and up-to-date reference book and bibliography for all working in radio astronomy, though few will read every paper. It is surely indispensable to all libraries with an astronomical section, and those who can afford private copies will find it very easy to lend to their astronomical friends. H. P. Palmer

MODERN INORGANIC CHEMISTRY

Advances in Inorganic Chemistry and Radiochemistry

Vol. 1. Edited by H. J. Emeléus and A. G. Sharpe. Pp. xi+450. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1959.) 12 dollars.

WITHIN the past twenty years inorganic chemistry has recovered from a moribund state to be, with radiochemistry, a fast-growing and extremely active branch of chemical science. Modern inorganic chemistry ranges from physical chemistry and pure radiation chemistry through analytical chemistry to the study of organo-metallic compounds. It is satisfying that this present volume reflects this wide range of interest.

In the first chapter, H. Taube writes on "Mechanisms of Redox Reactions of Simple Chemistry". This chapter is difficult reading for the non-specialist, who is not helped by a lack of clearness of the definitions of the various terms used. However, the actual discussion is extremely clear and contains many details of reactions which the inorganic and analytical chemist tend to think of as simple but which are, as yet, very imperfectly understood. The other chapter of interest to the analytical chemist is on "Activation Analysis", by D. H. F. Atkins and A. A. Smales. This review should be of use to all interested in the determination of microgram and sub-microgram quantities of the elements, but would have been improved by a comprehensive table of the various isotopes and methods used in analysis. Again, on the physical side T. C. Waddington has given an important review of "Lattice Energies and Their Significance in Inorganic Chemistry". The author includes a brief survey of methods of calculation followed by tables of values, many of them newly calculated. G. Harbottle and N. Sutin have written on "The Szilard–Chalmers Reaction in Solids". As an inorganic chemist, I found this chapter disappointing, as the treatment is mainly from a physical point of view and the chemical effects of the Szilard–Chalmers reaction are not dealt with in great detail.

On the structural side, W. N. Lipscomb writes on "Recent Studies of the Boron Hydrides". The order that X-ray crystallography and topological treatment of these and related compounds has brought to this previously intractable subject is one of the most æsthetically satisfying developments in modern inorganic chemistry. W. Rüdorff discusses "Graphite Intercalation Compounds". In view of the extensive use of graphite, often under the most rigorous conditions, in industry the importance of the study of these compounds is clear.

Finally, there are three articles on purely inorganic subjects. "Compounds of Aromatic Ring Systems and Metals" by E. O. Fischer and H. P. Fritz is potentially a most interesting chapter on a field which has only existed for the past eight years. Although factually almost complete, the chapter is disappointing because lack of tabular presentation of the material makes comparison and cross-reference difficult. N. L. Paddock and H. T. Searle write on "The Phosphonitrilic Halides and Their Derivatives". There is currently a very rapid development in the field of inorganic polymer chemistry, and this chapter does full justice to one homologous series. Finally, R. J. Gillespie and E. A. Robinson deal with "The Sulphuric Acid Solvent System". The use and study of non-aqueous solvents is now widespread in inorganic chemistry and this chapter discusses the inorganic applications of what is probably the best understood system.

The volume is extremely well produced and almost free from typographical errors, the omission of all the arrows from one Born–Haber cycle being the most noticeable mistake. My major regret is that the high price will probably mean that it will be purchased only by libraries, and for the complete success of reviews they should be owned by the individual. There is certainly a need for a volume of reviews on inorganic chemistry, and if the editors can obtain articles of the present standard and interest for succeeding volumes the success of the series is assured. D. W. A. Sharp

CLASSICAL CHEMICAL ANALYSIS

Comprehensive Analytical Chemistry

Edited by Prof. Cecil L. Wilson and David W. Wilson. Vol. 1*a*: Classical Analysis. Pp. xi+577. (Amsterdam: Elsevier Publishing Company; London: D. Van Nostrand Company, Ltd., 1959.) 105*s*.

THIS book forms the first part (*a*) of Vol. 1 of Elsevier's "Comprehensive Analytical Chemistry" which is to consist of five distinct volumes, some containing several parts. Vol. 1*a* (to be followed by 1*b* and 1*c*) deals with classical methods of analysis and contains six distinct chapters. Each chapter contains contributions from authorities in particular fields of analytical chemistry and there are, including editorial contributions, a total of nineteen individual authors in the present book.

The subject-matter is essentially of an introductory and general nature which is of importance in all branches of analytical chemistry; but included also are processes of sufficiently long standing that they can come under the general heading of "Classical Analysis. Chapter 1 is the editorial introduction to the entire work. This is followed by a chapter headed "Analytical Processes", which contains sections on materials, sampling, statistics, weighing, measurement of volume, solvent extraction, organic reagents in inorganic analysis, and occupies some 220 pages. Chapter 3 (87 pages) deals exclusively with gas analysis, Chapter 4 (68 pages) with inorganic qualitative analysis, and Chapter 5 (32 pages) with organic qualitative analysis. Chapter 6 (115 pages) treats the subject of inorganic gravimetric analysis.

In the main, this first part lives up to the standard expected from the general title; but in certain sections individual bias has prevented a truly comprehensive presentation of material and this is most marked in the chapters on inorganic and organic qualitative analysis. Here one might reasonably have expected to find a critical account of the various systems and schemes of analysis rather than a detailed