potentials, there is a detailed description of experiments to measure the electrochemical responses of phospholipid membranes, animal tongues, and related tissues. Models for the observed phenomena are proposed.

The only other contact with biophysics in this book would be via the article on photoelectrochemical processes by Honda, Fujishima, and Watanabe; the authors, however, limit this discussion to processes on metal and semiconductor electrodes. The experimental techniques and difficulties are described. The survey of studied interactions of photoexcited molecules with semiconductor electrodes is extensive, as is the discussion of the correlation of the results with electrochemical, spectroscopic, and other properties of the electrodes and the molecules. One section deals with the effects on photocurrents of coexisting molecules not directly involved in the reaction.

Two articles deal with films formed electrochemically on metals. The state of knowledge about anodic passivation films on iron is summarized in a brief chapter by R. Sato. Results of electrochemical and optical studies are reviewed with a view to elucidating composition and layer structure of the films. Takamura and Takamura, in a much longer article, discuss the application of the optical reflection method, including ellipsometry, internal reflection, and specular reflection. In addition to study of films and polarized metals, they consider the method's use for the study of electrosorption. Experimental problems are indicated and the theoretical background is briefly summarized, with relevant theoretical expressions given, but the emphasis is on results. Among the subjects touched on are oxide layers, adsorptions of water and organic compounds, infrared spectra, surface roughening, electrocatalysis, and atomic layers of foreign metals. The bibliography is particularly extensive.

The remaining articles are perhaps more classical in subject. Kozawa and Takai discuss the theory and practice of the zinc ion adsorption techniques for studying surface area and surface structure of such solids as MnO_2, SiO_2, TiO_2, Al_2O_3. Hirai and Tari consider the concepts of Isoelectric Point and Equi-adsorption Point, and their relation to double-layer and electrokinetic phenomena. This article is the most theoretically oriented, although experimental techniques and the applications of these concepts to a number of solid–liquid systems are discussed.

Jerry Goodisman, *Syracuse University*

The Polysaccharides. Volumes 1 and 2. Edited by Gerald O. Aspinall (York University). Academic Press, New York. Volume 1: 1982. xvi + 340 pp. $47.00. Volume 2: 1983. xiv + 503 pp. $67.50.

This (eventually) three-volume monograph seeks to meet the very real need for a comprehensive summary of the chemistry and biochemistry of polysaccharides which incorporates the huge expansion of knowledge about these carbohydrate polymers acquired during the past 2 decades. The scope of the subject clearly obviates a single authorship, and Professor Aspinall has obtained the services of a distinguished group of collaborators; the articles constituting these two volumes are authoritative in content and devoid of pedantry.

Volume 1 provides a general introduction to the field and discussions of selected chemical and physical methods for the isolation, characterization, and determination of structure of polysaccharides. A synopsis of carbohydrate nomenclature and basic chemistry is provided in the initial chapter which is followed by an article on the chemical principles relevant

to the extraction and purification of polysaccharides and the definition of their degree of homogeneity. Next, there is an overview of the modern chemical methods for acquiring data pertaining to the composition, molecular size, and fine structure—including approaches to the elucidation of monomer sequence—of these polymers. The use of proton and carbon-13 nuclear magnetic resonance spectroscopy and infrared-Raman spectroscopy for the determination of polysaccharide heterogeneity, anomeric linkage, and monomer conformation and sequence is described with some useful comment on infrared-Raman sampling methodology. A very thorough treatment of the principles, methods, and interpretation of experimental results applicable to the analysis of polysaccharide conformation has been included. Finally, there is a clear, concise introduction to the immunology of polysaccharides which affords the reader an appreciation of the role of structure in antigen–antibody reactions and of the significance of antigenic polysaccharides in human disease.

Volume 2 deals with groups of polysaccharides, although cellulose is treated separately, and there is also a chapter on industrial applications. The volume deals first with the classification of polysaccharides and continues with a detailed, highly physical discussion of cellulose structure. The four succeeding chapters are mutually complementary: The structures of selected, representative plant polysaccharides, with examples of pectins, gums, and hemicelluloses, are described and compared: the polymers are grouped according to the major constituent of the main chain. The structural features of characteristic glycans isolated from 10 phyla of algae are discussed in the context of evolutionary development. There follows a summary of the molecular details of some specific polysaccharides from a range of bacteria and protozoa, as well as of some nonspecific glycans, intracellular teichoic acids, and proteoglycans. The structures of polysaccharides from fungi and lichens are then reviewed. The volume concludes with a consideration of the economic aspects of the industrial utilization of some important carbohydrate polymers.

