

This is a very specialized book, well produced, with ample bibliographies. It is aimed at, and will be useful to, the practitioner. The young investigator, even if he absorbs but a small part of the formidable content, is likely to be able to exploit his electron microscope to better advantage. A further justification for this book lies in the fact that many applicants were turned away from the original summer school at which the lectures were given. We believe this book meets a very real need. It is unfortunately somewhat expensive. S. TOLANSKY

## X-RAY DIFFRACTION

### Diffraction of X-rays by Chain Molecules

By B. K. Vainshtein. Translated from the Russian. Pp. x+414. (Amsterdam, London and New York: Elsevier Publishing Company, 1966.) 130s.

THIS book describes X-ray diffraction by the partially ordered polymeric materials which are important in living organisms and in synthetic plastics. It is a translation of the 1963 Russian edition, revised and enlarged by its author.

The theory of X-ray diffraction by an assembly of electrons is given in the first chapter. This is followed by a discussion on the symmetry and structure of chain molecules, and the diffraction of X-rays by an isolated chain molecule is considered in Chapter III in detail. The next two chapters are concerned with the relation between the diffracted intensity and the molecular arrangement in paracrystalline systems, described by interatomic distribution functions. In Chapter V the theory is applied to parallel systems of chain molecules (with various degrees of order) and in Chapter VI non-parallel and amorphous arrangements are considered.

The line diagrams are numerous and good, but many of the half-tone reproductions (apparently copied from plates in journals) are less than adequate. The book is well and clearly written, the translation appears to be excellent and the examples and references cover a wide field.

It is a notable contribution and should be much used.

A. ELLIOTT

## TRANSPORT IN POLYMERS

### Transport Phenomena in Polymeric Films

Edited by Charles A. Kumins. (*Journal of Polymer Science*, Part C, Polymer Symposia, No. 10.) Pp. v+153. (New York and London: Interscience Publishers, a Division of John Wiley and Sons, 1965.) 49s.

THE importance of the relatively slow transport processes which occur in polymers is at last being widely recognized. These processes affect the suitability of particular polymers for particular purposes and they also create the possibility of developing new and valuable separation techniques. A symposium with the title of this book was held by the American Chemical Society at Detroit in April 1965. The book contains in full the ten papers presented at the symposium, but records none of the discussions which took place.

The first paper, by Charles A. Kumins, who also edited the volume, gives a general introduction to current views on the molecular mechanism of transport in polymers. The remaining papers report the results of recent researches, which cover a very wide field. They include a theoretical discussion of the anomalous sorption of vapours by polymers in the glassy state and experimental studies of the transport of gases, vapour, water and ions in amorphous, crystalline and filled polymers and elastomers.

The volume will be of value to workers already interested in this field, because it contains articles by many of the most active contributors. It is not a book from which a beginner should expect to get a balanced and simple exposition of the subject.

P. MEARES

## EXPERIMENTAL PHYSICAL CHEMISTRY

### Laboratory Course in Physical Chemistry

By Hugh W. Salzberg, Jack I. Morrow and Stephen R. Cohen. Pp. xvi+319. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1966.) \$7.75.

A FEW years ago there was a real need for modern texts on practical physical chemistry, but this need has recently been met and any new publication must justify its existence. One feature of this book is that it separates "background material"—the discussion of apparatus and general theory—from the experimental section, which makes for great flexibility in use. Unfortunately, the background material is so extensive, covering some 130 pages, that there is room for only 39 experiments covering 100 pages. Thus, in terms of cost per experiment, the price of the book is high.

The authors state that the book is written for first-year undergraduates, which perhaps explains why the contents are more restricted than the title of the book implies. There is nothing about conductometric, potentiometric, amperometric or coulometric titrations, and no reference to phase systems of three components, polarography or colloids. On the other hand, there are a few esoteric experiments such as the determination of lattice constants of a cubic solid by X-ray diffraction. On the whole, the experiments chosen are useful, well set out and form a reasonably balanced selection apart from the limitations mentioned.

An excellent feature of the book is the provision of five introductory chapters with a discussion of errors, accuracy, data processing, recording and reporting of data and the use and drawing of graphs. Most students are in great need of instruction and understanding in these matters, and they will find this a well-written, comprehensive and stimulating account. The book also includes fifteen appendixes, most of which describe practical techniques such as glassworking and soldering. A. G. CAMERON

## HANDBOOK FOR RADIOCHEMISTS

### The Radiochemical Manual

Edited by B. J. Wilson. Second edition. Pp. 327. (Amersham: The Radiochemical Centre, 1966.) 50s. net.

THE *Radiochemical Manual* first appeared in 1962 in two parts, the first dealing with physical data of interest to users of radioactive materials and the second with the production of primary isotopes and the synthesis of more complex labelled compounds. In this new edition, parts one and two have been revised and combined and a considerable amount of new material has been added. The various chapters of the manual were written by senior members of the scientific staff of the Radiochemical Centre of the U.K. Atomic Energy Authority at Amersham and, as the director, Dr. W. P. Grove, points out in his foreword, they are based on personal experience of radiochemical work. A note on the cover suggests that this experience amounts to the impressive total of 200 man-years.

The first half consists of fourteen chapters dealing with various aspects of the production of radioisotopes and their application—in the fields of medicine, industry and