

## Book Reviews

**The Physical Chemistry of Aqueous Systems.** Edited by ROBERT L. KAY (Carnegie-Mellon University). Plenum Press, New York and London. 1973. ix + 258 pp. \$19.50.

This book is a reissue of the *Journal of Solution Chemistry*, Vol. 2, No. 2/3; it contains the collected papers of a symposium by the same name held at the University of Pittsburgh in 1972 in honor of the 70th birthday of Professor Henry S. Frank. The twelve papers include both experimental and theoretical studies on the structure of water itself and of its solutions.

Stillinger discusses structure in aqueous solutions of nonpolar solutes using scaled-particle theory and develops a strong orientational bias for the nearest neighbor solvent molecules around a rigid-sphere solute. Hertz reports on his use of  $^{19}\text{F}$  and  $^1\text{H}$  nmr relaxation studies to determine the orientation of water molecules in the hydration sphere of fluoride ion and around the methyl group in propionic acid. The nature of solute association in aqueous solutions of propionic and butyric acids is also probed by  $^1\text{H}$  nmr relaxation studies of the suitably deuterated compounds. Hertz' paper is extremely well written and reports a series of really elegant experimental results. A paper by H. L. Friedman reports calculations on hydrophobic bonding in aqueous alcohol solutions using the co-sphere-overlap model. Two of the papers, one by Wen and one by Rasaiah, provide useful reviews of recent experimental and theoretical studies on aqueous tetraalkylammonium salt solutions (an update of similar reviews by Wen in other books) and of recent developments in electrolyte theory respectively. Because of the book's format, one can read accounts of Friedman's model calculations in three separate places. Other contributions include studies of water and concentrated electrolyte solutions at high pressures; Stokes and Robinson consider solvation equilibria in very concentrated solutions (up to 20–30 *m*).

The book obviously contains work by some of the best investigators currently working on the properties of aqueous systems. Each paper concludes with the discussion which followed it at the symposium (the exception is the Stillinger paper): the comments of Henry Frank on various subjects provide some amusing reading. For example, on the subject of high-pressure Raman spectra of water and ice VI: "What I want to ask at one bar depends on what bar I'm at."

Since the book is a straight reissue from the *Journal of Solution Chemistry* (for example, no index has been added, nor has the Introduction been changed), it is unfortunate that Plenum Press did not publish it in soft cover form at a considerably lower price.

Linda J. Magid, *University of Tennessee*

**Quantitative Thin Layer Chromatography.** Edited by JOSEPH TOUCHSTONE (University of Pennsylvania). John Wiley & Sons, New York, N.Y. 1973. xiv + 330 pp. \$14.95.

Collections of contributed chapters tend to be uneven in quality. This is expected. While this book has its low points, it is consistently better than most.

The book would be better titled "Densitometry in TLC" or the equivalent. It is (by the editor's own admission) devoted overwhelmingly to this method of quantitation. Its sixteen chapters provide both an overview and specific examples of the application of TLC/densitometry to areas that range from (alphabetically) air pollution to urinary purines.

The question of "most useful" or "most interesting" chapter is, of course, heavily influenced by the readers' area of interest. I would single out Chapter 12, titled "Quantitative TLC in Pharmaceutical Quality Control" by Edward MacMullan and J. E. Heveran. It contains an excellent and quite general discussion of the relative precision and accuracy of sample application, chromatography, detection, and densitometry. This chapter strongly underlines the theme of the whole book—that densitometry is the "way to go" in quantitative TLC.

Overall, the book provides a good introduction to TLC densitometry. In addition, the individual chapters contain sufficient detail in their areas to have made the book invaluable as a quick reference in our laboratory.

Thomas Jupille, *Regis Chemical Company*

**Essays in Chemistry. Volume V.** Edited by J. N. BRADLEY (University of Essex, U.K.), R. D. GILLARD, and R. F. HUDSON (University of Kent at Canterbury, U.K.). Academic Press, London and New York. 1973. x + 149 pp. \$6.95.

This is the fifth volume, in a continuing series of two per year, containing essays on topics in chemistry. The essays are intended to supplement undergraduate courses. Each is written by a specialist in the field. The five in this volume are entitled "Photoelectron Spectroscopy," "Potential Energy Surfaces and Collision Processes," "Interfacial Catalysis and Inhibition of Solution Reactions," "Alkaloid Biosynthesis," and "Elimination Reactions." They are clearly written and should give a curious undergraduate a satisfactory introduction to these active fields of research. Furthermore, they should be enjoyable reading for a practicing scientist outside of chemistry who might wish to know what is concerning chemists. The essays are only introductions to these progressing areas of study, but they can be helpful stepping stones to more advanced reviews and the current literature.

Alfred B. Anderson, *Yale University*

**Chemically Induced Dynamic Nuclear and Electron Polarization—CIDNP and CIDEP.** By C. RICHARD (CNRS, France) and P. GRANGER (University of Nancy, France). **NMR Basic Principles and Progress. Volume 8.** Edited by P. DIEHL, E. FLUCK, and R. KOSFELD. Springer-Verlag, Berlin and Heidelberg. 1974. 26 figures + 127 pp. \$23.80.

To summarize or to review a rapidly developing field such as CIDNP and CIDEP with high accuracy is by no means an easy task. There have been some good reviews on these topics, but this book covers the latest literature up to 1973. The outstanding feature of this book is the emphasis on the application of CIDNP to the study of chemical reactions and magnetic properties. The newcomers to the field, particularly those who would like to apply the CIDNP effects to their problems, will find it a good starting point. The weakest chapter is the chapter on CIDEP. (There are four chapters, three of which are devoted to CIDNP.) This might be partly due to much fewer experimental results possibly arising from much more difficult instrumentation required, and thus much less understanding of the CIDEP phenomena available in the literature when the book was prepared. The interested readers should therefore be advised to follow up closely the latest development in the literature.

S. King Wong, *University of Western Ontario*

**Annual Reports in Inorganic and General Syntheses—1973.** Edited by K. NIEDENZU (University of Kentucky) and HANS ZIMMER (University of Cincinnati). Academic Press, Inc., New York, N.Y. 1974. xvii + 312 pp. \$13.50.

The reader is referred to a review of the first volume in this series (*J. Amer. Chem. Soc.*, **96**, 2662 (1974)) for background and a sound judgment of the series' worth. Since editorship has not changed, and many authors appearing in the first volume are back again in this, the second, we must assume that this new book will appeal as the initial one did. But I sincerely hope we have now witnessed the series' high point in sloppiness, and future volumes will be better proofread by the authors—the number of typographical errors is astounding (page 100 seems to be champion with five), and a format using direct reproduction of typed manuscript means that only the authors are at fault. Happily, some of the authors are very careful about correct copy, as some are very terse (one 4½ page article has 135 references) while others are very wordy (K. S. Mazdiyasn's articles tend toward standard review length). No one is going to be interested in every chapter, and each individual reader should be well informed by what he reads in the book, because there is no faulting the thoroughness of every author.

There appears a review of porphyrin chemistry, which article continues a policy of including a topic of broad implication among the other, rather specific, chapters. Most practicing inorganic chemists should read this series, happy to have somebody else do a literature search. But I really wish there were an index, the lack of which remains a serious fault.

Robert M. Kren, *University of Michigan-Flint*