and they are also willing to program, as a service, any instrument that is capable of communicating with a digital computer via a GPIB (IEEE-488) or serial (RS-232) interface. In order to use an instrument which has a GPIB interface, a GPIB controller, such as National Instruments GPIB-Mac controller, for example, must be available which can be accessed via a Mac's serial (modem) port or via its SCSI port with MacBus. In the future LabVIEW will have drivers to operate input–output boards for the Mac II. With a Virtual Instrument for a given piece of laboratory equipment interfaced to a Mac via a GPIB-Mac controller or an instrument board (Mac II), the user has at his disposal the data manipulation capabilities of the LabVIEW software which include plotting, statistical analysis, wave form analysis, number crunching, and file and data base manipulation.

As a test of the laboratory computing capabilities of LabVIEW, a 2K National Instrument GPIB-Mac controller was used with a MacPlus to control a Keithley 4853 picoammeter with a GPIB interface. With use of built in LabVIEW GPIB functions, all device dependent commands could be accessed remotely one at a time and data read in to the computer from the instrument in single steps. However, to write a LabVIEW VI which allows complete set up of a particular set of instrument functions and ranges proved difficult. This was because a single string consisting of several device dependant commands could not be read into the Keithley instrument, although the manual states that this is possible. This situation may be a problem with the Keithley 4853 GPIB interface and not with LabVIEW; however, it should be pointed out that the GPIB-Mac controller can also be programed with BASIC where it is not necessary to use such a string command. Thus the question arises as to the advantages that LabVIEW gives over input–output programing with BASIC or some other language that can communicate with a controller. The main advantage of LabVIEW is not in the ease of input–output programing but rather in the user-friendliness that the front panel concept gives to labVIEW applications and the data logging, data manipulation, and graphics capabilities that it possesses. This software system would seem to be of most interest to chemists who either want to use a Macintosh system as a general laboratory computer or who have instrumentation with a GPIB interface and applications which involve extensive waveform analysis.

Ronald L. Birke, *The City College of CUNY*

*Book Reviews**

Growth of Crystals. Volume 14. Edited by E. I. Givaryizov (Academy of Science, USSR), translated by J. E. S. Bradley (University of London). Consultants Bureau: New York and London. 1987 (from Russian text published in 1983). viii + 199 pp. $65.00. ISBN 0-306-18114-2

This volume is similar to preceding volumes in this series in consisting of a compilation of papers in its specialized area. Despite its appearance as a hard-cover book, it is not a monograph; it has no unified or systematic organization in terms of content and no subject or author indexes. Rather, it is the equivalent of an issue of a regional journal. It contains 18 papers, the authors of all of which are from state institutes in the USSR.

The contributions are grouped into three categories. Part I contains papers dealing with the production or properties of thin films, with emphasis on polycrystalline and amorphous materials, and includes some new material in this industrially important field. Here, Givaryizov presents a brief literature survey of research approaches to producing oriented crystal films on amorphous substrates and shows some results he has obtained in producing oriented overgrowth of GaAs on an SiO_2 or Si substrate, and CdS on glass. Aleksandrov offers a theoretical treatment of the mechanism of accelerated crystallization; e.g., of amorphous films of Sb, Si, or Ge on glass induced by local pulsed heating, shock, or cleavage. Lyutovick details his experimental results in producing film crystallization through bombardment with ion beams. Solid-state epitaxy is a technique that seeks to form crystalline thin films at lower temperatures than traditional epitaxial deposition methods by interposing a thin metal film between the deposited material and the substrate; this approach is reviewed by Palatnik and Fedorenko. Sokol and Kosevich describe qualitatively the factors affecting crystal growth in amorphous films of Sb, Se, Te, Sb_2S_3, In_2Te_3, and Nb_2O_5. Stenin discusses the spontaneous formation of defect and dislocation structures during the deposition of heteroepitaxial films; e.g., Ge on SiO_2 and Si on Si_3N_4. Mil'vidskii and Dolginov describe some aspects of the production and properties of a few uncommon epitaxial heterostructures composed of quaternary solid solutions; e.g., InGaAsP on InP.

