Kerrick, in a succinct opening chapter, introduces many of the themes of the volume, and draws comparisons with regional metamorphism. I fail to see why he need be so tentative in suggesting that some areas of low-*P* regional metamorphism are intermediate in character, representing regional-scale contact metamorphism. The bulk of the chapters are in any case of broader scope than just contact metamorphism. A highlight is Labotka's summary of the properties and compositions of metamorphic fluids; not only do you get an instant reference of all the equilibrium constants and equations of state you need for C–O–H fluid calculations (no, I haven't checked for typographical errors), but for once the, often more abundant salt components are also taken into account.

P–T conditions for low-pressure rocks are dealt with in two chapters. Pattison and Tracy take on the metapelites, dividing them up into facies series with distinctive assemblages and developing a petrogenetic grid to illustrate phase relations between them. Use of geothemometers and geobarometers is also reviewed briefly and there is an exhaustive list of those aureoles which have been described in English, classified according to facies series. This may be galling for Welsh language enthusiasts and other anglophobes, but a godsend to anyone looking for a particular natural example to prove his latest inspired idea, or just wanting good teaching ideas. Tracy and Frost carry out a similar exercise on low-P–high-T phase equilibria in all the other rock types that do anything interesting during contact metamorphism. My editon has copious errata to the figure captions for this chapter.

The theme of metamorphic fluids returns with a review by Brenan of metamorphic permeability and its implications for how fluids move through crystalline rocks. This chapter considers both cracking and fracture permeability, and equilibrium fluid distributions along grain boundaries. Unfortunately, metamorphic secondary porosity, long predicted from stable isotope studies, and increasingly imaged by cathodoluminesence or back-scattered electron microscopy, does not get comparable billing.

Metasomatism in aureoles is described and summarised by Barton, Ilchik and Marikos, in a chapter which comes dangerously close to letting metamorphic petrologists know that some aureoles contain ore deposits. Their pragmatic recognition of a wide range of fluid types and sources in aureoles is sharply juxtaposed against a chapter by Ferry which takes a highly theoretical approach to a very simplified system.

Further chapters deal with several practical approaches to aureole studies: Nabelek on stable isotopes, and Furlong, Hanson and Bowers on modelling thermal regimes. This chapter is a particularly important introduction to modern modelling methods that incorporate evaluating fluid flow. Kinetics of specific reactions in aureoles (although not necessarily the underlying processes) are discussed in chapters by Joesten and by Kerrick, Lasaga and Raeburn. The book concludes with chapters on aureole tectonics, by Paterson, Vernon and Fowler, and on 'aureole systematics' (the most extensive lists yet, of aureoles described in English) by Barton, Staude, Snow and Johnson.

With all this in 850 pages, what else can be said? The main omission that I felt was the emphasis in most chapters on contact metamorphism as a low pressure equivalent of regional metamorphism, where most of the same rules still apply (e.g. lithostatic pressure = fluid pressure), rather than as a deeper equivalent of geothermal field alteration, closely related in space and time but not always operating under the same constraints (e.g. fluid pressure = lithostatic pressure). There have been studies, notably the work of Fournier in Yellowstone, which attempt to link contact metamorphism to contemporary active processes rather than to our inferences of deeper, and still more obscure events and this must surely be an important direction in the future. That said, such criticism is offered primarily because it is obligatory to demonstrate that the reviewer has read the book and thought about it. The reality is that this is an outstanding volume that should be on the bookshelf of every researcher or graduate student concerned with metamorphism in any of its guises.

B. W. D. YARDLEY

Shelly, D. *Igneous and Metamorphic Rocks Under The Microscope. Classification, Textures, Microstructures and Mineral Preferred Orientations.* London (Chapman and Hall), 1992. xv + 445 pp. Price £24.95.

This book is about those parts of hard-rock petrology that use the optical microscope as the analytical tool. Features visible only with the scanning or transmission electron microscope are not included, and chemical petrology is not considered. The author intends that students use the book initially as a basic guide to petrography and then as a route into the research literature, once their interest in textures and rock fabrics has been kindled.

