

most of the book, there are good worked examples and discussion of uncertainties.

As implied above, the book takes a practical rather than theoretical approach to the subject and is thus most suitable for advanced students and researchers with an interest in applying thermodynamics to specific petrological problems. When viewed in this light it is successful and merits extensive use.

B. J. WOOD

Eberhart, J. P. *Structural and Chemical Analysis of Materials—X-ray, electron and neutron diffraction—X-ray, electron and ion spectroscopy—Electron microscopy*. (Translated by J. P. Eberhart), Chichester and New York (J. Wiley and Sons), 1991, xxx + 545 pp. Price £95.00.

The first, French language, version of this book was published in 1989 by Bordas, Paris. The English translation, by the author, is a specially welcome addition to the relatively few books that introduce the non-specialist to techniques currently used in investigations of the microstructure and chemical composition of the interiors and surfaces of materials. It is essentially a textbook, rather than a laboratory handbook. The book provides an excellent and readily comprehensible account of both the basis for and equipment used in the most important imaging, diffraction and microanalytical methods. It does not specifically address minerals or indeed any particular group of materials.

In Part 1 (Chapters 1 to 8) the author presents elementary, largely unmathematical, but nevertheless fairly rigorous explanations of interactions between various forms of radiation and solids, thus giving the physical basis of modern instrumentation. A foundation of knowledge about crystallography and optics is assumed and the coverage is otherwise fairly comprehensive. (An organisational choice made here is to leave the discussion of irradiation damage processes until later: pp. 448–451, 490). Part 2 (two chapters) is concerned with the production and measurement of radiation, i.e. with sources, detectors and spectrometers; basic designs are described and illustrated. Part 3 (two chapters) covers the application of diffraction techniques to materials analysis; a bare minimum of theory is reproduced (some topics are summarised in appendices, e.g. reciprocal lattices, Fourier transforms). Much of the content of Parts 1, 2 and 3 will be familiar to graduates in the physical sciences.

The six chapters that form Part 4 cover various X-ray, electron and ion spectrometric methods

(XRF, EPMA, XPS/ESCA, Auger, X-ray absorption methods, EELS, SIMS, etc.). Part 5 consists of four chapters that address the various types of electron microscopy (TEM, HVEM, SEM, STEM, AEM, STM). The advantages and limitations of the various techniques are presented, together with specimen requirements, analysis correction methods, sources of errors, etc. Here also are briefly mentioned both the processes and practical effects of irradiation damage by electrons and ions.

The book is nicely produced and has an attractive format. The use of many sub-headings, italicised keywords, bold face definitions, boxed summary statements, etc., give clarity and make for easy relocating of particular topics. The book does not go into great practical detail; indeed the author stresses that readers are expected to seek review papers and specialist texts for greater technical information. It is adequately illustrated with line drawings, but has very few half-tones considering the inclusion of subject matter like imaging. For such a textbook, the selling price (£95 for 545 pages, including six appendices) seems high, and this will surely severely limit purchase by individuals.

D. J. BARBER

Hambrey, M. J., Fairchild, I. J., Glover, B. W., Stewart, A. D., Treagus, J. E. and Winchester, J. A. *The Late Precambrian Geology of the Scottish Highlands and Islands*. London (Geologists' Association), 1991. vii + 130 pp., 25 sketch maps. Price £8.50.

The Geologists' Association has been publishing field guides to classic areas of British Geology ever since the International Geological Congress was held in London in 1948. These guides have traditionally detailed the geology of a limited area through a series of itineraries designed to illustrate the regional geology. The latest GA Guide, prepared by Hambrey and his associates, represents a departure from this well-tried formula. This guide illustrates rocks of a particular age, the late Precambrian (Proterozoic), as they are represented in Scotland. Itineraries included in the guide cover classic localities for the study of the Dalradian Supergroup, the Moine Assemblage and the Torridonian Complex, extending from Islay to the Grampian Highlands and northwards to the Assynt District in the Northwest Highlands. Road improvements in recent years have made much of this area accessible within 2–3 hours of Edinburgh, Glasgow or Inverness.

The present guide has been conceived on a grander scale than many of its predecessors. Its