BOOK REVIEWS

Rollinson, H. R. *Using Geochemical Data: Evaluation, Presentation, Interpretation.* London (Longman Scientific and Technical), 1993. xxvi + 352 pp. Price £24.99. ISBN 0 582 06701 4.

Numbers are the ammunition of the geochemist. How to handle them wisely is the purpose of this manual. It guides and cautions the user on how to get the best from his or her igneous, sedimentary or metamorphic geochemical data, and begins by evaluating the raw geochemical data from the current analytical methods — from XRF and INAA to ICP-MS and ion microprobe (Chapter 1).

The statistical procedures necessary for handling large databases are systematically considered in Chapter 2. Bivariant plots are strongly criticized on the grounds that they should really be multivariate. Cautionary notes are given on the use of the Pearce element ratio diagrams, and the 'constant sum' problem is explained.

The longest chapters, 3 and 4, are on the uses of major and of trace and rare earth element data respectively, including classification, plotting variation diagrams and modelling. These will be the two most thumbed chapters, as they give advice on the question 'which plot to use?'. Tables of normalizing factors and of the mineral/melt partition coefficients for basalt, andesite, dacite and rhyolite liquids are compiled, and plots given of enrichment factors during melting processes.

Tectono-magmatic discrimination diagrams ('is it OIB or OIT or ORG or what?') are explained in Chapter 5, and the 'cookbook' approach is criticized. Chapter 6 is on using radiogenic isotope data: isochrons, model ages, blocking temperatures, mineral and whole-rock ages, recognition of HIMU, PREMA and other conceived mantle sources; and on interpreting epsilon values. The final chapter on the use of stable isotope data for O, H, C and S is particularly clearly explained, even to providing such useful O–C plots as Fig. 7.19 for carbonates with both PDB and SMOW scales shown.

The seven chapters make a well-balanced, clearly written account of how to deal with geochemical data for the more common rock types. The less common types such as the small partial melt mantle products, which arguably are the most telling compositions for igneous rock genesis, receive little mention unfortunately. The contents list makes a useful synopsis of the book and the index is thorough, but the reference list stops at 1990.

Students, researchers, academic and industrial professional geologists will need to have this manual at their elbow when dealing with geochemical data, and the price is fair. Borrowing it from the library will not be enough.

M. J. Le Bas

Jones, G. C. and Jackson, B. *Infrared Transmission Spectra of Carbonate Minerals.* The Natural History Museum and the National Museums of Scotland, London and New York (Chapman & Hall), 1993. 256 pages (unnumbered), 116 spectra. Price £75.00. ISBN 0 412 54650 7

A real need exists for a reliable compilation of infrared spectra of minerals (and, indeed, inorganic compounds in general). This book fills a small but important part of this gap, in that it is a compilation of the Fourier Transform infrared spectra of 109 carbonate minerals, arranged alphabetically, and indexed by mineral name and chemical class, but not by absorption maxima. It is printed on acid-free stiff paper and wire bound between hard protective covers. The first impression that the spectra are detachable to yield a 'card' index is erroneous – the pages are not removable, and the descriptions on the reverse sides would be found to refer to the next card.

The samples used were carefully selected, using a number of criteria including purity and homogeneity, and the identities of most confirmed by X-ray powder diffraction and by a compositional check using a scanning electron microscope with energy-dispersive X-ray analysis. Some very rare species have been included.

The spectra were recorded in transmission mode, using a Fourier Transform infrared spectrometer, and reproduced over the 4000–225 cm^{-1}