

between similar members of a solid solution series may depend upon very accurate d -values.

The author and his school are well known for their work on accurate lattice parameter measurement, and Prof. Wilson himself for his publications on the study of imperfections by X-ray diffraction. The latter subject is treated very succinctly in the last two chapters of the present volume.

Readers will be grateful to Prof. Wilson for the way in which he has gathered together material from a very scattered literature, and so clearly presented their essential features. For those who wish to probe more deeply there is an excellent coverage of relevant references.

The rather large and heavy print is easily read, but the paper used seems not opaque enough to cope with it. Otherwise the production of this volume, involving a large number of mathematical expressions, is extremely good. There is no doubt that this book merits a place on the shelf of anybody seriously concerned with using a diffractometer for accurate measurements.

J. ZUSSMAN

AHRENS (L. H.), PRESS (F.), and RUNCORN (S. K.), editors. *Physics and Chemistry of the Earth, Vol. 5*. Oxford (Pergamon), 1964. 398 pp. Price: 100s.

This book is the fifth volume in a series of progress reports in the fields of geochemistry and geophysics. There are six contributions in this volume:

The significance of the chemical bond for controlling the geochemical distribution of the elements, Part I (L. H. Ahrens); Recent information on the earth's interior from studies of mantle waves and eigenvibrations (B. A. Bolt); Geophysical studies of rift valleys (R. W. Girdler); Geomagnetic micropulsations (J. A. Jacobs and K. O. Westphal); Chemical thermodynamics in Mineral Studies (H. Ramberg); and The geochemistry of the alkali metals (K. S. Heier and J. S. Adams).

The paper by B. A. Bolt is a comprehensive and up-to-date survey and contains a theory of surface waves and eigenvibrations from which valuable period tables are compiled. On the experimental side, the problem of isolating long-period waves is discussed, and geophysical inferences are drawn from the results. 'Geophysical studies of rift valleys' (R. W. Girdler) is a useful compilation of data on rift valley structure and genesis, for which the author favours a tensional origin. Jacobs and Westphal present an account of the nature, form, frequency,

and distribution of micropulsations and a mathematical review of attempts to explain these phenomena in terms of hydromagnetic waves.

L. H. Ahrens's paper concerns the geochemical role of the chemical bond in terms of electronegativity and ionization potentials. In Part I the author deals with the topics of chemical inertness and siderophile tendency, chalcophile-lithophile tendencies, and the significance of varying degrees of covalency on element associations in silicates. Part II will deal with element associations in sulphides; distribution of the elements in the sedimentary cycle, and the formation of metal-organic complexes.

H. Ramberg discusses the chemical thermodynamic approach to mineral studies. Changes in the free energy, enthalpy, and entropy at various temperatures and pressures are considered for several minerals and mineral series. The effects of elastic strain on the free energy of crystalline solids, which are anisotropic with respect to their elastic properties, are considered.

The largest geochemical paper (128 pp.) is an extremely comprehensive and valuable review of the geochemistry of the alkali elements by Heier and Adams. It contains a wealth of tables, distribution histograms and inter-element variation diagrams. T. W. B. and M. B.

BROUWER (A. H.) and BOUMA (A.), editors. *Turbidites*. Amsterdam (Elsevier Publishing Company), 1964. 264 pp. Price: 90s.

The rapid growth in importance of the turbidity current hypothesis is reflected in the phenomenal expansion of the relevant literature over the past few years. However, this is the first book to be devoted entirely to that group of sediments whose genesis is ascribed to the action of turbidity events. This volume, the third in an Elsevier series entitled *Developments in Sedimentology*, is in fact a compilation of some 16 articles, 12 written in English, two in French, and two in German. The latter two groups have summaries and figure-captions in English.

Sandwiched between a brief introduction (Brouwer) and a more lengthy general summary (Bouma), the 14 contributions forming the bulk of this volume are of diverse character. Two are explicitly reviews of the existing literature dealing with the turbidites of specific regions: the United States (McBride) and Britain (Kelling). Eight are essentially local studies of ancient turbidite formations and most of these emphasize some feature of more general application. Perhaps the most novel paper in this category is that by Stanley and Bouma. In an attempt to quantify the complex of parameters utilized in sedimentological and palaeogeographical interpretation these workers have evolved a