BOOK REVIEWS

Pierrot, R. M. and Cesbron, F. P. Chemical and determinative tables of mineralogy—silicates. Orléans (Bureau de Recherches Géologiques et Minières), 1989. xii + 308 pp. Hardback £77.00.

The first volume which dealt with non-silicates has been in the microprobe laboratory at The Natural History Museum, London, for about eight years now and is well and truly 'thumbed' and in need of rebinding, an indication both of its usefulness and, perhaps, a less than robust spine. This second volume will be used more, rather than less, I imagine.

The layout is similar to the earlier volume, tabulated, and starting with silicates of low atomic number elements from lithium and beryllium to high atomic number elements such as bismuth, thorium, given in terms of oxide weight per cent. A compositional match is obtained by taking the major elements determined by microprobe or other analytical technique and searching the appropriate tables, a relatively rapid procedure. Obviously, some minerals will be more easily identified than others; the amphibole nomenclature for instance is that of Leake, but edenite is not listed as an amphibole in the main tables although it is listed as such later on. A brief, but not particularly up to date bibliography provides an entry into the literature in most cases.

In any work such as this, errors will creep in and it was unfortunate that the first check was on the data for marialite, $Na_4Al_3Si_9O_{24}Cl$, where the calculated weight per cent data are incorrect.

Nonetheless, recommended.

C. J. STANLEY

Leelanandam, C., Ed. *Alkaline Rocks.* Bangalore (Geological Society of India: Memoir 15), 1990. viii + 312 pp., 17 maps. Price Rs.300 ($45.00).

This Geological Society of India Memoir is largely concerned with Indian occurrences of these rocks. Four chapters only (of fourteen) cover non-Indian localities, of which two are on problems of peralkaline rocks (K. Currie) and carbonatites and fenites (M. J. Le Bas). The basis of choice of contributions on non-Indian rocks is not clear, unless to widen the readership outside the sub-continent.

Indian contributions can be grouped regionally. Two are on alkaline rocks of Rajasthan and of Gujarat and Maharasthra in the north west. Two are on alkaline intrusions in east and south peninsular India, of which that by Ratnaker and Leelanandam is a particularly comprehensive survey of all alkaline intrusions into Proterozoic and granulite terrains. All these southern intrusions appear to be deep-fault controlled. A third group of contributions discusses alkaline intrusions in the Eastern Ghats mobile belt. Here the plutons belong to two periods of magmatism in the Proterozoic: 1300 m.y. (alkaline) and 1000 m.y. (peralkaline). The Eastern Ghats also contains three belts of alkaline gneissic rocks which occur between granite gneisses and granulites. Alkaline gneisses are, as Madhavan and Khurran observe, highly problematical in origin, but they consider their data support a mantle-magmatic derivation. Each chapter contains field, petrographic and geochemical data, and the volume provides a useful guide to the great number of alkaline rock occurrences in India.

G. D. BORLEY

Yardley, B. W. D., MacKenzie, W. S., and Guilford, C. *Atlas of metamorphic rocks and their textures.* Harlow, Essex (Longman) and New York (Wiley), 1990, 120 pages, 113 colour plates, 2 line figs. Price £15.95.

It is a pleasure to welcome the publication of an atlas of metamorphic rocks in a series which has become an indispensable source of reference for petrologists. The quality of the plates is of the high standard set by the previous atlases, many containing three separate illustrations; in plane polarised light, between crossed polars and at higher magnification, emphasising a feature of special interest. The price is such that students, as well as research workers and laboratories, will be able to afford the book.