The papers in Part II deal with crystal growth in multicomponent systems. Temkin proposes a theoretical model for nucleation kinetics based upon the composition of the nuclei and the diffusion rates of the constituent species. Birman offers a thermodynamic treatment of crystal composition and growth in systems having complex phase diagrams, such as in the case of cement hydration. Barsukova and Kuznetsov provide data on the stability and growth by hydrothermal synthesis in fluoride media of Mg, Ca, Sr, Ba, Fe(II), Co(II), Ni(II), Pb, Mn(II), and Bi titanates. Punin employs microscopy to investigate the morphology and kinetics of defects produced in crystals due to plastic relaxation of growth stresses. Davtyan et al. describe the production of optical quality potassium pentaborate tetrahydrate crystals from neutral aqueous solutions by cooling from 70 °C to room temperature.

Of the six papers in Part III, four are by Tatarchenko and co-workers. These latter are mainly theoretical and deal with the problem of controlling the shape and crosssection dimensions of crystals that are grown from melts in which the side surface is produced free of contact with the walls of the container. The specific techniques discussed are those due to Czochralski, Stepanov, and Verneuil, as well as the floating zone method. Smirnov et al. offer a computer simulation of the velocity, temperature, and dopant concentration distributions for Ge grown by the Czochralski method. Antonov and Bakholdin give a qualitative interpretation of the profile of crystals grown from the melt as arising from the anisotropy of the crystal itself, plus the effect that factor has on the temperature pattern near the crystallization front.

The translation from the Russian is well done and is technically competent. The text is quite free of editorial and typographic faults. The Consultants Bureau continues to provide a valuable service to those of us who do not have entry into the original Russian literature.

S. Z. Lewin, *New York University*

Annulenes, Benzo-, Hetero-, Homo-Derivatives, and their Valence Isomers. Volumes 1, 2, and 3. By Alexandru T. Balaban and Mircea Banciu (The Polytechnic, Burcharest) and Vasile Ciorba (Foreign Trade Ministry, Bucharest). CRC Press Inc.: Boca Raton. 1987. Volume 1: xiv + 251 pp. Volume 2: xiv + 231 pp. Volume 3: xii + 206 pp. $395.00. Volume 1: ISBN 0-8493-6880-4. Volume 2: ISBN 0-8493-6881-2. Volume 3: ISBN 0-8493-6881-0

This three-volume series is a very timely and welcome addition to the organic literature. Most of the chemistry reviewed in this book has never been collectively addressed and certainly there exists no other monograph that covers the broad field of not only annulene chemistry but also the related areas of benzo-, hetero-, and homo-annulenes as well as their valence isomers. This book goes considerably beyond another recent contribution in the field, written by Douglas Lloyd and published in 1984.

The three volumes are divided into ten chapters, Volume 1 begins with three introductory chapters written by Balaban, which encompass 65 pages. These chapters introduce the book and then address the subjects of aromaticity and graph theory. In his introduction Balaban claims that the book will follow a "Sherlock Holmes" type approach in that graph theory will be used to delineate all possible graphs depicting $(CH)_n$ isomers. This list will then be pruned of irrelevant graphs and finally compared to known compounds. Luckily for the reader, this approach is not seriously implemented after Chapter 3. Other stated objectives of the book are to provide a short-cut to the vast literature of the field and to provide inspiration for synthetic chemists. In these respects the authors succeed very well.

Chapter 2 is devoted to a discussion of the controversial topic of aromaticity, beginning with an historical review of the subject. An interesting section is included on aromaticity criteria which relates the often subjective opinions of several illustrious chemists on this volatile issue. With regard to the theoretical basis for aromaticity, the authors

*Unsigned book reviews are by the Book Review Editor

are critical of the oversimplification inherent in simple HMO theory. Not surprisingly, they are much more positive about graph theoretical approaches.

Chapter 3 attempts to introduce some elementary graph-theoretical notions and combines them with an historical overview of their relation to chemical problems. For what is touted to be a unifying and simplistic approach to the enumeration and evaluation of $(CH)_n$ isomers, graph theory mostly confused this reviewer whose mathematical background is admittedly not extensive. The terminology alone is mind boggling, including such terms as "forests" and "trees" among numerous others. Included are several tables of multigraphs with a prescribed number of vertices and double bonds. These graphs represent structures for $(CH)_n$ isomers and purportedly serve as an inspiration to synthetic chemists.