The monograph has been named with precision; it is a description of polysaccharides: their sources, structures, roles and properties, and the techniques whereby they may be isolated, studied, and modified. It is not a treatise only on the organic chemistry, per se, of these compounds. The set arbitrarily, but justifiably, excludes nucleic acids, glycoproteins, and glycolipids; also not considered are the levans and inulins. The information is proffered in a predominantly delineative, narrative style, and the chemistry is not presented in the typical form of equations, mechanisms, and experimental detail. These are not to be viewed as textbooks, or even as supplementary sources for the chemical reactions of polysaccharides such as might be required for a course in carbohydrate chemistry. Each chapter is complete in itself and some are markedly physical or biological in emphasis. The introductions to the chapters on spectroscopy are too brief to prepare one unfamiliar with the subject for what follows. Moreover, the exigencies of assembling and editing contributions from so widespread a group of authors seem almost inevitably to create an unfortunate time lag with the result in the present case that, with one exception, thorough coverage of the literature does not extend beyond 1979. This has a particular disadvantage for any discussion of economics, a subject wherein even the most perceptive and cogent analysis may be obsolete within a few months. However, these articles may be read with considerable profit by carbohydrate chemists who wish to keep abreast of the progress in this subject area or any specific branch thereof, and by other chemists and biochemists whose solid foundation in modern chemistry and spectroscopy will permit a full appreciation of these reviews. Certainly institutional scientific libraries cannot afford to omit this monograph from their acquisitions list.

George W. Hay, *Queen's University*

Books Received

Chemical Property Estimation Methods: Environmental Behavior of Organic Compounds. By Warren J. Lyman, William F. Reehl, and David H. Rosenblatt. McGraw-Hill Book Company, New York, 1982. xxxix + 921 pp. $42.50.

Angewandte Mathematik; Finanzmathematik, Statistik, Informatik für UPN-Rechner. By Helmut Alt. Friedr. Vieweg + Soh, Braunschweig. 1979. viii + 162 pp. (DM 29.80).

Environmental Chemistry. By R. W. Raiswell, P. Brimblecombe, D. L. Dent, and P. S. Liss. John Wiley and Sons, New York. 1980. viii + 184 pp. dol14.95.

Critical Survey of Stability Constants and Related Thermodynamic Data of Fluoride Complexes in Aqueous Solution. International Union of Pure and Applied Chemistry Chemical Data Series, No. 27. By A. M. Bond and G. T. Hefter. Pergamon Press, Oxford. 1980. $25.00.

Elementary Statistical Thermodynamics, A Problems Approach. By Norman O. Smith. Plenum Press, New York. 1982. xiv + 216 pp. $25.00.

Defense and Recognition. Volume IIA. Cellular Aspects. Volume IIB. Structural Aspects. International Review of Biochemistry. Volumes 22 and 23. Edited by E. S. Lennox. University Park Press, Baltimore. 1979. Volume IIA: ix + 278 pp. Volume IIB: ix + 222 pp. $29.50 each volume.

Essays in Biochemistry. Edited by P. N. Campbell and R. D. Marshall. Academic Press, London. 1979. $11.50.

Environmental Effects of Utilising More Coal. Edited by F. A. Robinson. Royal Society of Chemistry, London. 1980. viii + 203 pp. £9.50.

Cell Potassium. By Roderick P. Kernan. John Wiley and Sons, New York. 1980. xiii + 200 pp. $32.50.

Methods in Vitamin B-6 Nutrition: Analysis and Status Assessment. Edited by James E. Leklem and Robert D. Reynolds. Plenum Press, New York. 1981. xi + 401 pp. $49.50.

Flow Injection Analysis. By Jaromir Růžička and Elo H. Hansen. John Wiley and Sons, New York. 1981. xi + 207 pp. $32.50.

Charge Transfer Processes in Condensed Media. Lecture Notes in Chemistry. Volume 10. By Jens Ulstrup. Springer-Verlag, Berlin. 1979. vii + 419 pp. $19.50.

Aspects of the Linear and Magnetic Circular Dichroism of Planar Organic Molecules. Lecture Notes in Chemistry. Volume 14. By Erik Waaben Thulstrup. Springer-Verlag, Berlin. 1980. vi + 100 pp.

