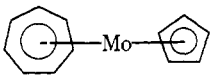
absorptions, 84.4 (5.03 C) and 80.4 ppm (6.97 C). These data strongly support the assignment of the 7-5 sandwich structure, cycloheptatrienylcyclopentadienylmolybdenum.



The analogous reaction to prepare the 7-5 tungsten sandwich compound is not as readily affected. Despite efforts, employing a variety of conditions, it was not possible to obtain a pure product; only mass spectral evidence could be obtained for its presence.

Both of these 7-5 sandwich compounds were described earlier.[4] While we have full accord in mass spectral features for the molybdenum compounds, there is an apparent disagreement in the proton nmr spectrum, probably in the reporting of the data.

Acknowledgment. The financial support of the Air Force Office of Scientific Research (Grant No. 71-1983) is acknowledged with gratitude.

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Received August 15, 1974

Book Reviews

Structure and Bonding, Volume 16. Edited by J. D. DUNITZ (Eidgenössischen Hochschule, Zürich). Springer-Verlag, New York-Heidelberg-Berlin. 1973. 189 pp. $23.00.

The topic of this volume of "Structure and Bonding" is Alkali Metal Complexes with Organic Ligands. The chapter titles and authors are: (1) Design of Organic Complexing Agents. Strategy towards Properties (J.-M. Lehn); (2) Structures of Organic Complexes with Alkali Metal Ions (M. R. Truter); (3) Specificity for Alkali and Alkaline Earth Cations of Synthetic and Natural Organic Complexing Agents in Membranes (W. Simon, W. E. Morf, and P. Ch. Meir); and (4) Thermodynamics of Cation-Macrocyclic Compound Interaction (R. M. Izatt, D. J. Eatough, and J. J. Christensen).

The editor could not have chosen better authors or subject matter in trying to present the status of organic complexes of alkali metal cations. The authors are among the major contributors and the topics are representative of the recent efforts in this "new area of chemistry." The first article begins with Professor Lehn's thoughts on the necessary features for synthetic organic ligands and reports in a concise and thorough manner the state of the art for their synthesis, properties, and complexes up to 1973. A comprehensive bibliography of 165 references which covers the significant contributions to this area is given. Professor Truter's chapter concerns the structures of a variety of alkali metal complexes, from chelating anions through naturally occurring compounds to synthetic macrocycles like the crown ethers and cryptates. None is discussed at length, but many structures and interesting information are given. The third chapter is a more physical presentation of cation selectivity and permeability through biological and artificial membranes. Theoretical considerations and factors which influence these processes are given. In the last chapter, the Brigham Young group discusses in detail stability constants of complexation of the Pedersen crown ethers and factors which affect these, *e.g.*, cation size, type, and charge, ligand parameters, and the role of solvent.

Because the chapters cover different scientific disciplines, few readers will find all chapters equally interesting. Also applications and use discussion are brief because of the very nature of the studies investigated thus far. In total, though, this is a well-written and concise summary of alkali metal complexation. Coupled with some supplemental literature study, this is a good book for those who would like to learn about the recent state of affairs dealing with alkali metal complexes, and it is helpful even to those currently working in this area.

Donnie J. Sam, *E. I. du Pont de Nemours and Company*

Methods in Membrane Biology, Volumes 1 and 2. Edited by E. D. KORN (National Heart and Lung Institute). Plenum Press, New York, N.Y. 1974. xv + 277 and xiii + 363 pp. $17.50 and $22.50.

These volumes are intended for the membrane researcher who wants to develop an appreciation and understanding of new techniques sufficient to permit critical evaluation of the data obtained.

Each volume has five chapters. The first chapter, by Bangham, Hill, and Miller on liposomes, gives a complete and interesting account of phospholipid vesicles as membrane models. Next Gershfeld describes the use of lipid monolayers and renders a readable treatment of the thermodynamics of films in equilibrium with aqueous phases. The methodology of forming monolayers is treated thoroughly and pitfalls are emphasized. The third chapter concerns spectroscopy of membranes: Urry and Long present seemingly rigorous mathematics to prove the dangers of applying the circular dichroism technique to particulate materials. In a chapter on HL-A antigens, by Reisfeld, Ferrone, and Pellegrino, the difficulties encountered in solubilizing, without denaturing, membrane proteins are presented. Finally, Volume 1 contains a chapter by Kagawa on the reconstitution of mitochondrial membranes. His section on the use of detergents is particularly good.

Volume 2 begins with a long chapter (156 pp) by Lee, Birdsall, and Metcalfe on the application of nmr to membranes. Relaxation times are thoroughly explained and the nmr approach is compared with others, *e.g.*, fluorescent antibody. The evidence for our current concept of the membrane is lucidly presented. The second chapter is by Glick concerning membrane glycoproteins. Assays and methodology are concisely stated with descriptions of advantages and disadvantages. Next comes glycosphingolipids by Laine, Stellner, and Hakomori, in which methodology is stressed. The fourth chapter, written by Steck, is about inside-out and right-side-out vesicles of erythrocytes. The facts are laid bare as the author is delightfully candid about the difficulties encountered in reproducibly generating these vesicles. Surprisingly this is one of the few places where the use of marker enzymes was discussed. The final chapter, by Eilam and Stein, is a mathematical treatment of transport across the erythrocyte membrane.

