

McCall (G. J. H.), editor. *The Archean: Search for the Beginning*. Stroudsburg, Pennsylvania (Dowden, Hutchinson, and Ross Inc.). xii + 505 pp., 77 figs. Price \$40.; £24.00.

The development of the concept of plate tectonics is rightly regarded as a major recent advance in geological thought, which progressed from first enunciation to general acceptance in about 10–15 years. It is now the recognized framework for the interpretation of the events of the last 200 Ma or so and can, with varying confidence, be used to understand geological events that occurred earlier in Phanerozoic time. But Phanerozoic time is short compared with that of the Precambrian eras, and it can be argued that advances in our understanding of Precambrian rock over the same 15 years' period, though less well publicized, have been little less important than the development of the plate tectonics concept. This book traces something of the history of these advances by means of selected readings from the literature. Both the plate tectonics concept and the unravelling of some of the problems of the Archaean have resulted largely from technological developments; on the one hand, the development of geophysical techniques and of the means of exploring and sampling the deep oceans, and on the other, the refinement of methods of isotopic age determination and their application to ancient crustal rocks, and the great achievement of lunar exploration and the knowledge gained therefrom of events that took place early in the history of the solar system. Rock assemblages that a generation ago would have remained as 'fundamental basement complex of presumed Precambrian age' have in the last decade become increasingly amenable to structural, geochemical, and isotopic analysis. It is not surprising therefore that all but one of the articles selected for inclusion in this volume were written since 1964. Many are direct reproductions of original articles, and so the book contains a variety of typographic styles, but together the articles comprise a most useful single-volume compendium of some of the significant literature on the study of the Archaean. Not all the selected articles are reproduced in full, however: of the forty-two papers chosen, half appear as short summaries, prepared by the editor.

More than half the book is devoted to the nature of greenstone belts and high-grade gneissic terrains in what have become the classical areas of Africa, Canada, Australia, north-west Europe, and Greenland. It is interesting to reflect that these areas are mostly within the English-speaking world, and hence there is available an extensive literature in English. By contrast, the paucity of our knowledge of the ancient cratons of Asia, South America, and

India is reflected in the lack of articles selected relating to these areas. Many papers on the geology of these areas are published other than in English and the editor has sought to overcome this problem by including summaries of a few papers on the Archaean of Russia, but one is left wishing that both more material were available, and that more of what is available could have been included. It is where original material is hard to find that the editorial commentaries prove to be of particular help, and for all sections of the book they are valuable reviews in their own right and provide connecting material for those papers that have been selected.

The problems of the sedimentology of the Archaean are outlined by the editor and a specially written article is included on banded iron formations. The question of Archaean life is restricted to a two-page review by the editor in order to avoid the repetition of material in the Benchmark Series Volume edited by K. A. Kvenvolden on the origin of life. Similarly, the application of plate tectonics to the Archaean and the nature of the primordial crust are each reviewed in a few pages and not supported by original articles.

Perhaps the least satisfactory part of this book is that devoted to general papers. Some salient articles have been included in this section, but each tends to stand in isolation and many suffer from being reproduced only as summaries. Clearly, there is a limit to what can be included in a book of this kind and the task of selection is inevitably both personal and difficult. Different editors may well have made different selections, but one is grateful that so much has been covered.

The book is a timely but expensive combination of some of the more important literature on the Archaean, and is a valuable summary of recent work.

A. C. BISHOP

Woolley (A.), editor. *The Illustrated Encyclopedia of the Mineral Kingdom*. London (Hamlyn Publ. Group Ltd.), 1978. 240 pp., 223 figs., 150 colour photographs. Price £5.95.

Yet another book for the popular market, though the colour photographs are not as uniformly good as in some recent examples of the genre. However, the text is authoritative (for contributors see M.A. 78–3), and does include a section on optical properties of minerals and the use of the polarizing microscope. *The Hamlyn Guide to Minerals, Rocks and Fossils* (M.A. 74–2902) is to be preferred as a book to help a beginner with the identification of specimens.

R. A. H.