Boiling Phenomena. Volumes 1 and 2. By Sjoerd Van Stralen and Robert Cole. Hemisphere Publishing Corporation, Washington, D.C. 1979. Volume 1: xiii + 476 pp. Volume 2: xii + 506 pp. $85.00 for 2-volume set.

Tumours that Secrete Catecholamines. By R. Robinson. John Wiley and Sons, New York. 1980. xii + 132 pp. $40.00.

Fundamentals of Crystal Growth I: Macroscopic Equilibrium and Transport Concepts. By F. Rosenberger. Springer-Verlag, Berlin. 1979. x + 530 pp. $39.50.

Chemical Equilibrium and Analysis. By Richard W. Ramette. Addison-Wesley Publishing Company, Reading, MA. 1981. xv + 765 pp.

Cosmic Plasma. Volume 82. By Hannes Alfvén. Reidel Publishing Company, Dordrecht, Holland. 1981. ix + 164 pp. $75.00.

The Interpretation of Ionic Conductivity in Liquids. By Stuart I. Smedley. Plenum Press, New York. 1980. xvi + 195 pp. $25.00.

Electrons and Phonons in Layered Crystal Structures. Edited by T. J. Wieting and M. Schlüter. D. Reidel Publishing Company, Dordrecht, Holland. 1979. x + 474 pp. $78.95.

The Tunnel Effect in Chemistry. By R. P. Bell. Chapman and Hall, London. 1980. ix + 222 pp. $39.95.

Physical Principles of Far-Infrared Radiation. Methods of Experimental Physics. Volume 10. By L. C. Robinson. Academic Press, New York, 1979. xi + 460 pp. $29.50.

Polymers: Molecular Structure and Dynamics. Methods of Experimental Physics. Volume 16, Part A. Edited by R. A. Fava. Academic Press, New York, 1980. xxiv + 590 pp. $55.00.

Polymers: Crystal Structure and Morphology. Methods of Experimental Physics. Volume 16, Part B. Edited by R. A. Fava. Academic Press, New York. 1980. xxiv + 421 pp. $45.00

Quantum Electronics. Methods of Experimental Physics. Volume 15. Part B. Edited by C. L. Tang. Academic Press, New York. 1979. xix + 342 pp. $36.00.

Masters Theses in the Pure and Applied Sciences. Volume 26. Edited by Wade H. Shafer. Plenum Press, New York and London. 1982. xv + 321 pp. $75.00.
Lists titles of theses by University for 1981.

Masters Theses in the Pure and Applied Sciences. Volume 27. Edited by Wade H. Shafer. Plenum Press, New York and London. 1983. xv + 321 pp. $85.00.
Lists titles of theses by University for 1982.

Molecular Structure and Sensory Physiology. Structure and Bonding. Volume 41. Springer-Verlag, Berlin, Heidelberg, and New York. 1980. 146 pp. $36.80.
Contains four reviews that are primarily concerned with perception of light.

The Physicochemical Factors of Biological Evolution. Revised English edition. By S. E. Shnol. Translated from the Russian by Virginia B.

Silverstein. Harwood Academic Publishers, New York and London. 1981. xv + 280 pp. $120.00.

This is an English translation of a Russian work apparently published in 1976. The author elaborates his principle of "kinetic perfection" in the concept of biological evolution.

Microweighing in Vacuum and Controlled Experiments. Edited by A. W. Czanderna and S. P. Wolsky. Elsevier Scientific Publishing Co., Amsterdam and New York. 1980. xiv + 404 pp. $78.00.

Consists of ten contributed chapters, and constitutes an expansion of an earlier work published in 1969.

New Syntheses with Carbon Monoxide. Edited by J. Falbe. Springer-Verlag, Berlin, Heidelberg, and New York. 1980. xiv + 465 pp. $129.00.

This is a fundamentally revised edition of the previous book "Carbon Monoxide in Organic Synthesis". New chapters on Homologation and on Carbon Monoxide Hydrogenation have been added. The content consists of contributions by B. Cornils, H. Bahrmann, C. D. Frohning, and A. Mullen.

Amorphous Semiconductors. Edited by M. H. Brodsky. Springer-Verlag, Berlin, Heidelberg, and New York. 1979. xvi + 337 pp. $53.90.

Contains ten contributed chapters on theory, structure, and properties, including one on amorphous silicon solar cells.

Biomolecular Information Theory. By Serafin Fraga, K. M. S. Saxena, and Manuel Torres. Elsevier Scientific Publishing Co., Amsterdam and New York. 1978. x + 272 pp. $48.75.

