EVER IN ORBIT

The Earth–Moon System

Edited by B. G. Marsden and A. G. W. Cameron. (Proceedings of an International Conference, January 20–21, 1964, sponsored by the Institute for Space Studies of the Goddard Space Flight Center, NASA.) Pp. xiv+288. (New York: Plenum Press, 1966.) $12.50.

THE present rate of publication of new books on the Moon is so great that one automatically questions their need and asks how they differ in their coverage from previously published volumes. This volume provides outlines of all the interesting aspects of the dynamics of the Earth–Moon system and the origin of the Moon, and the only comparable book is Munk and MacDonald's *The Rotation of the Earth*. Although some topics in Munk and MacDonald are repeated in *The Earth–Moon System*, the emphasis is, naturally, different; and other topics in the two books are distinctly different. There is therefore a need for a book of this nature: it is the only complete modern reference on this aspect of solar system astronomy.

The list of contributors is impressive. It includes such well known authorities as Brouwer (now deceased), Schatzman, Kaula, Munk, Runcorn, Gold, Dicke, MacDonald and Urey. As may be expected when a collection of concise lectures by leading authorities is published in book form, the reader will require an adequate background of the often very advanced subject matter before he will be in a position to understand all the implications of the various chapters.

There is a five-page summary of the discussions that were offered at the conference. The editors have suffered the important drudgery of producing a very good author index and an adequate subject index.

G. FIELDER

FULL TREATMENT OF ALUMINIUM

Metallurgy of Aluminium Alloys

By Marc Van Lancker. Translated by E. Bishop. Pp. xvi+488. (London: Chapman and Hall, Ltd., 1967.) 140*s*. net.

IT is many years since a book claiming to deal specifically with the metallurgy of aluminium and its alloys appeared in English. The translation of M. Van Lancker's work is therefore of considerable interest, especially because it is the author's expressed intention to provide "the means of translating the results of metallurgical thought, research and invention directly and effectively into industrial applications in both the manufacture and the utilization of light alloys".

Within the limit of 488 pages it is hardly possible to be comprehensive, and the degree of emphasis given to different topics varies considerably. Thus, thermodynamics of the aluminium production process are discussed in some detail and so are the properties of aluminium and aluminium alloy single crystals. A useful chapter on master alloys is next. This is followed by a detailed description of work relating to precipitation from aluminium alloy solid solutions; a briefer discussion of recovery and recrystallization from the same point of view of the metal physicist follows.

The remaining half of the book deals with certain of the more technological aspects of aluminium metallurgy (it comprises machining, welding, riveting, adhesive bonding, surface finishing and corrosion), at times in a somewhat superficial manner. No unusually effective synthesis of metallurgical theory and practice is evident.

Unsatisfactory features from the point of view of the British reader are that much of the discussion of commercial alloy properties uses the nomenclature of French alloy specifications and translation appears to have given rise occasionally to obscurity. Another demerit is that little account appears to have been taken of work published after 1962. Few references bear the date 1963 (although at least one publication of 1965 is referred to) but, for instance, grain boundary precipitation phenomena in aluminium–zinc–magnesium alloys are discussed entirely in terms of solute depletion, no mention being made of recent explanations based on a vacancy depletion mechanism. Other examples can be cited.

At £7 the book cannot be recommended to the individual buyer, but should find a place on library shelves as a general introduction to aluminium metallurgy and as a convenient source of thermodynamic data of interest in the field.

H. W. MEAD
D. C. MOORE

CHEMICAL METALLURGY

Physical Chemistry for Metallurgists

By J. Mackowiak. (Institution of Metallurgists–Modern Metallurgical Texts, Vol. 2.) Pp. viii+311. (London: George Allen and Unwin, Ltd., 1966.) 42*s*. net.

THIS book, the second in the series of Modern Metallurgical Texts commissioned by the Institution of Metallurgists, is intended as a student text-book. At a brisk trot it covers thermodynamics, chemical kinetics and electrochemistry from the point of view of the metallurgist. In order to fit the material into a volume of quite modest size, some compression is evident, but many may feel this to be a positive advantage—in comprehensive texts on these subjects it is often hard to see the wood for the trees. Absolute rigour, far from clarifying the issue, often seems to confuse it.

There is nothing new about Dr. Mackowiak's treatment, though—the second law of thermodynamics is attacked through the Carnot cycle—and it would be hard to justify repeating treatments as familiar as nursery rhymes if it were not for the clarity and common sense of the text that accompanies them. Particularly good is the chapter on Ellingham diagrams. Students who feel drawn to thermodynamics, kinetics or electrochemistry will doubtless pass on to more elevated—and expensive—texts, but for the majority of metallurgists this book supplies all that most examination syllabuses call for. It is a worthy addition to what is becoming a valuable series.

NIGEL HAWKES

ANALYSIS CONTINUES

Treatise on Analytical Chemistry

Edited by I. M. Kolthoff and Philip J. Elving. Part 2: Analytical Chemistry of Inorganic and Organic Compounds. Vol. 13: Functional Groups. Pp. xxi+528. (New York and London: Interscience Publishers, a Division of John Wiley and Sons, 1966.) 160*s*.

THIS volume of Kolthoff and Elving's comprehensive treatise begins with a general introduction by J. Mitchell, jun.; the main organic functional groups are catalogued, the general problems are reviewed, and a brief account of the chemical and instrumental methods most frequently used is given. Thereafter various functional groups are reviewed.

The determination of active hydrogen is discussed by F. T. Weiss in what I consider to be the best chapter in the book. The C-methyl grouping is treated by the late K. G. Stone, and, in another short chapter, D. N. Bernhardt gives an account of phosphorus-based functions, including some for which few analytical reactions are yet known.

Hanna and Siggia contribute a chapter on carbonyl and derived functions, and carboxyl and derived functions