

which at present are of no commercial significance and the preferred or commonly used process is not always indicated. The information on polymerization is too casual and incomplete to be of much usefulness. No mention is made of the important low temperature emulsion polymerization method for butadiene copolymers. Workers in the field of polymer chemistry will probably find the sections on physical properties of the monomers to be the most useful feature of the book. Its over-all usefulness would have been enhanced by a more critical selection of the material. Some errors were noted which, it is hoped, will be corrected in future editions.

H. T. NEHER

**Colloid Science. II. Reversible Systems.** Editor: H. R. KRUYT, President of the Central National Council for Applied Scientific Research in the Netherlands, T. N. O., The Hague. Elsevier Publishing Company, Inc., New York and Amsterdam, 1949. xix + 753 pages. 16.5 × 24.5 cm. Price, \$11.50.

The need for a collective work in present day colloid science served as the inspiration for the present volumes, a projected Volume I on Irreversible Systems, and the present Volume II on Reversible Systems. Because of accidental circumstances the order of publication has been reversed. Naturally, the full import of the work cannot be grasped until Volume I makes its appearance.

It was the original intention of the editor that the work be international in scope. With the intervention of the recent war it became necessary to restrict the effort to Dutch collaborators, so it cannot be expected that the whole subject of colloid science will be uniformly treated. Actually, by now one can hardly expect any one book on colloid science to give its various topics in balance. There must be arbitrariness in the choice of subjects. For instance, there is only minor resemblance between this treatise and the recent Alexander-Johnson book with identical title. With these situations in mind we can make the following remarks.

In addition to the preface, table of contents and author and subject indices, Volume II consists of fourteen chapters.

- I. A Survey of the Study Objects in this Volume
- II. The Formation and Structure of Macromolecules
- III. Thermodynamics of Long-Chain Molecules
- IV. The Physical Properties of Randomly Kinked Long Chain Molecules
- V. The Determination of the Molecular Weight of Macromolecules
- VI. Macromolecular Sols without Electrolyte Character
- VII. Sols of Macromolecular Colloids with Electrolytic Nature
- VIII. Crystallisation—Coacervation—Flocculation
- IX. Reversal of Charge Phenomena, Equivalent Weight and Specific Properties of the Ionized Groups
- X. Complex Colloid Systems
- XI. Morphology of Coacervates
- XII. Gels
- XIII. Solid Macromolecular Systems with One (Chemical) Component
- XIV. Association Colloids

To this reviewer the most satisfactory chapters are those which have to do with the thermodynamics of long-chain molecules (Chapter III), the physical properties of randomly kinked long chain molecules (Chapter IV), gels (Chapter XII) and solid macromolecular systems with one component (Chapter XIII). These are all substantial sections which are quite well documented and up-to-date.

Chapters VIII-XI inclusive have been written about the subject of coacervation. As indicated in the preface, the treatment is relatively ample and many experimental data are given. There is a voluminous literature on this

subject by Drs. Kruyt and de Jong and their students. It is convenient to have this material in one place and in English, also valuable descriptions of experiments are given; even so, one cannot avoid the feeling that some of the excessive purely physical weight of the book might have been removed by more careful pruning in these sections.

Methods of molecular weight determination (Chapter V) are given in rather brief, and in some instances, unconventional form. To our mind the sedimentation equilibrium method gives the most valuable information about the average sizes and size distribution in high polymer systems; furthermore, its full potentialities hardly have been realized. The summary table of the various molecular weight methods (page 151) is very interesting. Molecular weight determinations based upon measurements of viscosity are also considered in parts of Chapter VI.

Chapter VII, which deals with sols with electrolytic nature, did not seem to be up to the standard of excellence set by some of the other sections. The whole subject of electrophoresis is dismissed with four printed pages, while the electroviscous effect receives minute and detailed description in some eighteen pages. The electrophoresis assembly of the present day, the development of which began with Tiselius, and has continued with Svensson, Longworth, Alberty and others, is an extremely powerful tool in colloid science as well as in physical biochemistry, and it is surprising to find no mention of it in this volume.

The work of the translations into English has been admirably done, so that the exposition is clear and reasonably uniform. There are some typographical errors, most of them of a type to be expected from authors who must use a foreign language. Printing and indexing are good.

J. W. WILLIAMS

## BOOKS RECEIVED

March 10, 1950-April 10, 1950

- DOUGLAS PAYNE ADAMS (compiled and edited by). "An Index of Nomograms." The Technology Press, Massachusetts Institute of Technology and John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1950. 174 pp. \$4.00.
- FELIX HAUROWITZ. "Progress in Biochemistry." A Report on Biochemical Problems and on Biochemical Research since 1939. Interscience Publishers, Inc., 215 Fourth Avenue, New York 3, N. Y. 1950. 405 pp. \$7.50.
- PAUL KARRER. "Organic Chemistry." Elsevier Publishing Company, Inc., 215 Fourth Avenue, New York 3, N. Y. 1950. 973 pp. \$8.50.
- JACOB KLEINBERG. "Unfamiliar Oxidation States and Their Stabilization." University of Kansas Press, Lawrence, Kansas. 1950. 131 pp. \$3.00.
- FREDERICK GEORGE MANN. "The Heterocyclic Derivatives of Phosphorus, Arsenic, Antimony, Bismuth, and Silicon." The Chemistry of Heterocyclic Compounds Series. Interscience Publishers, Inc., 215 Fourth Avenue, New York 3, N. Y. 1950. 180 pp. Special price for subscribers to series: \$4.20; for non-subscribers: \$5.25.
- HARRY SOODAK AND EDWARD C. CAMPBELL. "Elementary Pile Theory." John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1950. 73 pp. \$2.50.
- W. THEILHEIMER. "Synthetische Methoden der Organischen Chemie. Repertorium 3." S. Karger, Ltd., Holbeinstrasse 22, Basle, Switzerland. 1949. 412 pp. Swiss frs. 40.--.
- ARNOLD WEISSBERGER (Editor). "Technique of Organic Chemistry. Volume III." Interscience Publishers, Inc., 215 Fourth Avenue, New York 3, N. Y. 1950. 661 pp. \$10.00.