Contains a unified presentation of the theory of recognition processes in terms of quantum-mechanical research.

Progress in Inorganic Chemistry. Volume 28. Edited by Stephen J. Lippard. Wiley-Interscience, New York. 1981. v + 463 pp. $45.00.

Contains six contributed reviews on Heterolytic Activation of Hydrogen by Transition Metal Catalysts (P. J. Brothers), Chlorotris(triphenylphosphine)rhodium(I) (F. H. Jardine), Metal Carbide Clusters (M. Tachikawa and E. L. Muetterties), The Coordination Chemistry of Tungsten (Z. Dori), Aspects of the Stereochemistry of Nine-coordination, Ten-coordination, and Twelve-coordination (M. C. Favas and D. L. Kepert), and A Dynamic Model for Mixed-Valence Compounds (K. Y. Wong and P. N. Schatz).

Glassy Metals I: Ionic Structure, Electronic Transport, and Crystallization. Edited by H.-J. Gündtherodt and H. Beck. Springer-Verlag, Berlin, Heidelberg, and New York. 1981. xiv + 267 pp. $39.80.

Contains ten contributed chapters, which deal with structure, stability, properties, and theory.

Geochemistry of the Lithosphere. By. A. A. Beus. MIR Publishers, Moscow. Distributed by Imported Publications, Inc., Chicago. 1976. 366 pp. $10.00.

This book is primarily concerned with mathematical modeling of the geochemistry of the earth, based on recent advances in the knowledge of the statistical distribution of the elements in the lithosphere.

Fluoreszenz Organischer Verbindungen. By Theodor Förster (Max Planck Institute, Göttingen). Vandenhoeck & Ruprecht, Gottingen. 1982. 315 pp. DM 42.00 softbound.

This classic work, which has been out of print, is again available. This is an unrevised reprint of the first edition (1950), augmented by a list with titles of later publications (1952 to 1975) by the author, who died in 1974.

Volumes of Proceedings

The Chemistry and Uses of Molybdenum. Fourth International Conference. Edited by H. F. Barry and P. C. H. Mitchell. Climax Molybdenum Co., Ann Arbor, MI. 1982. x + 440 pp. No charge.

Lectures and papers presented at the fourth Climax Conference, held at the Colorado School of Mines at Golden, Colorado; reproduced from uniform typescript; no index.

Biodeterioration. Volume 5. Edited by T. A. Oaxley and Sheila Barry. John Wiley and Sons, New York. 1983. xxvii + 749 pp. $81.00.

Based on papers presented at the 5th International Biodeterioration Symposium held at Aberdeen in 1981. Among the topics are biodeterioration of wood and wood-based material, effluent wastes, petroleum and petroleum products, and cereal and agricultural products. Biodeterioration in the marine environment as well as in museums, galleries, libraries, and archives and biotransformation of polymers, such as poly(vinyl chloride) films and polyester/polyurethane elastomers, are discussed. The final section is concerned with the control of biodeterioration by chemical biocides, biostats, and preservatives.

Crown Ethers and Phase Transfer Catalysis in Polymer Science. Edited by Lon J. Mathias and Charles E. Carraher, Jr. Plenum Press, New York. 1984. ix + 426 pp. $59.50.

There are 27 papers in this volume, some of which are reviews of previous work in selected areas, and some are reports of original research. All of them are expanded versions of presentations made at an international symposium held in 1982 in Las Vegas. The editors believe that this is the first book to summarize this rapidly growing area comprehensively. The papers are reproduced from the authors' typescripts, and there is a subject index.

Properties and Applications of Zeolites. Edited by R. P. Townsend. The Chemical Society, London. 1980. xi + 429 pp. $30.00.

Contains typescripts of papers included in a symposium held in 1979 under the auspices of the Royal Society of Chemistry; not indexed.

Faraday Discussions of the Chemical Society. No. 75. Intramolecular Kinetics. The Royal Society of Chemistry, London. 1983. 435 pp. $48.00.

Contains the lectures and the transcribed discussions, plus a list of posters, comprising a symposium held at the University of Warwick in 1983. Set in type, but not indexed.

New Monomers and Polymers. Edited by Bill M. Culbertson and Charles U. Pittman, Jr. Plenum Press, New York. 1984. xi + 494 pp. $59.50.

Proceedings of a symposium held at the ACS meeting in Kansas City in 1982, consisting of 24 typescript papers enhanced by the addition of complete experimental details and including a thorough index.

