BOOK REVIEWS

MASON (B.) and MELSON (W. G.). *The lunar rocks.* New York and London (Wiley-Interscience), 1970. x+179 pp. 64 figs. Price £4·20.

AFTER an introductory chapter dealing with pre-Apollo knowledge of the Moon, this timely book deals entirely with the detailed mineralogy, petrology, and geochemistry of the various lunar samples brought back from the Apollo 11 manned landing. As anyone will know who has attempted to digest the mass of data assembled by the 140 principal investigators and their collaborators and presented in the special issue of *Science* and in the 3000 pp. supplement of *Geochimica et Cosmochimica Acta*, it is not easy to learn just how much conflict of evidence has appeared and what degree of overlap exists between the efforts of the various research teams. The authors of this book therefore deserve to be complimented in attempting the task of giving a comprehensive review of the results attained. It is undeniably aimed not only at the professional scientist but also the interested student and layman. Lunar petrology is essentially an igneous-rock petrology, with the addition of complex breccias evidently produced by the impact events recorded in the cratered surface of the Moon. The low fugacity of oxygen during crystallization of the lunar rocks has resulted in the appearance of native iron and troilite and has also given the two new mineral phases pyroxferroite, $CaFe_6(SiO_3)_7$, and armalcolite, $(Fe,Mg)Ti_2O_5$. The authors are well qualified to present the comparisons between lunar petrology and that of terrestrial rocks, meteorites, and tektites: apart from their higher TiO_2 content, the Apollo 11 rocks are considered quite comparable in chemical and mineralogical composition with some of the eucritic meteorites. The evidence from the lunar samples is in general unfavourable for the origin of tektites from the Moon. Lunar geochemistry is discussed element by element: in addition to high Ti all the chalcophile (except Pb), siderophile, and volatile elements are highly depleted compared with the carbonaceous chondrites. The implications of the data from Apollo 11 samples for lunar history are discussed briefly in the final chapter. It is clearly premature to propound a comprehensive theory for the origin and evolution of the Moon at this stage in lunar exploration: further hypotheses will evolve after examination of material from later missions but meanwhile this first concise account of the scientific effort on the lunar samples is most welcome.

R. A. HOWIE

WELLS (A. F.). *Models in structural inorganic chemistry.* Oxford (Clarendon Press), 1970. xi+186 pp., 133 figs., 21 tables. Price £2·75 (boards), £1·40 (paper).

THE interest of the author in the topology of crystal structures is well known; this book represents an attempt at presenting some of the more elementary of his ideas in the form of a coherent course of practical exercises in model building for students of inorganic chemistry at schools and universities. It is doubtful, however, whether

many such students would have the time (or the patience) to work systematically through the many exercises here given or whether the necessary equipment would be at their disposal (where, for example, does one procure coloured plastic spheres with radii in the ratios 1:0·732:0·414:0·225?). It is therefore more likely that the principal appeal of the work will be to teachers as a source of ideas and to those who are more interested in 'recreational mathematics' than in chemistry.

The greater part of the book is devoted to the exercises (103 in all). These are followed by a section presenting the solutions to the problems, and the volume ends with four lengthy theoretical appendices. The work is elegantly produced and copiously illustrated with excellent diagrams.

R. C. EVANS

DOE (B. R.). *Lead isotopes* (Minerals, Rocks & Inorganic Materials: Monograph Series of Theoretical and Experimental Studies, Vol. 3). Berlin, Heidelberg, and New York (Springer-Verlag), 1970. ix+137 pp., 24 figs. Price DM36 (U.S. $9.90).

IN contrast to some important earlier reviews of lead isotope geochemistry, which have a strongly physico-mathematical bias, Dr. Doe's book is written from a refreshingly geological viewpoint. Most of the work is divided evenly between uranium–thorium–lead dating and the isotope geochemistry of 'common' lead. Radioactive lead isotopes receive a brief mention. Several appendices give tables of isotopic analysis of trace lead in common rocks, and the bibliography selectively covers about one-third of the published literature.

The section on U–Th–Pb dating systematically reviews the various mineral groups to which these methods have been applied. That on common lead surveys the results from old basement rocks and sediments as well as the more widely investigated young volcanic rocks and lead ores. The work relies heavily on tabular presentation of material (not just numerical data), and the text is very readable. Considered as a critical introduction to the literature of lead isotopes (including important Russian work) it will be extremely valuable, even to specialists in isotope geology: the price, however, seems excessive for such a slim volume, and must surely narrow the readership to less than the book deserves.

M. H. DODSON

POUGH (F. H.). *A field guide to rocks and minerals.* London (Constable & Co. Ltd.), 1970. xv+349 pp., 33 figs., 46 pls. (25 in colour). Price £1·75.

APART from one brief chapter on rocks and four rather unconvincing plates figuring common rocks, this book is devoted to the study of minerals. It is in two distinct parts, the first section being concerned mainly with physical properties, crystallography, chemical classification, and simple tests, whereas the second and much longer part is concerned with mineral descriptions. This genuinely pocket-sized book is not intended as a textbook of mineralogy but is a practical book with as much first-