Chapter 4 gets back to reality with a thorough discussion of annulenes from cyclobutadiene up to [30]annulene, including pertinent syntheses, physical and chemical properties, and valence isomerizations. Sections are also included on dehydroannulenes, monocyclic ions derived from annulenes, annuleno-annulenes, and zero-atom bridged annulenes. The last chapter in this first volume presents an excellent survey of bridged annulenes with the expected emphasis on the superb work of Vogel and Boekelheide. The second volume contains Chapters 6 and 7 both of which, along with Chapter 5, were written by M. D. Banciu. Chapter 6 addresses valence isomers of annulenes from tetrahedrane to dodecahedrane. The literature coverage is extensive and very useful tables are included summarizing the known valence isomers for each $(CH)_n$ class. Chapter 7 extends the excellent coverage of the two previous chapters to include benzoannulenes and their valence isomers. It is a shame that nomenclature involving the prefixes benz- and benzo- has not been revised so that misr omers such as benzocyclooctene are still sanctioned by IUPAC.

The third volume begins with a chapter written by Balaban on heteroannulenes and their valence isomers. Clearly this topic could easily lead into the vast arena of heterocyclic aromatics, but the discussion is skillfully limited to systems relevant to the carbocyclic analogues discussed earlier. Chapter 9 was written by V. Ciorba and pertains to homoannulenes with subsections on annulenones and dehydroannulenones, annulenediones, annulenone valence isomers, monoionic homoannulenes, and homoaromaticity. The last chapter, written by Balaban, returns to graph theory and presents reaction graphs for several automerization reactions and the rearrangements of azabullvalene.

Overall this book should find wide appeal among synthetic and physical organic chemists alike. It reviews a field that has seen dramatic development over the past two decades and provides inspiration for further creativity in the fascinating area of annulene chemistry.

Randolph P. Thummel, *University of Houston*

Nuclear Chemistry. By A. Vertes (Eötvös Lorand University) and I. Kiss (Central Research Institute for Physics of the Hungarian Academy of Sciences). Elsevier Science Publishers: Amsterdam and New York. 1987. 619 pp. $122.25. ISBN 0-444-99508-0

This monograph is a translation of a book originally published in Hungarian. The audience to which it is addressed is not explicitly stated, but a short list of exercises at the end of each chapter suggests it is intended for classroom use, probably at the graduate level.

The book starts out with four chapters on basic aspects of nuclear properties and reactions, radioactive decay, and the interactions of radiation with matter. The chapter on nuclear reactions is very skimpy, devoting less than a page to heavy ("accelerated") ion induced reactions. Similarly, when discussing spontaneous fission or isomeric state decay, shape isomeric states and their decay by spontaneous fission are not mentioned.

The emphasis of this book is on applications, with chapters or sections on such subjects as Mössbauer spectroscopy, positronium chemistry, hot-atom chemistry, radiation chemistry, and isotope effects. Unfortunately, much of this material is rather dated. For example, Chapter 9 on radiation chemistry lists 39 references and monographs, the most recent of which is 1974. The date of publication of the original version is not indicated, although there are a few references in the translation as late as 1984. Much of the coverage, however, is somewhat dated, and the value of the monograph lies primarily in its extensive coverage of the older literature on applications of nuclear chemistry.

Robert Vandenbosch, *University of Washington*

Principles of Chemical Instrumentation. By Gary T. Bender (University of Wisconsin, La Crosse). W. B. Saunders: Philadelphia, PA. 1987. 358 pp. $24.95. ISBN 0-7216-1834-0

There is a need for a compact text that gives an uncluttered account of the *principles* of analytical instrumentation. This book attempts to do so with emphasis on methods and applications important in clinical and biochemical analysis. It is generally successful in achieving these aims, although the level of treatment is probably too low for use as a text in one-semester instrumental analysis courses for chemistry majors. Labored explanations are given at points, the book makes minimal use of math, the electronics section is weak, and the chapter problems are too simple. On the positive side one must note the bold illustrations and diagrams, the treatment of chromatography, and the admirable brevity achieved. Instrumental aspects of spectroscopy are well done although the emphasis on errors in Beer's law seems unnecessarily heavy and there is little on the fundamentals of the subject.