Modern Synthetic Methods. Volume 3. 1983: Transition Metals in Organic Synthesis. Edited by R. Scheffold. John Wiley and Sons, New York. 1983. 440 pp. $33.95 soft bound.

The 1983 triennial Interlaken seminar on modern synthetic methods was devoted entirely to use of transition metals. Five long papers, essentially full chapters in themselves, fill this volume: Principles of Transition Metal Chemistry, by J. K. Stille; Group VIII Metals in Organic Synthesis, by L. S. Hegedus; Organocopper and Organomanganous Reagents, by J. F. Normant, A. Alexkis, and G. Cahiez; Titanium and Zirconium Derivatives in Organic Synthesis, by D. Seebach, B. Wiedmann, and L. Widler; and Vitamin B-12 and Related Co-complexes as Catalysts in Organic Synthesis, by R. Scheffold, G. Rytz, and L. Walder. The bibliographies are quite comprehensive—one contains 285 citations. There is unfortunately no index, and there are no running heads, but each paper has an unusually long table of contents.

Organic Coatings. Volume 5. Science and Technology. Edited by Geoffrey D. Parfitt and Angelos V. Patsis. Marcel Dekker, New York. 1983. 392 pp. $75.00.

The Seventh International Conference on the title subject, held in Athens in 1981, gave rise to the 21 invited and five short contributed papers in this volume, all of which are nicely set in type. Alas, there is no index.

Chemistry and World Food Supplies: The New Frontiers. CHEMRAWN II. Pergamon Press, New York. 1983. xvi + 664 pp. $75.00.

This softbound volume gathers in typescript form the large number of invited papers given at an international conference in Manila in 1982.

Thermodynamics of Aqueous Systems with Industrial Applications. Edited by Stephen A. Newman. American Chemical Society, Washington, D.C. 1980. xiii + 771 pp. $58.00.

The 38 papers in this volume derive from a symposium held in 1979, sponsored jointly by the AIChE, NBS, and NSF. The papers are typewritten; the index is typeset.

Mass Transfer and Kinetics of Ion Exchange. Edited by Lorenzo Liberti and Friedrich G. Helfferich. Martinus Nijhoff Publishers, The Hague, Boston, and Lancaster. 1983. viii + 459 pp. $60.00.

The 13 typescript papers in this volume are the proceedings of a NATO Advanced Study Institute held in Italy in 1982. No index.

Methods in Computational Molecular Physics. Edited by G. H. F. Diercksen and S. Wilson. D. Reidel Publishing Co., Dordrecht, Boston, and London. 1983. vii + 367 pp. $48.00.

The 13 typescript papers, some double-spaced and some single-spaced, in this volume were given at a NATO Advanced Study Institute held in the Federal Republic of Germany in 1982. There is a subject index.

Mass Transfer with Chemical Reaction in Multiphase Systems. Volume I. Two-Phase Systems; Volume II. Three-Phase Systems. Edited by Erdoğan Alper. Martinus Nijhoff Publishers, The Hague, Boston, and Lancaster. 1983. Volume I: xi + 679 pp. Volume II: x + 399 pp. $140.00 for the two-volume set.

Volume I contains 24 and Volume II 15 typescript papers given at a NATO Advanced Study Institute held in Turkey in 1981. No index.

Contemporary Topics in Polymer Science. Volume 4. Edited by William J. Bailey and Teiji Tsuruta. Plenum Press, New York and London. 1984. xv + 1013 pp. $125.00.

This hefty volume contains the large number of papers given at the U.S.-Japan Polymer Symposium held at Palm Springs in 1980. It has a substantial index.

Studies in Surface Science and Catalysis 17: Spillover of Adsorbed Species. Edited by G. M. Pajonk, S. J. Teichner, and J. E. Germain. Elsevier Scientific Publishing Co., Amsterdam and New York. 1983. xii + 320 pp. $74.50.

Contains the typescript papers given at an international symposium held in France in 1983. Not indexed.

Structure–Property Relationships of Polymeric Solids. Edited by Anne Hiltner. Plenum Press, New York and London. 1983. viii + 270 pp. $42.50.

Composed of 17 papers on original research presented at the Bordon Award Symposium held in Atlanta in 1981. Contains a short index.

Polymers in Medicine: Biomedical and Pharmacological Applications. Edited by Emo Chiellini and Paolo Giusti. Plenum Press, New York and London. 1983. x + 420 pp. $57.50.

