

the somewhat illogical organization: chapters on 'related rocks' are placed ahead of chapters dealing with the principal true boninite localities). Certain chapters can be excluded from this general criticism; in particular Cameron (p. 325) provides excellent descriptions and photomicrographs of boninites from New Caledonia, with whole rock and trace element analyses of the same samples on the following page. The general-interest reader who simply wants to know what boninites are would be well advised to start here. It is particularly frustrating that the one chapter which deals with the Bonin Islands type locality contains no petrographic data whatsoever, and hardly mentions the rocks at all. This is a matter of some concern, given the fact that almost all boninites contain some proportion of phenocryst material, and therefore most of the chemical analyses presented in the book do not truly represent liquid compositions.

Throughout the book, there is very little emphasis on what is surely one of the most characteristic and significant features of true trench-related boninites: they contain unusually large quantities of primary water. This fact seems to be somewhat taken for granted, and its petrogenetic significance has clearly been recognized by the contributors, but nowhere is it emphasized as being a potential discriminating feature of true boninites. Inclusion of high primary water content in a definition of boninites would go a long way towards relieving some of the terminological confusion.

A consistent theme throughout the book is the integration of major and trace element, isotopic, tectonic and experimental data into petrogenetic models. There is a broad consensus among most of the contributors that boninites owe their unusual characteristics to a combination of factors: a previously depleted mantle source, shallow depths of melting, and metasomatism of the mantle source by an incompatible-element-enriched hydrous fluid phase. The nature and derivation of this metasomatizing fluid is the main point of debate. Low pressure fractionation and magma mixing processes may also play important roles, as shown by Falloon *et al.* in a chapter dealing with lavas from the North Tonga trench.

I strongly recommend 'Boninites' as a source book for petrologists with active research interests in island arcs and ophiolites, particularly those researchers who enjoy plate-tectonic petrogenetic theorizing. Specific chapters will be of interest to workers on layered intrusions, Archaean greenstone terrains, lamprophyres and experimental petrology of basaltic rocks. General-interest readers are liable to find themselves bogged down in

geochemical detail and are liable to find some of the terminology frustratingly vague. Geological research libraries should certainly acquire the book.

'Boninites' is very clearly laid out and printed, illustrations are consistently of high quality, chapters are individually referenced and there is a comprehensive index. The price is reasonable by present standards bearing in mind the excellent quality of the production.

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Xu, D.-Y., Zhang, Q.-W., Sun, Y.-Y., Yan, Z., Chai, Z.-F. and He, J.-W. *Astrogeological Events in China*. Edinburgh (Scottish Academic Press), New York (Van Nostrand Reinhold) and Beijing (Geological Publishing House), 1939, xiv + 264 pp. 150 figs., 51 tables. Price £35.00.

This book is a progress report on six years' work by a team of Chinese geologists associated with the International Geological Correlation Programme. This team has studied stratigraphic boundaries in China which are marked by abrupt changes in the geological succession. Each of the main boundaries studied are accorded a chapter. About half the book reports studies on the Precambrian-Cambrian and Permian-Triassic boundaries. In contrast, the Cretaceous-Tertiary boundary is covered in only 12 pages. Other stratigraphic discontinuities described, in one chapter and with limited discussion, are the Ordovician-Silurian and the Devonian-Carboniferous boundaries. The discussion of causes and the significance of the evidence reported is wide ranging and does not always accord with contemporary western thinking. The book is strongest in illustrating stratigraphic sections in China and provides faunal and geochemical data on the samples analysed. Some hypotheses advocated here are at variance with most current western thinking and certainly could not be derived from the quoted evidence; for example a cometary origin for tektites is proposed. Further, the authors favour astrogeological events as the cause of the discontinuities mentioned and the terms event and boundary seem to have become synonymous in this book. The references are collated at the end of the book though not all of those quoted in the text are included. For those who need a well-written, English language text which gives an indication of the current stage of evolution of geological thought in China this book will serve well. As a contribution to the understanding of the causes of abrupt changes in the geological succession it is less successful.

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