Coverage is appropriate although one might wonder why osmometry deserves a chapter while mass spectrometry does not. (The use of mass spectrometers as detectors for gc is, however, covered and rather well done.)

R. Graham Cooks, *Purdue University*

Organometallic Chemistry. Volume 14. Specialist Periodical Reports. Edited by E. W. Abel and F. G. A. Stone. Royal Society of Chemistry: London. 1986. xvi + 503 pp. £96 or $173. ISBN 0-85186-621-2

This volume reports with the usual care the literature published during 1984. Chapter 1 deals with alkali and coinage metals and Chapter 2 with alkaline earth, zinc and its congeners. Chapters 3 and 4 describe the chemistry of boron and carboranes. Chapter 5 is devoted to aluminum, gallium, indium, and thallium, Chapter 6 to silicon and phosphorus groups, and Chapter 7 to group V. The remaining and larger part of the book is devoted to transition-metal chemistry: Chapter 8, metal carbonyls; Chapter 9, metal–metal bonds; Chapter 10, substitution reactions; Chapters 11 and 12, complexes containing metal–carbon σ bonds; Chapters 13 and 14, metal hydrocarbon π complexes; Chapter 15, homogeneous catalysis. Owing to the increasing importance of structural determination, Chapter 16 consists of a comprehensive list of organometallic compounds whose structures have been determined by X-ray, neutron, or electron diffraction methods and reported during 1984.

O. Eisenstein, *Universite Paris Sud*

Advances in Inorganic Chemistry and Radiochemistry. Volume 30. Edited by H. J. Emeleus and A. G. Sharpe (University Chemical Laboratory, Cambridge, England). Academic Press, Inc.: Orlando, Florida, and London, England. 1986. v + 327 pp. $79/£66. ISBN 0-12-023630-3

This volume is part of the well-known, long-running series which every good chemistry library should have. There are four reviews: (1) "Catenated Nitrogen Ligands. Part 1. Transition Metal Derivatives of Triazenes, Tetrazenes, Tetrazadienes and Pentazadienes", by D. S. Moore and S. D. Robinson (68 pages); (2) "The Coordination Chemistry of 2,2';6'2''-Terpyridine and Higher Oligopyridines", by E. C. Constable (52 pages); (3) "High-Nuclearity Carbonyl Clusters: Their Synthesis and Reactivity", by M. D. Vargas and J. N. Nicholls (99 pages); (4) "Inorganic Chemistry of Hexafluoroacetone", by M. Witt, K. S. Dhathathreyan, and H. W. Roesky (89 pages). There is also a comprehensive 14-page index.

All the contributions meet the high standards that we have come to expect from this series. They are well-written and informative and will be of value to those working in their respective fields.

Richard A. Jones, *The University of Texas at Austin*

Hazards in the Chemical Laboratory. Edited by L. Bretherick. The Royal Society of Chemistry: London. 1986. xiii + 604 pp. $54.00. ISBN 0-85186-489-9

Chemical hazard awareness is the first step in ensuring the safety of oneself and others in the chemistry laboratory. This book, now in its fourth edition, continues to provide for its readers valuable descriptive material on chemical hazards such as fire/explosion, chemical reactivity, health, and radiation. First aid is also discussed as is safety planning and management. All of these topics have been revised to include new developments. An in-depth description of procedures to be followed in case of hazardous chemical emergencies is omitted from this book, but in the preface the reader is referred to a number of other publications dealing with emergency procedures. An additional chapter included for the first time, which outlines distinctions between US and UK legislation and practice in chemical laboratories, is interesting but may not be very useful to the reader.

The uniqueness of *Hazards in the Chemical Laboratory* is found in the monographs of 490 hazardous chemicals that could be encountered in the chemistry laboratory. These monographs include a summary of the hazardous properties of these substances and their effects upon the

human body. For ease of locating the monographs, a separation from the rest of the text is accomplished by printing them on yellow paper. However, the text material refers to these substances and therefore makes them an integral part of the overall presentation of material. The inclusion of CAS registry numbers in the title lines of each entry will be very useful to anyone wanting to do computer searching on a particular substance. A failure of the monographs is that they do not include any reference to NFPA-306 (National Fire Protection Association Standard 306) ratings, which are used extensively in many laboratories today to alert the users of specific chemicals to the hazards of the materials being handled.

