

nowhere older than Upper Cretaceous. The brief account of the exploration history of this little-known region, although not strictly germane to the book, makes interesting reading.

Primarily, however, the book is about volcanicity, and nearly one-half is devoted to this aspect of the islands. In all, some one hundred and sixty out of a probable total of two hundred and fifty volcanoes are described in meticulous detail, with petrological and mineralogical accounts of the lavas and pyroclastic material found. Many of the islands and volcanoes are illustrated by photographs and, in most cases, the descriptions are accompanied by small sketch maps showing the present-day distribution of volcanic material around the volcanoes. This approach amounts almost to a monograph and is probably unique in providing geologists unfamiliar with this little known and rarely visited area with what is almost a detailed guide.

As an accompaniment to the descriptions, detailed chemical analyses of the lavas from many of the volcanoes are given, together with analyses from volcanoes in the adjacent Pacific area; hence affording a particularly useful comparison with better known areas.

The book will be of very great interest to Earth scientists, and researchers will find the comprehensive reference list of particular value. Its specialized appeal should not, however, necessarily preclude others interested in volcanology from reading it.

J. R. V. BROOKS

## ORGANOTIN CHEMISTRY

### The Chemistry of Organotin Compounds

By R. C. Poller. Pp. ix+315. (Logos in association with Elek: London, September 1970.) 120s.

ORGANOTIN chemistry has had its fair share of the general escalation in scientific publications over the past twenty years. Yet although individual aspects of the subject have been reviewed from time to time, the last comprehensive treatment was by Gilman and his co-workers in 1960. The demand for an authoritative work in this large and important branch of organometallic chemistry is beyond question. Workers in the field will therefore welcome this book, but will evaluate it against the background of a competitive work by W. P. Neumann (*The Organic Chemistry of Tin*, Wiley, 1970).

The opening chapter is a short introduction dealing with nomenclature, reactivity, isotopes, and analysis; most of this material could have been incorporated to greater effect in subsequent chapters. The bulk of the chemistry, subdivided according to the elements bonded to tin, is presented in a "preparations and properties" format in the next nine chapters. Tin-carbon bond formation (chapter 2) and cleavage (chapter 3) are followed logically by a treatment of organotin halides in which their importance as intermediates in the synthesis of other classes of organotin compounds is correctly emphasized. Compounds containing the tin-oxygen bond are sensibly divided between two chapters, one dealing with oxides, alkoxides, peroxides, etc. (chapter 5), and the other devoted to organotin esters (chapter 10), which exhibit quite different properties.

Other chapters describe compounds with bonds from tin to nitrogen, hydrogen, sulphur (and selenium or tellurium), and metals (including phosphorus), and the relative space devoted to each topic is entirely reasonable. There is no obvious basis for the order of presentation of these chapters, but this is not a serious criticism of the book. Coordination chemistry, structure, and spectroscopic properties are presented separately in chapters 11-13. The extensive tabulation or i.r., NMR and Mössbauer characteristics will be greatly appreciated. In the final two chapters the industrial applications of organotin

compounds in terms of their biological and chemical activity are considered.

The overall impression of the book is one of an industrious rather than a stimulating treatment of the subject. Some 1,870 references to the original literature are given of which about 370 are to patents. There are no serious omissions in the coverage of the literature which extends to the end of 1968, and this alone will guarantee sales to most libraries. But for many individuals, the price will dictate a choice between this book and its similarly expensive competitor.

A. J. BLOODWORTH

## GRAPHITE RESEARCH

### Modern Aspects of Graphite Technology

Edited by L. C. F. Blackman. Pp. x+320. (Academic: London and New York, September 1970.) 100s.

THE publishers state that this book is a balanced account of the preparation, properties and non-nuclear applications of graphite and graphite materials. From a first reading of its contents, which include discussions of polycrystalline carbon and graphite and their manufacturing technology, quite theoretical reviews of electron transport, thermal gas reactions and mechanical properties, concluding with technological aspects of friction, wear and industrial applications, it would seem that the book is seriously unbalanced in content, specializing in a laboratory study rather than on the experience of manufacturer and user which is what the title would have us believe. In fact, the balance of the book lies in its accurate reflexion of the relative availabilities of relevant academic research and the more industrially biased technology. The graphite producing industry is inadequately covered by patents and no manufacturer is going to describe the secrets of his art, even to a persuasive editor. A consequence is that we have knowledge, in depth, of the physical and chemical properties of graphite substances, but only a superficial awareness of the process of manufacture.

I remember attending a conference at which a distinguished physicist, an authority on graphite, asked industrial representatives to indicate if they had been able to make significant use of the researches into graphite at the theoretical level. The answer was in the negative. A gap evidently has to be bridged. Movement of ideas may occur principally in one direction. But this is of no consequence if, as a result, we see an expansion in consumption and application of this material. In this book I feel we have an effective impetus. The chapters are particularly well written, being lucid and authoritative, and they combine to give quite a comprehensive text. This is a matter of extreme importance when one is concerned with graphite which, indeed, is a most complex substance. The book will be of considerable value to chemists, physicists, those in material science and refractories technology and, of course, to all workers within the graphite industries.

HARRY MARSH

## TOOL FOR METALLURGISTS

### Field-Ion Microscopy

By K. M. Bowkett and D. A. Smith. (Defects in Crystalline Solids, Vol. 2.) Pp. x+257. (North-Holland: London and Amsterdam, 1970.) \$15.00; 126s.

A most notable development in microscopy was the invention by Professor E. W. Müller in 1955 of the low-temperature field-ion microscope. The atomic resolution images of metal surfaces that it provides are often of great beauty and hold an undeniable fascination for all who work with this instrument. In the early years of field-ion microscopy, much research was begun on the assumption