

and the editor has quite obviously exerted considerable and appropriate control. The final point in its favour is the lack of any alternative!

R. E. BEVINS

Helgeson, H. C., ed. *Chemical Transport in Metasomatic Processes*. Proceedings of NATO Advanced Studies Institute, Dordrecht, Holland. (D. Reidel) 1987. xxv + 782 pp. Price £94.25.

A resort near Corinth and a seaborne geological excursion to the Cycladic Islands in the Aegean might seem unlikely venues for the advancement of geochemistry, but this formidable volume of the proceedings of a NATO Advanced Studies Institute in Greece in 1985 attests otherwise. It is in the nature of NATO-ASI proceedings that a significant proportion of the published material is of a review character. In this instance, two and a half years have elapsed between the ASI and the publication of this volume of proceedings, with the result that some of the material in the proceedings will be familiar, in a different guise, to specialists in the field who are abreast of the current journal literature. Nonetheless, there is much material, both new and old, to challenge and stimulate the specialist and student alike in this diverse volume [M.A. 88M/3788-3815].

The diversity of material is considerable, spanning mantle metasomatism, the theory of fluid transport and metasomatism, the thermodynamics of mineral-grain interfaces, speciation in metamorphic and hydrothermal fluids, modelling of fluid movement and circulation from the scale of the mineral grain to that of the whole crust, and a comprehensive overview of the petrology, geochemistry, tectonics and field geology of the Cycladic Islands of the Aegean. The authors are in the main the leading authorities in these fields. The scarcity of experimental studies in such a large volume on fluid geochemistry and metasomatism is disappointing, given the manifest inadequacy of the experimental basis for thermodynamic data sets for minerals and fluids, but the volume probably truly reflects recent trends away from experimentation towards theory and modelling.

A few papers in this volume do successfully attempt to marry theory or modelling to real geological examples, but the gap between theory and practice is nonetheless apparent in many contributions, and the clearly increasing complexity of metasomatic and fluid-transport theory demonstrated in several papers serves to underline the need for theoreticians, modellers and practical geochemists and geologists to collaborate in bridging this gap.

At £94.25, this volume is only likely to find its

way onto the shelves of the specialists in the field of chemical and fluid transport, but it should become a widely-referenced university library text, giving as it does a fair reflection of the state of the art in this field as seen by some of its foremost practitioners. Given the quantity and diversity of its contents, the book is better value for money than might at first be suggested by its high cost.

C. M. GRAHAM

Carmichael, I. S. E. and Eugster, H. P. (eds.). *Thermodynamic Modelling of Geological Materials: Minerals, Fluids and Melts* (Volume 17 in *Reviews in Mineralogy*), Washington, D.C. (Mineralogical Society of America), 1987. xiii + 499 pp. Price \$18.00.

Volume 17 of *Reviews in Mineralogy* continues the high standards of its predecessors and constitutes a remarkably broad ranging review of the application of thermodynamics to geological and geochemical problems. The main emphasis is on thermodynamics involving fluids, and the volume will do a great service in bringing this rapidly evolving field to a wider audience. However the range of geological applications that the volume encompasses is particularly large, spanning sedimentary, igneous and metamorphic rocks, and ore deposits; truly there is something for everyone.

In the first part of the volume the basic principles of the thermodynamics of phase equilibria are developed by Newton, and applied to crystalline solutions by Navrotsky, while Wood describes the approach to more complex systems with multiple solid solutions. All this is good stuff, well written and up to date, but it must be said that this is largely material that has been well reviewed in recent years, by these and other authors. Indeed, while there are some new developments, notably the work on Fe-minerals described by Newton, the examples are mostly drawn from the same groups of minerals as in earlier reviews.

A second group of 7 chapters concerns crustal fluids and mineral-fluid equilibria, from the points of view of both the solvent and its dissolved load.

Two chapters, by Holloway and by Ferry and Baumgartner, are concerned primarily with supercritical fluids in the C-O-H system. Holloway discusses the nature of forces between molecules in the fluid and develops equation of state models before giving examples of equilibrium calculations. Ferry and Baumgartner concentrate on various versions of the Redlich-Kwong equation of state in current use, which they contrast. If you like reading equations, this is the chapter for you.

Five chapters are concerned primarily with