I find that this edition would be very useful to safety managers in developing presentations on topics in hazardous materials for training purposes. It would also provide an excellent reference for laboratory technicians who could easily refer to the yellow pages for relatively complete hazard descriptions of chemicals encountered in the laboratory. Anyone who works in a chemistry laboratory will find this book easy to read, an excellent reference text, and a worthwhile investment.

Thomas J. Haas, *United States Coast Guard Academy*

Electronic Phenomena in Adsorption and Catalysis on Semiconductors and Dielectrics. By V. F. Kiselev (Moscow State University) and O. V. Krylov (Academy of Sciences of the USSR). Springer-Verlag: New York, Berlin, Heidelberg. 1987. viii + 279 pp. DM 160. ISBN 0-387-17514-8

The purpose of this book, as described by the authors, is to generalize the experimental data and relationship between two important classes of phenomena occurring at semiconductor surfaces. These are the following: one, the electronic properties of semiconductors and how they are influenced by adsorption and catalytic processes taking place at the surface; and two, the influence the electronic subsystems of semiconductors can have on adsorption and dissociation of molecules at the surface. The majority of the book deals with the first topic. After a short introductory chapter there are eight more chapters that focus primarily on the electronic structure of semiconductors and to a lesser extent dielectric materials. The topics covered are as follows: Chapter 2, The phenomenological description of electronic processes on semiconductor surfaces; Chapter 3, The energy spectrum of semiconductor surfaces; Chapter 4, Electron processes in semiconductor adsorbents and catalysts; Chapter 5, The electron theory of chemisorption and catalysis on ideal semiconductor surfaces; Chapter 6, The effects of adsorption on the electrophysical parameters of real semiconductor surfaces; Chapter 7, Catalysis and electronic phenomena on real semiconductor surfaces; Chapter 8, The phonon and shock mechanisms of charge-carrier capture in adsorption and catalysis; and, Chapter 9, Proton processes on the surfaces of semiconductors and insulators. The two chapters dealing with electronic effects on the mechanisms of adsorption and catalysis are relatively short. Chapter 5 has a total of 21 pages and Chapter 7 has 18 pages. The authors have greatly extended discussions introduced in their earlier work *Adsorption Processes on Semiconductor and Dielectric Surfaces, Volume I* (Springer-Verlag, 1985). One limitation of this overview is that few references after 1980 are cited.

This book combines the classical solid state physics descriptions of electronic structures of the substrates with empirical discussions of surface chemistry. This broad approach will appeal to readers with a very wide range of backgrounds. Even though a quantitative description of chemisorption and surface charging is not yet available the authors do a good job of explaining electronic processes and chemisorption separately and then bringing the two topics together qualitatively. A variety of substrates are discussed, including Ge, Si, TiO_2, SiO_2, ZnO, Al_2O_3, and PbS. Adsorbing and reacting species discussed tend to be model systems such as H_2, O_2, CO, CO_2, and NH_3. A few more complicated adsorbates such as CH_3OH, pyridine, and acetone on various surfaces are reviewed.

I recommend this book for anyone wishing a thorough review of electronic phenomena at the surface of semiconductors. It is also a good starting point for the study of the relationship between substrate electronic properties and catalytic phenomena.

Terry S. King, *Iowa State University*

JANAF Thermochemical Tables. Third edition. By M. W. Chase, Jr. (Dow Chemical U.S.A., now National Bureau of Standards), C. A. Davies, J. R. Downey, Jr., D. J. Frurip, R. A. McDonald, and A. N. Syverud (all of Dow Chemical U.S.A.). American Chemical Society: Washington, DC. American Institute of Physics: New York. 1985. ix + 1856 pp. Two volumes: $130.00. ISBN 0-88318-473-7 (*J. Phys. Chem. Ref. Data* **1985**, 14, Suppl. 1)

