

the time the book was published, an important requirement in a subject which is developing as fast as this one. Thus the recent controversy concerning the validity of 'Loewenstein's rule' and zeolite A in particular is covered. Also the very recent studies on a novel series of aluminophosphates are considered, and the development and synthesis to date of the high-silica ZSM and Nu zeolites are documented and discussed.

The book is well produced, with text and diagrams clearly printed on good-quality paper. The quality of production is reflected in the price; nevertheless it is well worth purchasing and thoroughly recommended.

R. P. TOWNSEND

Wilson, A. N. *Diamonds: from Birth to Eternity*. Santa Monica (GIA) 1982. xxv + 450 pp., 88 figs., 30 colour plates. Price US \$43.95.

This is a compendium of the most recent information and opinions on the origin and distribution of diamonds. It is written for the general reader in a free, open, and personal style, and is tastefully illustrated by sketches, diagrams, tables, and colour plates. Throughout the book the author translates and assesses highly technical information in a form readily understandable by the non-specialist. The procedure adopted is to describe in Part I the geological background to diamonds and kimberlites, incorporating the latest ideas on plate tectonics, ocean-floor spreading and age determination. In Part II a more detailed description of diamond distribution is followed by an extremely useful tabulation of the actual occurrences of diamond in kimberlite or gravels, and of kimberlites both diamondiferous and barren. In the table, the occurrences are given in chronological order starting with the oldest known diamonds in the Witwatersrand; each is assigned a stratigraphic or an isotopic age and a reference is given to later text where more fascinating detail can be found. This part forms the major section of the book (278 pages) and is a wealth of information about the historical, technical, and in some cases the social background to the discovery and development of particular deposits. The book has been designed with wide margins beside the text and these are commonly used in a well-spaced, uncrowded way for black and white sketches of the principal characters or places mentioned in adjacent text. However, the abundance of information and ancillary description has its price in that particular details you may require to refresh your memory can be difficult to locate. Part III is an eighteen-page exploration of the idea that kimberlites are fundamentally related to major rifts in the Earth's crust. The kimberlites are placed

in time slots and the evidence for periodicity and repeat activity outlined and assessed. In the following Part, the 'Magic of Kimberlite' explains the nature of kimberlite and the kinds of xenoliths and xenocrysts it contains. Quite rightly the difficulty of defining kimberlite is stressed and the modern ideas on formation of kimberlitic liquids discussed in suitably speculative terms. In Part V, 'Genesis', early theories of the formation of diamond are followed by the listing and classification of inclusions found in diamond. The different states of carbon are discussed and linked with the information obtained from inclusions to postulate and assess possible melting processes deep in the Earth's crust. The final sections are concerned with whether or not diamond crystallized from kimberlite.

Mr Wilson translates in a dramatic and stimulating way the many technical aspects that have been applied to the problem of diamond genesis, and although some readers may feel that one or two phrases are too colourful or too banal, in general the message comes across very well. His enthusiasm for the drama of the subject are reflected in his use of such words as magic, masterpiece, miracle, and astonishing, and these are complemented by the choice and production of some stunning colour plates. Many of the plates are full page (about 250 × 200 mm) pictures of single crystals in generally subdued and unusual colours but which are full of atmosphere and distinction. The other colour plates, again superbly produced, are directly relevant to the adjacent text as are the black and white sketches, diagrams and tables, although this reviewer feels that perhaps even further use of diagrams could have been made (especially in Parts IV and V) to illustrate the interaction of geotherms, solidii, and phase boundaries. The geoscientist and perhaps other specialists will still want to consult books such as 'Diamonds' by Bruton, and 'Kimberlites and their Xenoliths' by Dawson for more wide-ranging information on diamond or for more technical information on kimberlites, but this book updates Chapter 16 in 'Diamonds' and provides more background information to diamonds than Professor Dawson's book. There is an adequate index and there are very few anomalies, although 'plastic' in the mantle (p. 411) may raise a smile and may be inadvertently close to the truth, 'kyantie in aluminium silicate' (p. 416) is rectified in repeat information on p. 436, lamproites contain 'felsparcoid' (p. 437), the Hope diamond is perhaps not at its best on a blue background, and some of the tinting in the chronological table of kimberlites is not consistent (cf. pp. 127 and 312). A small bibliography listing ten to twenty major books or research papers would have been desirable but

perhaps any reader inspired by some aspect of the text would explore his or her interest in bookshops or track it down in libraries via the topic or the personalities listed throughout the text. These are, however, but minor quibbles about a splendidly produced book which will enable a large proportion of the public to understand, appreciate and support highly specialized endeavours at present largely obscured by technical language.