Part One deals with rock nomenclature and the mineralogical and textural characteristics of individual rock types. The IUGS scheme is used as a framework for the igneous rocks, and a similar hierarchical scheme is adopted for metamorphic rocks. Part Two opens with a discussion of the principles of crystallisation and recrystallisation and is followed by treatments of the nature and origin of twinning, zoning, intergrowths, and volcanic, plutonic and metamorphic textures. Part Three discusses the mechanisms by which preferred crystal orientations develop in metamorphic rocks, principally, but also in igneous ones. It includes instructions in how to use the Universal Stage in such studies and how to interpret data patterns in stereograms. The book closes with an extensive combined index and glossary.

Coverage of textures and rock types is comprehensive and amply illustrated with carefully chosen, high quality, black-and-white photomicrographs. The layout is attractive and the writing style flows smoothly.

In my opinion Parts One and Two are out of sequence. It is eccentric that each rock type in Part One has a statement about the textures present and yet the vocabulary of textures is dealt with in Part Two, or has to be accessed via the glossary. Students may well get frustrated by this arrangement. (They are also likely to be frustrated by the absence of glossary entries defining the terms *texture, structure* and *fabric*!)

The 200 pages of Part Two are the meat of the book. The information on textures is comprehensive and commendably up-to-date, for example Bruce Marsh's introduction of crystal size distribution curves is included, as is Bob Hunter's work on cumulate maturation, both of late 1980's vintage. The majority of references are from the last decade which helps to convey that micropetrography is alive and evolving, though it obscures the fact that many features were recognised up to 150 years ago. Students need to be aware of this, so that some, at least, will investigate old descriptions and interpretations. A short section on the history of micropetrography would have helped to make this point. Only three pages are allotted in the chapter *Crystals and crystallisation* to nucleation, diffusion and crystal growth. Concepts such as interface attachment kinetics, layer spreading versus continuous growth, spiral versus surface nucleation growth, surface free energy, and compositional convection ought to have been included here. Their absence is a missed opportunity to engage students in these important current ideas about crystal growth in geological systems.

Therefore, while my students will find this book in their library, I am in two minds about urging them to purchase a personal copy.

C. H. Donaldson

Parson, L. M., Murton, B. J. and Browning P. (eds.) *Ophiolites and their Modern Oceanic Analogues.* London (Geological Society Special Publication No. 60) 1992. 330 pp. Price £55.00.

It is almost inevitable that papers collected together under such a title should be polarised into two groups, and it is not surprising that most authors attempt to bridge the gap between the two cultures from a firm standpoint on one side or the other. Of course, the correlation between ophiolites and oceanic crust, however widely accepted in general, is fraught with difficulties when it comes down to details. This is largely the result of insufficient three-dimensional information on present-day oceanic crust, and the obscuring of earlier magmatic history by later tectonic events in the case of the ophiolitic complexes. However, this memoir represents a praiseworthy effort to establish firmer connections between the two, and contains a wealth of valuable information, as well as some fascinating speculation. It's a pity that there is not a more extensive introduction—setting the scene, defining the jargon, and emphasising the problems, and perhaps a concluding chapter to re-assess the situation in the light of the contributions presented here.

The 18 papers (following a very brief preview) are informally grouped by the editors into three categories, although the rationale for this grouping is not particularly clear, and a review of the contents is not helped by the absence of chapter numbers. The first five papers are described as having an essentially tectonic flavour, and comprise two on specific ophiolites (Josephine and Oman), and three on modern oceanic crust (one general, and one each on segments of the East Pacific Rise and Mid-Atlantic Ridge, respectively). The next nine papers are more geochemical in nature and cover such diverse topics as marginal or back-arc basins, boninites, and chromites, as well as specific ophiolite complexes (e.g. Ballantrae, Pindos, Troodos), apparently in no particular order. The final four papers are said to have a varied content, but to represent a 'similarity of methods and concepts'. This coherence is not strong, and three of these papers would have fitted equally well into the earlier 'tectonic' group, and the other is essentially geochemical. This section contains the most idiosyncratic contribution in which an analogy is drawn