This is the third, and most comprehensive, edition of the JANAF tables or thermodynamic properties and incorporates the contents of the 2nd edition (1971), its four supplements in the *Journal of Physical and Chemical Reference Data*, and new data as well. While the authors have restricted the scope to inorganic compounds and organic compounds with but one or two carbons, some 1800 species of unique stoichiometry and state are presented. For example, elemental aluminum appears as crystal, liquid, the monoatomic gas and its +1 and −1 ions, and—because the species are arranged by the Hill–Chemical Abstracts sort scheme—some pages later, diatomic aluminum, Al_2, as well. (The intervening pages are filled with both rather exotic species such as AlBr(g) and normal compounds such as $AlBr_3$(s).) For each entry (each on its own page) numerous thermodynamic quantities are explicitly given, such as heat capacity, entropy, and both the enthalpy and Gibbs energy of formation. (All of these quantities are given at numerous temperatures and not "merely" 25 °C or 298 K.) All of the data and any associated calculations and assumptions are extensively referenced to the primary literature and key other compendia. It is also made explicitly clear what is the quality of all of the quantities given. Some of the included data are distressingly old and inexact. This is clearly not the fault of Chase and his co-workers, but rather it reflects holes in our current knowledge and implicit suggestions for future research.

Not surprisingly, all of the data are in SI units. Disappointingly, the price of the volume is high (the 2nd edition cost $9.75 in 1971 dollars). This last result should not discourage any individual interested in molecular structure and energetics from owning a personal set and imploring his/her institutional library to buy one. The price will, however, discourage professors such as the reviewer to recommend to their more advanced students that they buy their own set so that they can personally have access to both the data and evaluation and the numbers and their understanding, collected and generated by some of their major practitioners and researchers.

Joel F. Liebman, *University of Maryland, Baltimore County Campus*

Volumes of Proceedings

Recent Advances in Electroorganic Synthesis. Edited by Sigeru Torii. Elsevier Science Publishers: Amsterdam. 1987. xxvi + 475 pp. Dfl. 370.00 (U.S. $180.50). ISBN 0-444-98693-3

The First International Symposium on Electroorganic Synthesis was held in Japan in 1986. The plenary and invited typescript papers, grouped into six sections (Electrooxidation; Indirect Electrooxidation; Electroreduction; Metal-Mediated Electroreduction; Conductive Polymer, Electropolymerization, Electrode Surface; Industrial Application and Cell Design) make up this volume. Indexed.

Coal Characterisation for Conversion Processes 1986. Edited by Jacob A. Moulijn and Freek Kapteijn. Elsevier: Amsterdam and New York. 1987. xvi + 414 pp. $100.00. ISBN 0-444-42501-2

The First International Rolduc Symposium on Coal Science was held in The Netherlands in 1986. This volume of typescript papers is reprinted from a special issue of *Fuel Processing Technology*, Volume 15, Numbers 1–3.

Dynamics of Molecular Crystals. Edited by J. Lascombe. Elsevier: Amsterdam and New York. 1987. xxvii + 727 pp. $169.00. ISBN 0-444-42738-4

This volume of typescript papers reports the proceedings of an International European meeting of the Societe Francaise de Chimie, held at Grenoble University in 1986. The contents are subdivided into ten sections: I. Intermolecular Forces (6 papers); II. Relaxation Phenomena (7 papers); III. Phase Diagrams and Phase Transitions (18 papers); IV. Properties of Materials (6 papers); V. Glasses (6 papers); VI. Low Dimensional Systems (9 papers); VII. Elementary Excitations (11 papers); VIII. Large Amplitude Motions (21 papers), IX. Tunnelling Dynamics (5 papers); X. Computer Simulation (7 papers). There is an index of contributors, but none of subjects.

Wood and Cellulose: Industrial Utilisation, Biotechnology, Structure and Properties. Edited by J. F. Kennedy, G. O. Phillips, and P. A. Williams. John Wiley & Sons: New York. 1987. xiv + 664 pp. $100.00. ISBN 0470-20884-8

Cellucon-86 is the name of the event of which this book is the proceedings. Its 71 contributions, from camera-ready copy, are called "chapters", but they are reports of original research. They are grouped under three headings: Structure and Properties, Biotechnology, Industrial Utilisation. Six are poster presentations. The subject index is substantial.