The 31 papers given at a symposium held in Italy in 1982 are reproduced in typescript to make up this volume. The content is arranged in these sections: Polymeric Drugs and Drug Delivery Systems; Polymers as Biomaterials; Medical and Surgical Applications of Polymers. Indexed.

Rings, Clusters, and Polymers of the Main Group Elements. Edited by Alan H. Cowley. American Chemical Society, Washington, D.C. 1983. x + 182 pp. $32.95.

Ten papers given at a symposium sponsored by the ACS Division of Inorganic Chemistry, held in September 1982, were expanded to make this book, which is dedicated in memoriam to the late Ralph W. Rudolph. Indexed.

Biopolymers. Volume 22. No. 1. Edited by Murray Goodman. John Wiley and Sons, Inc., New York. 1983. xii + 588 pp. $31.00.

This issue is essentially a soft-bound book, containing the proceedings of a symposium held in Italy in 1982 on Peptides, Polypeptides, and Proteins: Interactions and their Biological Implications.

Beijing/Shanghai Proceedings of an International Conference on Lasers, May 1980. John Wiley and Sons, Inc., New York. 1983. xix + 909 pp. $95.00.

Contains in nicely typeset form the large number of papers presented at a symposium held in 1980, arranged under these rubrics: Laser Physics and Laser Chemistry; Lasers and Laser Components; Laser Fusion; Lasers in Medicine and Integrated Optics, etc. Unfortunately, not indexed.

Modification of Polymers. Edited by Charles E. Carraher, Jr., and James A. Moore. Plenum Press, New York and London. 1983. ix + 420 pp. $57.50.

Contains the expanded texts of 23 papers and a review presented at a symposium held at the ACS National Meeting in Las Vegas in 1982. Indexed.

New Approaches in Liquid Chromatography. Edited by H. Kalász. Elsevier Scientific Publishing Co., Amsterdam and New York. 1984. x + 291 pp. $67.25.

Proceedings of the 2nd Annual American–Eastern European Symposium on Advances in Liquid Chromatography, held in Hungary in 1982, covering HPLC, Displacement Chromatography, Characterization of Stationary Phases, Optimization, Thin-layer Chromatography, Analysis of Amino Acids (by which is actually meant "determination"), and Separation of Peptides and Proteins. Reproduced from typescripts and provided with a minimal index.

Modern Trends in Analytical Chemistry. Edited by E. Pungor, I. Buzás, and G. E. Veress. Elsevier Scientific Publishing Co., Amsterdam and New York. 1984. xiv + ca. 650 pp. $134.50.

Proceedings of two symposia held in Hungary in 1982: Electrochemical Detection in Flow Analysis and Pattern Recognition in Analytical Chemistry. Each symposium is separately indexed.

Analytical Spectroscopy. Edited by W. S. Lyon. Elsevier Scientific Publishing Co., Amsterdam and New York. 1984. xiv + 394 pp. $75.00.

Proceedings of the 26th Conference on Analytical Chemistry in Energy Technology, held in Knoxville in 1983, consisting of papers on Lasers, Mass Spectrometry, Plasma, Nuclear, and Other Spectroscopic Techniques, reproduced from typescripts and indexed.

Topics in Forensic and Analytical Toxicology. Edited by R. A. A. Maes. Elsevier Scientific Publishing Co., Amsterdam and New York. 1984. x + 214 pp. $57.75.

Proceedings of the Annual European Meeting of the International Association of Forensic Toxicologists, held in Munich in 1983, reproduced from typescripts and provided with a brief subject index.

Chemistry for Protection of the Environment. Edited by L. Pawlowski, A. J. Verdier, and W. J. Lacy. Elsevier Scientific Publishing Co., Amsterdam and New York. 1984. xii + 626 pp. $132.75.

Proceedings of an international conference held in Toulouse in 1983, consisting of 54 papers plus author and subject indexes.

Structure and Reactivity of Modified Zeolites. Edited by P. A. Jacobs, N. I. Jaeger, P. Jiru, V. B. Kazansky, and G. Schulz-Ekloff. Elsevier Scientific Publishing Co., Amsterdam and New York. 1984. xii + 376 pp. $77.00.

Proceedings of an international conference held in Prague in 1984, consisting of 40 papers and an author index.

Ionic Processes in the Gas Phase. Edited by M. A. Almoster Ferreira. D. Reidel Publishing Co., Dordrecht, Boston, and Lancaster. 1984. x + 374 pp. $46.50.

Proceedings of a NATO Advanced Study Institute held in Portugal in 1982, consisting of 19 papers and a subject index, reproduced from jarringly varied typescripts.

