

Chromatographic Reviews

Progress in Chromatography, Electrophoresis and Related Methods, Vol. 3. Edited by Michael Lederer. Pp. viii+187. (Amsterdam: Elsevier Publishing Co., Inc.; London: D. Van Nostrand Company, Ltd., 1961.) 50s.

TWO of the articles in this volume have hitherto not been published. H. Bloemendal reviews starch-column and starch-gel electrophoresis in two articles, which form a series with the first article in a previous volume on starch slab electrophoresis. Techniques and applications are adequately covered, though one wonders why the author took the trouble to write so comprehensively about the first subject when his conclusions show that he does not think much of the method. L. Reio continues a painstaking survey of the paper chromatography of phenolic and related compounds, begun in a previous volume, and gives R_F values and colour reactions of hundreds of compounds. Some of his tables contain such a heterogeneous collection of substances that the value of his article would have been enhanced by a more systematic presentation enabling one to locate a given compound. Substances which can undergo slow changes may form more than one zone on a chromatogram. This phenomenon is examined by R. A. Keller and J. C. Giddings. Z. Pučar deals fully with methods utilizing continuous electrophoresis and electrophoresis combined with chromatography. The articles by J. J. Wren are up to date and useful reviews of chromatography of lipids on silicic acid. Finally, the behaviour of inorganic ions on paper chromatograms (M. Lederer) and by ionophoresis (R. A. Bailey and L. Yaffe) are the subjects of comprehensive reviews covering progress in the past few years and complete another useful volume in this series.

R. CONSDEN

Process Chemistry

Vol. 3. Edited by F. R. Bruce, J. M. Fletcher and H. H. Hyman. (Progress in Nuclear Energy, Series 3.) Pp. vi+474+xii. (London and New York: Pergamon Press, 1961.) 105s. net.

THE first volume on *Process Chemistry* was published in the year following the 1955 Geneva Conference and contained not only a selection of conference papers revised by their authors but also a substantial number of papers specially written for it. By contrast, this third volume contains twenty-seven papers from the 1958 Conference, only one of which is marked as modified, together with a review of its two hundred process chemistry papers. It is disappointing, therefore, to find such a long delay in publication.

The book contains a reasonable selection of papers from four volumes of the official proceedings, covering the treatment of ores, the refining and production of feed materials, aqueous and non-aqueous processes for irradiated fuels and waste treatment. Some deal with operational processes, some review special aspects of the chemistry of the processes and others describe research and development work on new processes.

Much of the information represents the first open publication; the Russian papers in particular were new to the majority of delegates at the Conference. The two Conferences did in fact cover some fifteen years of work originally reported to a privileged few.

This volume does bring together under one cover a fair cross-section of the art in 1958, and is therefore of

value to the library which cannot justify the expenditure on a set of the official proceedings. But it must be admitted that interested people are more likely to go to the original sources and can be kept up to date by the excellent and cheap quarterly reviews now available.

A. S. WHITE

Physical Chemistry

By Prof. Farrington Daniels and Prof. Robert A. Alberty. Second edition. Pp. x+744. (New York and London: John Wiley and Sons, Inc., 1961.) 70s.

THE ancestry of this book may be traced back to Getman (1913), *Outlines of Theoretical Chemistry*, which passed through four editions by 1927, when Dr. Daniels took over. In 1955, Getman and Daniels was replaced by the first edition of the present book, which quickly became established as a leading physical chemistry text for university work in the United States. The second edition has been largely re-written and substantially expanded. The treatment is more mathematical, with emphasis on the rigorous treatment of chemical thermodynamics, the laws of which are established in the opening chapters, and quantum mechanics. This has necessitated the pruning of older and more elementary topics. New chapters on spectroscopy and statistical mechanics emphasize the thermodynamical outlook. Simple molecular orbital theory is included and there are new chapters on one-component systems and surface phenomena. Problems (836) are grouped according to difficulty at the end of each chapter and important calculations are shown in the text. A summary of the mathematical relations which might cause difficulty are included in the appendix, with values (1951) of constants (showing uncertainties) and various conversion factors. Atomic weights are based on the oxygen-16 scale (1956-57). The index seems comprehensive. The book is well produced with clear diagrams. The lucid arguments based on a logical development of the subject make the second edition of Daniels and Alberty most welcome among the modern texts giving a broad coverage of physical chemistry at university-level.

B. J. MOODY

Annual Review of Physical Chemistry, Vol. 11

Edited by H. Eyring, in association with C. J. Christensen and H. S. Johnston. Pp. vii+587. (Palo Alto, Calif.: Annual Reviews, Inc., 1960.) 7 dollars.

THE current volume of this valuable publication reviews the literature, in most cases, to the end of December 1959. Most of the articles are concise; the first one, for example, occupies a little more than twelve pages but has 347 references. Most of the topics covered in previous volumes reappear and are carried further. Some of the articles, such as one on the quantum theory of electronic structure of molecules, will be intelligible only to specialists; others are of a more general character. The very long article on statistical theory of transport is mathematical. There are short articles on chromatography and nuclear and electronic resonance.

The article on photosynthesis will be of interest to biologists. The subject is evidently not yet fully cleared up; in particular, recent work on the pathway of carbon has received some amount of criticism. It is stated that on long manned space flights the