

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.

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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

between the development of individual oceanic island volcanoes, and the growth of oceanic plates. The same authors also speculate that some ophiolite complexes in Kamchatka represent obducted remnants of the Hawaiian-Emperor volcanic chain, where its northward extension appears to have been involved in subduction.

Minor quibbles include the poor quality of the field photographs in an otherwise excellent account of the Josephine ophiolite; the lack of any diagrams in the valuable review article on the volcano-tectonic setting of oceanic lithosphere generation; and the frequent perpetuation of the unfortunate term 'sheeted dykes'—a tautology if ever there was one.

Overall, this compilation provides a stimulating basis for further research, and if it adds up to slightly less than the sum of its parts, this is surely a reflection of the current state of the ophiolite/oceanic crust debate, in which the detailed complications outweigh the overall simplicity of the concept.

W. J. WADSWORTH

Freeth, S. J., Ofoegbu, C. O. and Onuoha, K. M. (eds.) *Natural Hazards in Western Central Africa*. Braunschweig/Wiesbaden, (Vieweg & Sohn). 1992. vi + 174 pp. Price DM 88.00.

Before the Lake Nyos gas release that killed some 1700 people in 1986, western central Africa was not considered an area of high risk from major natural disasters. However, based on the oral history of western Cameroon, spectacular 'misbehaviour' of lakes recurs in legends of the local tribes, suggesting that that type of phenomenon was well known in the past. With the rise in population around these lakes, it is clear that increasing attention should be paid to the hazards presented by the rapid expulsion of toxic gases from lakes.

Some two-thirds of the book are devoted to a discussion of the causes and results of the Lake Nyos disaster. Also discussed in short sections are the hazards from earthquakes, and landslides and erosion. Seismically, this area is relatively stable; but, earthquakes do occur, such as the 1939 Accra earthquake which killed 16 people. The effects of slope failure, on the other hand, are considered to be an increasing problem.

Most of the material about Lake Nyos is the subject of a thematic edition of the *Journal of Volcanology & Geothermal Research* published in 1986; thus a full description and discussion of this topic by the authors of chapters in this book is already available. In addition, the chapter on seismic monitoring of Lake Nyos is almost word for word, the same as a chapter by the same authors in *Geo Hazards Natural and Man-made*, published by Chapman & Hall, also in 1992. Even within the book under review, there is an undesirable degree of repetition which should have been edited out. Considering that the Cameroon Volcanic Line runs straight through the area under discussion, it is surprising that volcanic activity, other than gas emissions, gets only the briefest of mentions as a hazard in the region.

As the editors rightly point out, more people died as a result of catastrophic natural disasters in this area during the 1980s than in the whole of recorded history. A contributory factor is the increase in population causing people to live in areas of potential hazard such as the area around Lake Nyos, previously unoccupied. Indeed this is a world problem recognised by the United Nations in the International Decade of Natural Disaster Reduction. As a new contribution to the discussion which could help mitigate the risk posed by natural disasters, this book does not achieve its objective.

J. E. GUEST