

BOOK REVIEWS

Bowes, D. R. (editor) *The Encyclopedia of Igneous and Metamorphic Petrology*. New York (Van Nostrand Reinhold), 1989. xviii + 666 pp. Price £85.00.

This is a recent addition to the 'Encyclopedia of Earth Sciences Series' prepared under the overall editorship of Rhodes W. Fairbridge. Together, they represent an impressive attempt to encapsulate their subject in a form suitable for general reference.

The title of this latest volume suggests a statement of where these branches of petrology have reached at the start of the 1990s as well as a practical reference work covering this area of the Earth Sciences. To what extent does it fulfil such expectations?

Professor Bowes has taken the difficult step of dividing the expanse of igneous and metamorphic petrology into two hundred and sixty six major topics covering principle rock types, associations, textures and processes, together with one dealing with the development of petrology. Each has then been described by one of a panel of expert contributors in the form of a summary or short paper setting out the important facts on the topic. The accounts vary from a single paragraph, as with the 'brownstone facies', to several thousands of words, as with 'metamorphic facies', 'basalt', 'mid-ocean ridge and ocean-floor petrology' and many more. They are well provided with maps, diagrams and photographs and combine descriptions and definitions with historical review and discussion of conflicting interpretations. Further reading is encouraged by selected reference lists and sets of internal cross-references. Several topics include definitions of 'other terms' which are generally related rock names or descriptive terms of restricted usage. It is here that 'peperite', 'cipolino', 'adinole', 'leptite' and others you may have forgotten will be found. Finally, the author and subject indexes complete the overall accessibility of the information.

The format of the book lends itself to a thirty minutes browse to catch up on a subject of immediate importance; the quality of the individual accounts lends itself to 'easy reading'. With more

time, you can move from topic to topic, using the cross-references to chart your own course, thus gaining an advantage in flexibility over the conventionally structured textbook. Moreover, in doing this you continually encounter the diverse viewpoints and senses of proportion of the different authors.

Some contributors stand out by virtue of the amount of material they have provided, including D. R. Bowes himself, Adrian F. Park and A. E. Wright, but this in no way decries the value of the other inputs to the encyclopedia. Many of the contributors are British or American, resulting in a 'North Atlantic' flavour that runs through much of the book. However, it is difficult to see how some such bias could be avoided, and it does not detract from the pervasive sense of authority and thoroughness.

There will inevitably be points of criticism regarding the choice of major topics, the emphasis within individual description, etc. It must be impossible for a work of this kind to be perfectly balanced, not least because knowledge and our sense of what is important can never be fixed. Everyone will be able to light upon something they would prefer done differently, or which appears to have been left out. I felt that the types of cleavage found in low-grade metamorphic rocks could have been treated as a major topic, and was mildly surprised to find komatiite under 'ultramafic rocks' rather than given a section of its own. It is perhaps up to the individual reader to make his or her own judgement. Since the brevity of the individual accounts does not allow for exhaustive detail in the descriptions, some of the strength of the encyclopedia lies in the way in which the literature references enable readers to look beyond the bare descriptions given.

It is also worth considering what the encyclopedia is not. It cannot be commended as a conventional textbook, nor is it a rigorous dictionary of petrological terms, though it performs many of the functions of both. It is not suitable as an introduction to the subject, nor as a vehicle for concentrated specialized study.

One might add that it is not cheap. Given that

you might need the allied volumes on geochemistry, mineralogy and structural geology (etc.), an appreciable investment will be involved. The justification must be that they capture a wide ranging contemporary view of the earth sciences, and thus provide a comforting foundation of reference material for those needing quick access to a broad background knowledge. One for the library budget!

In reviewing this volume, I was drawn to reflect upon the status of petrology as a distinct branch of Earth Science. A book which seeks to give a concise review of igneous and metamorphic petrology must be governed by the acknowledged limits of its subject, which are historical in origin. There is indeed a strong sense of the evolution of the science, without over-indulging in speculations about future developments (perhaps wisely). Moreover, the encyclopedia deals strictly with topics which fall into the field of academic petrology, in terms largely drawn from within its own tradition. You will find tuffs but not bentonites, whole-rock analyses but no account of analytical techniques, metasomatism and a little on hydrothermal processes but fluid inclusions are found in another part of the series.

However, such carpings do not detract from the overall strength of the encyclopedia, which is the sheer abundance of useful information and the convenient manner in which it is arranged. I enjoyed delving into it, and look forward to using it in future.

N. J. FORTEY

Allaby, A. and Allaby M. (editors) *The Concise Oxford Dictionary of Earth Sciences*. Oxford and New York (Oxford University Press), 1990. xxii + 410 pp. Price £20.00.

The Concise Oxford Dictionary of Earth Sciences attempts to cover geology in all its aspects, together with (or are they now part of?) climatology, meteorology, oceanography, pedology, planetary geology, palaeontology and geomorphology as well as the philosophy and history of the Earth Sciences. This is a tall order and especially so when space is limited. The editors admit that they operated a 'rationing system' in selecting terms which were to be incorporated. That some sought-after information will be missing is to be expected: the field is so broad and the subjects are advancing so rapidly. This work tries to be all things to all men and in so doing it reveals its failings. We find reference to the Chemungian ['(Cohoktomian) See Senecan'] which some readers will be interested to know is part of the Devonian of Canada but will find

nothing on the Cimmerian and all that it implies in the evolution of the North Sea province. Yazoo stream is described yet there is no mention of the Yoredales. A number of 'second-spellings' of words are omitted -*laurvigite* is missing, only *larvikite* is described. *Geophysics* is defined while the word *geology* is not.

Such criticisms reflect some of the shortcomings of the work but on the positive side one must say that the definitions therein are full and clear with ample cross references. The work is certainly global in its approach and this reflects credit on the contributors and advisers used in its compilation, but sadly some more 'domestic' terms such as Red Crag will not be found.

There is a useful bibliography of some 400 titles but surprisingly there is no reference there to other geological dictionaries—for example to Fairbridge's series of dictionaries published a decade or so ago. At £20.00 it is an expensive addition to one's library and it is not going to give all the answers: clearly the editors had realized this when they wrote the preface. The specialist, I suspect, will use his own sources, the amateur may be better served by some of the cheaper dictionaries available or indeed by the glossaries provided in so many of the new text books with broad appeal. I suspect that some users will find the work irritating.

A. J. SMITH

Cooper, M. P. and Stanley, C. J. *Minerals of the English Lake District—Caldbeck Fells*. London (British Museum [Natural History]). 1990. vi + 160 pp., 32 figs., 69 colour photos, 11 maps, 3 tables. Price £14.95.

This book, the second in a series on the minerals of the British Isles to be produced by The Natural History Museum, describes the comparatively small but richly mineralized area of the Caldbeck Fells in the northern Lake District. Unless further volumes are to follow on the minerals of other parts of the Lake District the title chosen for the present book is rather misleading: 'Minerals of the Caldbeck Fells' would be much better.

Like its companion volume on the minerals of Devon and Cornwall the contents of this book fall into two parts. In the first the geological framework of the Caldbeck Fells is outlined briefly. There follows a section in which the main groups of mineral deposits are described and classified and their origins discussed in the context of the whole Lake District. Several distinctive major mineralizing episodes produced a variety of deposits for which the area has long been celebrated. A section is devoted to mining, one of