Loss Prevention and Safety Promotion in the Process Industries. Volume 1: Safety in Operations and Processes. Volume 2: Hazardous Chemicals and Liquefied Gases—Safe Transport by Sea. Volume 3: Chemical Process Hazards. By The Institution of Chemical Engineers. Pergamon Press, New York. 1983. ca. 1000 pp. $126.00 for the three-volume set.

Proceedings of the 4th International Symposium on the subject, held in England in 1983, consisting of plenary lectures and short papers, including many case histories, but no index.

Phencyclidine and Related Arylcyclohexylamines. Edited by J.-M. Kamenka, E. F. Domino, and P. Geneste. NPP Books, P.O. Box 1491, Ann Arbor, MI. 1983. xxi + 690 pp. $50.00.

Proceedings of a Joint French–U.S. Seminar held in Montpellier in 1982, consisting of papers grouped in several sections: Chemistry; Biochemistry and Receptors; Biotransformation; Pharmacology; Drug Abuse; and New Directions. Subject index.

Oxygen and the Conversion of Future Feedstocks. Royal Society of Chemistry, London. 1984. viii + 471 pp. $33.00.

Proceedings of the Third BOC Conference, held in London in 1983, consisting of 25 papers balanced between modern industrial processes and historical considerations, including two plenary lectures, one of which treats the use of oxygen from a global perspective and the other discusses the world's first chemical explosive. Softbound.

Challenges to Contemporary Dairy Analytical Techniques. Royal Society of Chemistry, London. 1984. xi + 337 pp.

Proceedings of a Seminar organized by the Food Chemistry Group of the Royal Society of Chemistry, held in Reading in 1984.

Ultrastructure Processing of Ceramics, Glasses, and Composites. Edited by Larry L. Hench and Donald R. Ulrich. Wiley-Interscience, New York. xvi + 564 pp. $59.95.

Contains 42 addresses and papers presented at an international symposium held at the University of Florida in 1983, grouped under these rublics: Introduction; Sol-Gel Processing; Organometallic Precursors; Micromorphology-based Processing; Phase-transformation-based Processing; Characterization. The papers are set in type and there is a good subject index.

Atomic, Molecular and Solid-State Theory, Collision Phenomena, and Computational Quantum Chemistry. Edited by Per-Olov Löwdin. Wiley-Interscience, New York. xix + 650 pp. $78.95.

Proceedings of an international symposium held in Florida in 1983, published as an issue of the International Journal of Quantum Chemistry.

Quantum Biology and Quantum Pharmacology. Edited by Per-Olov Löwdin. Wiley-Interscience, New York. 1984. xv + 416 pp. $54.95.

Proceedings of an international symposium held in Florida in 1983, published as an issue of the International Journal of Quantum Chemistry.

Frontiers in Chemical Reaction Engineering. Volumes I and II. Edited by L. K. Doraiswamy and R. A. Mashelkar. John Wiley and Sons, New

York. Volume I: viii + 697 pp. $43.50. Volume II: viii + 463 pp. $43.50.

Contains the text of 14 plenary lectures and 67 contributed papers from the International Chemical Reaction Engineering Conference held in Poona, India, in 1984.

Organic Molecular Aggregates: Electronic Excitation and Interaction Processes. Edited by P. Reineker, H. Haken, and H. C. Wolf. Springer-Verlag, Berlin, Heidelberg and New York. 1983. ix + 285 pp. $29.00.

Contains the 26 papers presented at an international symposium held in Bavaria in 1983. Reproduced from varied typescripts and not indexed.

Ion Cyclotron Resonance Spectrometry. Volume II. Edited by H. Hartmann and K.-P. Wanczek. Springer-Verlag, Berlin, Heidelberg and New York. 1982. xv + 538 pp. $32.80.

Contains 28 reviews and short papers presented at the 2nd International Symposium, held in Mainz in 1981. Softbound.

Neurobiology of the Trace Amines: Analytical, Physiological, Pharmacological, Behavioral, and Clinical Aspects. Edited by A. A. Boulton, G. B. Baker, W. G. Dewhurst, and M. Sandler. Humana Press, Clifton, NJ. 1984. xx + 597 pp. $59.50. U.S./$69.50 export.

Proceedings of a meeting held at the University of Alberta in 1983, consisting of invited and contributed communications under the headings of Introduction, Analysis, Physiology and Pharmacology, Behavior, and Clinical Studies. Reproduced from typescripts and indexed.