Molecular Mechanisms of Carcinogenic and Antitumor Activity. Edited by Carlos Chagas and Bernard Pullman. Pontificia Academic Scientarum: Vatican City (distributed by Adenine Press, P.O. Box 335, Guilderland, NY). 1987. xxii + 489 pp. $70.00. ISBN 88-761-023-9

The Pontifical Academcy of Sciences was the host for a Working Group in 1986 and was responsible for the primary publishing of this

volume. It consists of an introductory lecture by B. Pullman, eight papers on the mechanisms of carcinogenesis, and eleven papers on molecular aspects of antitumor activity. Although this is a softbound volume, it is very nicely produced. Not indexed.

Integration and Control of Metabolic Processes: Pure and Applied Aspects. Edited by O. L. Kon. ICSU Press, Published by Cambridge University Press: Cambridge and New York. 1987. xvii + 595 pp. $59.50. ISBN 0-521-34273-2

The proceedings of the Fourth Federation of Asian and Oceanian Biochemists Congress, and its Satellite Symposium on Molecular and Protein Engineering, consisted of papers on gene structure and engineering, biochemistry of the immune system, marine and plant biochemistry, chemical biochemistry, advances in technology, and protein engineering. The typescripts are accompanied by a 3-page index.

Physics of Complex and Supermolecular Fluids. Edited by Samuel A. Safran and Noel A. Clark. John Wiley & Sons: New York. 1987. xv + 720 pp. $49.95. ISBN 0471-85081-0

This well-produced volume is a collection of the papers given at a symposium held in Annandale, NJ, in 1985. The papers are mostly reviews and are grouped under seven headings: I. Introduction; II. Single Particle Properties; III. Phase Behavior; IV. Equilibrium Properties—Disordered Systems; V. Equilibrium Properties—Ordered Systems; VI. Fluctuation Dominated Phenomena; and VII. Dynamics and Rheology. Not indexed.

Chromatography '85. Edited by Huba Kalasz and Leslie S. Ettre. Akademiai Kiado: Budapest. 1986. xv + 695 pp. $66.00. ISBN 963-05-4494-6

This volume contains the proceedings of the 1985 Budapest Chromatography Conference. It consists of 55 typescript papers and a good subject index.

Catalyst Deactivation 1987. Edited by B. Delmon and G. F. Froment. Elsevier Science Publishers: Amsterdam and New York. 1987. xiv + 666 pp. Dfl. 325 ($159.00). ISBN 0-444-42855-0

This volume of typescript papers contains the proceedings of a symposium held in Antwerp in 1987. There are six review articles (ca. 20 pages each), 46 reports of original research, and an index of contributors, but not of subjects.

Advances in X-ray Analysis. Volume 30. Edited by Charles S. Barrett, John V. Filfrich, Ron Jenkins, Donald E. Leyden, John C. Russ, and Paul K. Predecki. Plenum Publishers: New York and London. 1987. xviii + 602 pp. $79.50. ISBN 0-306-42690-0

This volume presents the proceedings of the 1986 Denver Conference on Applications of X-ray Analysis. The content ranges from a plenary sessions on Trends in XRF: A World Perspective, to workshop sessions on safety in analytical X-ray work. The typescript papers are augmented by an index of contributors, a good subject index, a photograph of the presentation of the first Birks Award, to Ron Jenkins, and a list of papers that were not included in this volume.

Synthesis and Chemistry of Agrochemicals. ACS Symposium Series 355. Edited by Don R. Baker, Joseph G. Fenyes, William K. Moberg, and Barrington Cross. American Chemical Society: Washington, D.C. 1987. xii + 474 pp. $64.95. ISBN 0-8412-1434-4

This volume is made up of 37 papers selected from symposia organized by the Division of Agricultural Chemistry over recent years, beginning in 1984. They are in general reports of original research and are grouped under the headings Herbicides, Insecticides, and Other Control Methods. The subject index shows the satisfying thoroughness characteristic of the ACS Symposium Series.

