BOOK REVIEWS

Holness, M. B. (Ed.) *Deformation-enhanced Fluid Transport in the Earth's Crust and Mantle.* Mineralogical Society Series 8. Chapman & Hall, 1997, xiv + 333 pp. £69.00. ISBN 0-412-752905.

This book would be more appropriately titled 'Deformation-enhanced fluid and magma transport'.. because about half the book deals with magma movement. Although semantically correct, in that magma is a fluid, many will not expect magma to be included.

The contents of the book are well summarised by the chapter titles, thus: (1) The permeability of non-deforming rock; (2) Experimental investigation of the rheology of partially molten peridotite at upper mantle pressures and temperatures; (3) Melt distribution in partially molten peridotites: implications for permeability and melt migration in the upper mantle; (4) The influence of deformation on the extraction of crustal melts: a consideration of the role of melt-assisted granular flow; (5) The role of deformation in the movement of granite melt; views from the laboratory and the field; (6) Ascent mechanisms of granitic magmas: causes and consequences; (7) Ascent and emplacement of granitic plutonic complexes in subduction-related extensional environments; (8) Lithological, structural and deformation controls on fluid flow during regional metamorphism; (9) The geochemistry of volatile fluid flow in shear zones; (10) Segregation veins: evidence for the deformation and dewatering of a low-grade metapelite; (11) Fluid flow in fractured rocks at shallow levels in the Earth's crust: an overview. There is a place and subject index.

The book summarises the present state of knowledge in this important field but does not add much in the way of new insights, theories or even field examples; too many of the ideas have already been published and the only universal agreement that emerges from almost all the conclusions is the complexity of the whole process of fluid and magma movement during deformation and the multiplicity of caveats necessary for any of the proposed models. There is much written on theoretical considerations and experimental studies but many chapters contain scant or even no natural examples with which to constrain theoretical musings. Both Graham, *et al*, who use the SW Scottish Highlands as an illustrative case study of the controls on fluid flow during regional metamorphism, and A.M. McCaig, who considers the geochemistry of volatile fluid flow in shear zones, give useful tables summarising a wealth of information about particular instances already published. Only S.L. Brantley *et al.* specifically consider fluid expression from subduction zones – one of the most important situations where massive fluid flow occurs with veins being kept open by hydraulic pressure while high-pressure minerals grow into 'free-space'. However, they consider hydrofracturing with localised fluid sources only without channelised flow of external fluid and use SW Alaska as their field area.Those interested in granite emplacement are well served with consideration of segregation and melt extraction and Clemens *et al.* convincingly demonstrate the non-viability of diapirism as a mechanism of granitic emplacement and re-iterate the dyke ascent model.

Overall then, this book is an excellent summary of what is currently known about the role of deformation in initiating and assisting the movement of fluids and magmas but is very much an interim statement rather than a comprehensive integrated thesis. B. E. LEAKE

Banfield, J. H. and Nealson, K. H. (Eds.) *Geomicrobiology: Interactions between Microbes and Minerals.* Washington, (Mineralogical Society of America: Reviews in Mineralogy Vol 35), 1997, 448 pp. Price $32.00, ISBN 0-939950-43-X.

As stated throughout this book, and described in various chapters, geomicrobiological research has made major discoveries in the last few years which have profound implications. Many of these relate to microbial mineral interactions and we are now becoming aware of the global significance of these interactions and the probable role that they have played in the evolution of our planet. This is coupled with discoveries of microbial populations deep within the Earth's crust and of inorganically driven anaerobic ecosystems, completely inde-