Electron and Proton Transfer. Faraday Discussions of the Chemical Society. No. 74. 1982. The Royal Society of Chemistry, London. 1983. 413 pp. £25.00.

Proceedings of a "Discussion" held in Southampton in 1982, consisting of the second R. A. Robinson Memorial Lecture (R. A. Marcus) and 21 papers with the discussions that followed them and a list of poster presentations. Softbound; set in type.

Stable Isotopes in Nutrition. Edited by J. R. Turnland and P. E. Johnson. ACS Symposium Series No. 258. American Chemical Society, Washington, D.C. 1984. 230 pp. $39.95 U.S. and Canada/$47.95 export.

Based on a symposium sponsored by the ACS Division of Agricultural and Food Chemistry, August 28–September 2, 1983.

Bioregulators: Chemistry and Uses. Edited by R. L. Ory and F. R. Rittig. ACS Symposium Series No. 257. American Chemical Society, Washington, DC. 1984. 283 pp. $44.95 U.S. and Canada/$53.95 export.

Based on a symposium sponsored by the ACS Division of Agricultural and Food Chemistry, August 28–September 2, 1983.

Catalytic Conversions of Synthesis Gas and Alcohols to Chemicals. Edited by R. G. Herman. Plenum Publishing Corp., New York and London. 1984. xi + 475 pp. $69.50.

Proceedings of a symposium held at the Middle Atlantic Regional Meeting of the ACS in 1983, consisting of 25 papers, a table of energy-conversion factors, and a 2-page appendix on nomenclature containing an inexcusable amount of gratuitous misinformation about systematic nomenclature.

Laser Applications in Chemistry. Edited by K. L. Kompa and J. Wanner. Plenum Publishing Corp., New York and London. 1984. ix + 273 pp. $45.00.

Contains the lectures and seminars presented at a NATO Advanced Study Institute held in Italy in 1982, reproduced from a variety of typescripts, well illustrated, but sparingly indexed.

Advances in Materials Characterization. Edited by D. R. Rossington, R. A. Condrate, and R. L. Snyder. Plenum Publishing Corp., New York and London. 1983. xi + 680 pp. $89.50.

Proceedings of a conference held at Alfred University in 1982. The 49 papers are grouped under these rubrics: Surface Spectroscopy; Surface Techniques; Vibrational Spectroscopic Techniques; Electron Optical Methods; Acoustic and Mechanical Properties; General Crystallographic Techniques; General Glass Characterization Techniques. Full author and subject indexes.

Stereochemistry and Reactivity of Systems Containing π Electrons. By William H. Watson. Verlag Chemie International, Deerfield Beach, FL. 1983. xiv + 439 pp. $44.90.

The symposium that generated the 12 papers in this book was held in recognition of Professor Paul Bartlett's contributions to physical organic chemistry. Among the subjects covered are polyenes, singlet oxygen, stereoelectronic control, conformational mobility, etc. There is an adequate subject index.

Nitrogen as an Ecological Factor. Edited by J. A. Lee, S. McNeill, and I. H. Rorison. Blackwell Scientific Publications, Palo Alto. ix + 470 pp. $67.00.

Proceedings of the 22nd Symposium of the British Ecological Society, held in 1981, consisting of 19 papers and the abstracts of poster presentations, all properly set in type and well indexed. Most of the papers deal with an aspect of the utilization and metabolism of nitrogen compounds, organic and inorganic, by microorganisms, plants, or animals.

75th Jubilee Conference on Helium. Volume 4. Edited by J. G. M. Armitage. Heyden and Son, Inc., Philadelphia. 1984. xx + 211 pp. $26.00.

Proceedings of a conference held in Scotland in 1983 to celebrate the 75th anniversaries of the liquefaction of helium and of the birth of Jack Allen. A large number of papers, ranging from Superfluidity to Helium in Space, are reproduced from typescripts. Alas, there is no index.

Liquid Crystals and Ordered Fluids. Volume 4. Edited by Anselm C. Griffen and Julien F. Johnson. Plenum Publishing Corp., New York and London. 1984. xiii + 1157 pp. $135.00.

Proceedings of an American Chemical Society Symposium held in Las Vegas in 1982, consisting of a large number of papers ranging from design and synthesis of new mesogenic materials to theoretical treatment of the physics of anisotropic liquids. The topics include some intriguingly arcane ones, such as pleochroic dyes, discotics, incommensurate smectics, etc. The papers are reproduced from uniform typescripts, and there is a short subject index.