R. R. HARDING

Nancollas, G. N., ed. *Biological Mineralization and Demineralization*. Berlin, Heidelberg, and New York (Springer-Verlag): Life Sciences Report 23, 1982. viii + 417 pp., 105 figs. Price DM 52.00 (US \$23.10).

Although the title of this book suggests matters of interest to Earth Scientists, there are in reality only two papers of marginal interest, except perhaps for very specialized applications (e.g. studies on bone collagen). One is concerned with problems of crystal growth and dissolution which is an interesting theoretical study, some of which is relevant to aspects of diagenesis. The other, concerned in part with the organic matrix of the molluscan shell, is of limited interest to palaeontologists.

J. FERGUSON

Bates, R. L. and Jackson, J. A. *Our Modern Stone Age*. Oxford (W. H. Freeman), 1982. viii + 136 pp., 134 figs. Price £13.30.

Those who know Bob Bates as the author of the only student textbook on Industrial Minerals, and as the witty author of the back page of *Geotimes*, will not be surprised that he has combined these talents to produce a readable and informative book on his favourite subject. It is also a much-needed book; industrial minerals do not have the glamour of gems, nor the metallic attraction of ores, but our whole industrial society is dependent upon them. This needed saying, and Professor Bates and Julia Jackson have said it effectively and forcefully.

The book begins with a startling demonstration of the dependence of everyone in the industrial world on minerals by pointing out that consumption averages 11 tons annually for each US citizen. He introduces his subject by showing which of those minerals preponderates. Then follows a series of sections on individual mineral substances, starting with limestone, through salt, sand, clays, to diamonds. In doing so there are sections on transport ('Rocks en route') and mineral processing ('The Disassembly Line'), and the reader is introduced to these matters with great skill. The variety of uses to which each mineral is put is also spelt out. In the

process of this description, we are introduced to a wide range of topics—thus in describing silica sand we are given a brief summary of the palaeogeography of the North American Ordovician; even palaeontology gets a showing (in relation to Devonian limestones and diatomites).

When we reach Florida Phosphates and Canadian Asbestos ('Two Industries with Problems') the serious purpose of the book is revealed, and we begin a careful and well-balanced discussion of the environmental problems of the minerals industry—and in 'Blast it Out and Break it Up (But Not in My Neighbourhood)' the theme is developed. The fundamental conflict between the citizen who needs minerals to live, and that same citizen who does not want to be inconvenienced by their extraction, transport or processing is illustrated by a wealth of examples. The tone of the discussion is always moderate and reasoned; but the message is clear and forceful—a proper balance needs to be struck, and the means to achieve that balance are so far a notable failure.

This is a 'popular' book, in the sense that it could be read with pleasure and profit by any intelligent 12-year-old; but I would like to make it required reading for any cabinet minister, chief executive or chief planning officer who is concerned with minerals. From this side of the Atlantic, the fact that the majority of the examples are North American is a disadvantage. But if some are tempted to say that we order things better here, then any one in the industry could rapidly disillusion them.

In addition to the single purpose of the book, it is remarkable for the amount of information, on an enormous range of subjects, that is contained within a mere 135 pages. Add to that a series of informative, clear diagrams and photographs which properly illustrate the text, and you have a book which is indeed a triumph.

J. E. PRENTICE

Best, M. G. *Igneous and Metamorphic Petrology*. San Francisco and Oxford (W. H. Freeman), 1982. xx + 630 pp., 453 figs. Price £20.95.

For many years now those of us involved in the teaching of petrology have been acutely aware of the lack of a really good modern textbook on igneous and metamorphic petrology suitable for senior undergraduate courses. Most existing texts were either introductory and suitable only for first-year students or so advanced as to be of use only to postgraduates. The last few years have seen the publication of a number of textbooks on igneous and/or metamorphic petrology in attempts to rectify this situation, but the various authors, approaches adopted, and degrees of success have