Liquid Membranes: Theory and Applications. ACS Symposium Series 347. Edited by Richard D. Noble and J. Douglas Way. American Chemical Society: Washington, D.C. 1987. ix + 196 pp. $49.95. ISBN 0-8412-1407-7

The symposium that generated the 13 typescript papers in this volume originated at a symposium held at the 8th Rocky Mountain Regional Meeting of the ACS, in Denver in 1986. In the introductory chapter, the editors define a membrane as a semipermeable barrier between two phases. A liquid membrane may be immobilized on a solid surface, such as the interior of a tubule, or may be in the form of an emulsion. Such membranes are of importance in separations of many kinds and have an obvious relation to some forms of chromatography. The papers are grouped under the headings Theory, Carrier Chemistry, and Applications. Well indexed.

Supercomputer Research in Chemistry and Chemical Engineering. ACS Symposium Series 353. Edited by Klavs F. Jensem and Donald G. Truhlar. American Chemical Society: Washington, D.C. 1987. vii + 436 pp. $89.95. ISBN 0-8412-1430-1

The Industrial and Engineering Chemistry Winter Symposium of 1987 gave rise to the 21 papers in this volume. An overall introduction by the editors is followed by three papers on electronic structure, five on equilibrium properties and spectra, five on microscopic dynamics, and six on transport. Fully indexed.

Sites of Action for Neurotoxic Pesticides. ACS Symposium Series 356. Edited by Robert M. Hollingworth and Maurice B. Green. American Chemical Society: Washington, D.C. 1987. ix + 334 pp. $69.95. ISBN 0-8412-1436-0

The 22 typescript papers and the text of a panel discussion were taken from a symposium held at the 191st meeting of the ACS, in New York, in 1980. Nine of them are concerned with GABA-ergic neuro transmission, six with octopaminergic neurotransmission, four with voltage dependent sodium channels, and three with other types of neurotransmission (acetylcholine and glutamate). In the preface, the editors note that although about 200 substances have been commercialized as insecticides in the past 40 years, there are many serious problems, and "we remain but one step ahead of important pests in the struggle for dominance". The aim of the symposium seems to have been to put mankind at least two steps ahead of the centipedes by using our knowledge of arthropod physiology to design more effective pesticides. Well indexed.

Interactions of Water in Ionic and Nonionic Hydrates. Edited by Hubertus Kleeberg. Springer-Verlag: Berlin, Heidelberg, and New York. 1987. xiii + 311 pp. $59.40. ISBN 0-387-91308-4

This softbound book contains a large number of typescript papers grouped under five headings: Hydration of Ions; Hydration of Nonionic Substances; Hydration of Biological and Macromolecular Substances; Water and Surfactants; and Methods, Models and Theories. For each of these subject headings, there is a plenary lecture of about 20 pages, as well as short reports of original research. The symposium that generated these was held in Marburg in 1987, to honor the 65th birthday of Werner A. P. Luck. Indexed.

New Trends in Colloid Science. Progress in Colloid and Polymer Science. Volume 73. Edited by H. Hoffman. Springer-Verlag: New York. 1987. viii + 203 pp. $63.00. ISBN 3-7985-0724-4

The title of this book is also that of a "workshop" held in Italy in 1986, from which the content is derived. It is made up of 179 pages of papers reporting original research and 22 pages of abstracts of other contributions. All is nicely typeset. The index is only about a third as long as the table of contents.

Surface Forces and Surfactant Systems. Progress in Colloid and Polymer Science. Volume 74. Edited by J. C. Eriksson, B. Lindman, and P. Stenius. Springer-Verlag: New York. 1987. vii + 120 pp. $54.00. ISBN 0-387-913039-2

This book contains 15 papers (in English) selected from the 9th Scandina-ian Symposium on Surface Chemistry, held in 1986, plus appreciations of Krister, Fontell, and Ingvar Danielson on the occasion of their retirement. The content is set in uniform type and there is a miniature subject index.

Surfactants, Adsorption, Surface Spectroscopy and Disperse Systems. Progress in Colloid and Polymer Science. Volume 70. Edited by B. Lindman, G. Olofsson, and P. Stenius. Steinkopff Verlag: Darmstadt. 1985. vi + 127 pp. $36.00. ISBN 3-7985-0667-1 (Available from Springer-Verlag: New York)

The 8th Symposium on Surface Chemistry held in 1984 produced the 19 papers included in this volume. They are a mix of plenary lectures and reports of original research and are all set in uniform type, in English. A memorial for the late Gunnar Aniansson and a petite subject index complete the volume.