The selection of specimens to illustrate is particularly difficult for metamorphic rocks, which include all the compositional types found among their sedimentary and igneous precursors, as well as the mineralogical and textural changes

due to the whole range of metamorphic processes. This atlas follows the scheme of organisation of Yardley's textbook *An introduction to metamorphic petrology* (1989, Longman), being divided into two sections, Part 1 following sedimentary and igneous rocks of listed compositional types through a range of metamorphic conditions (Plates 1 to 78), and Part 2 illustrating metamorphic textures (Plates 79 to 113). Each section is prefaced by a short introduction, Part 1 presenting a pressure–temperature map of the broad metamorphic facies classification which is used to indicate the conditions of metamorphism of the rocks shown in the individual plates, the captions providing cross-references. For students, this use of metamorphic facies as a guide, instead of assignment to a facies being treated as an end in itself, gives an example of good practice. The organisation of Part 2 is less satisfactory, perhaps inevitably given the wide variety of rocks and processes which have to be summarised. I did not get the sense of enthusiasm which comes through in Part 1, and which is found in *Atlas of deformational and metamorphic textures* by Borradaile, G. J., Bayley, M. B. and Powell, C. M. (1982), Berlin, Springer) which I was sorry not to see mentioned in the reference list.

The actual rocks illustrated include familiar classics such as the pelitic hornfelses of the Skiddaw aureole (Plate 28), the regional metamorphic pelites of western Ireland (many examples), impactite from the Ries Crater of Germany (Plate 8), blueschist facies metabasites from California (Plates 66 and 67), eclogites from western Norway (Plates 68–70) and charnockite from St Thomas's Mount, Madras, India (Plate 76). There are also illustrations of significant discoveries of more recent times, for example the coesite-bearing schist of the Dora Maira massif of the Alps (Plate 37), and the high-temperature granulites of Antarctica (Plate 26). There is only one illustration (Plate 58) where a better example could have surely have been found from the collections available. The authors have missed an opportunity for topicality in the year of German re-unification, by not including a granulite from the type area in Saxony.

Unfortunately, although the captions do convey the authors' enthusiasm, there are lapses from the high standard of accuracy and authority which characterised the first *Atlas of the rock-forming minerals*. There is no such thing as 'cross polarised light' (p. 4), although I have seen it mentioned in undergraduate and postgraduate theses. The abbreviation XPL refers to *Crossed PoLars*, if a mnemonic is needed (and has changed to CPL in the caption to Plate 31). The rock in Plate 5, the introductory example of a dynamic metamorphic rock, is correctly described as a peridotite mylonite in the heading, and incorrectly as a protomylonite in the caption. The authors say in their preface 'We have tended to ignore . . . minerals or textures which cannot be clearly seen on our original photographs because . . . there is nothing more frustrating than a photograph which does not show what it purports to show.' Yet the caption to Plate 42 opens with the words 'This is an extremely fine-grained rock and mineral identification is not easy. The bulk of the rock is composed of fine-grained quartz with chlorite and minor epidote.' The minerals named are not identifiable in the PPL and XPL photographs, and the opening sentence is the kind of thing students should be encouraged *not* to put into their own rock descriptions. G. W. Barrow published his discovery of the regional metamorphic zones in the Grampian Highlands 90 years earlier than the date given in the reference list. Regrettably, these are not isolated examples and I hope that the publishers will consider a re-draft of the text, while retaining the excellent photographs. In a work of this authority, petrologists should practise what they preach.

In spite of this reservation, I must end by repeating that this is a vital reference book for all who use the petrological microscope to study rocks.

R. MASON

Barker, A. J. *Introduction to Metamorphic Textures and Microstructures.* Glasgow and London (Blackie) and New York (Chapman and Hall), 1989. vi + 162 pp. Price £30.00 hardback, £13.95 paperback.

The author's stated aim in writing this book is to produce a text 'which deals comprehensively and exclusively with the interpretation of metamorphic rocks in thin section'. It is also 'written primarily for the undergraduate' but should 'provide a useful first source of reference' for metamorphic geologists in general. The book is short, comprising 170 pages of text, 89 diagrams (including black and white photographs) and 44 colour photomicrographs. It is divided into sections which include: introductions to processes and environments of metamorphism, the facies concept, and the compositional range of metamorphic rocks; discussions of rock textures and