To conclude, I feel that the methods presented are described so as to reveal their powers and their limitations. On the other hand, this collection of methods does not represent a how-to-do-it book. Also, I feel that the authors could have made greater attempts to relate one method to another. Several topics have not been covered which might have been, including preparation of cell organelles by differential and gradient centrifugation, use of marker enzymes, analysis of membrane lipids, analysis of membrane proteins by

electrophoresis through polyacrylamide gels in the presence of sodium dodecyl sulfate, and turnover of membranes. Since the series will continue, it is anticipated that these fundamental topics will be covered in future issues.

The volumes are well indexed and titles are included with the references. For anyone active in membrane research, I am certain "Methods in Membrane Biology" would prove useful; for graduate students and postdoctorals, requisite.

Donald L. Schneider, *University of Massachusetts*

Recent Advances in Polymer Blends, Grafts and Blocks. Edited by L. H. SPERLING (Lehigh University). Plenum Press, New York and London. 1974. xi + 439 pp. $29.95.

This book contains the seventeen papers given at the symposium on polymer blends, grafts, and blocks during the fall 1973 (Chicago) meeting of the American Chemical Society. Shorter versions of these papers have been published in *Polymer Preprints* **14** (2), 958–985 and 1032–1096 (1973). Included are furthermore two additional papers which are intended as an introduction into the field: one by J. P. Kennedy on the nomenclature and synthesis of block and graft copolymers (60 pp) and one by R. D. Deanin, *et al.* (30 pp), on practical properties of multiphase polymer systems. The latter is by far too elementary and occasionally outdated even by the standards of 1973. Covered are the formal description of these systems by group theory concepts, and the synthesis, characterization, physical properties, and application of selected polymers and systems. The typewritten manuscript pages were directly reproduced.

As one would expect from such a symposium on industrially important polymers, descriptive industrial-type papers dominate over scientific ones, although there are more papers from universities than companies. The systems are admittedly complex, and the relative importance of several factors is not known; this and the search for research money may explain the low scientific quality of some papers which would rather better fit into trade journals. Scientifically outstanding are a very critical treatment on the statistical thermodynamics of block copolymers (E. Helfand) and two progress reports on novel synthesis for polymers with controlled network density (C. H. Bamford and G. C. Eastmond) or graft efficiency (J. P. Kennedy and R. R. Smith). The remaining papers do contain at least some information not published before, and probably justify the buying of this book, which is also Volume 4 of a "Polymer Science and Technology" series.

Hans-Georg Elias, *Midland Macromolecular Institute*

Reactivity, Mechanism and Structure in Polymer Chemistry. Edited by A. D. JENKINS (School of Molecular Sciences, University of Sussex) and A. LEDWITH (Donnan Laboratories, University of Liverpool). John Wiley & Sons Ltd., London. 1974. xvii + 613 pp. $37.50.

This book brings together well-written material concerned with the "correlation of kinetic and thermodynamic aspects of reactivity, configuration and conformation in polymerization reactions."

There is an excellent review chapter on polymerization processes. An attempt is made to avoid any dichotomy between polymer chemistry and general organic chemistry. In this regard, there are review chapters on free radical chemistry, carbonium ions, and carbanions. Each of these chapters is followed by chapters on polymerization reactions involving radical propagation, transfer and termination processes, cationic polymerization, and anionic polymerization. Three chapters deal specifically with organometallic derivatives and transition metals in polymerization reactions. Finally, five chapters cover the more physical aspects in polymer chemistry, *i.e.*, the influence of pressure on polymerization reactions, emulsion polymerization, photochemistry of monomers and polymers, configuration and conformation in high polymers, and thermodynamics of addition polymerization processes.

This book would do well as a supplementary text in a polymer chemistry course, and as a good reference book. It truly represents its title.

Clayton B. Quinn, *General Electric Research and Development Center*

Introduction to Modern Liquid Chromatography. By L. R. SNYDER and J. J. KIRKLAND. John Wiley & Sons, Inc., New York, N.Y. 1974. 534 pp. $16.95.

This is a book written for beginners in the field of high-pressure liquid chromatography. It is based upon the lectures prepared in the presentation of the popular ACS Short Course by the same authors. Because of this experience, it is well organized, well illustrated, and up to date.

It has been written by two experienced and knowledgeable chemists. They offer many suggestions and "tricks" which will be valuable to workers in the field. For teachers it offers the most current and the best balanced presentation of LC available today.

It serves well to define the subject; to explain and illustrate the four-column modes in LC; to describe in detail the instrument requirements; and to illustrate with many examples the advantages and versatility of HPLC. It is the best reference book available today; it lists the textbooks, abstracting services, important research papers, and suppliers of instruments, accessories, and supplies. It is well worth the price for this reference literature alone.

The final chapters present methods for developing a particular separation, strategy for preparative separations, quantitative analysis, and techniques for solving the general elution problem.

It is weak in chromatographic theory, but this will not be a limitation to practical workers in the field. Unfortunately the first printing is full of typographical errors. I found 15 in my first reading. These are items such as lack of titles or proper units on figures or tables, lack of symbols in some equation, etc. The authors are aware of these errors and the publisher has a list of corrections. They will hopefully be eliminated in the next printing. Present owners are encouraged to write the authors for the correction list. The quality of the pages (off-set printing, I believe) is only fair, but this is compensated for by the reasonable price and the rapid production of the book (many 1973 references are included).

This book is warmly recommended to all workers in "modern liquid chromatography."

Harold M. McNair, *Université de Neuchâtel, Switzerland*