

BOOK REVIEWS

Adams, A. E., MacKenzie, W. S., and Guilford, C. *Atlas of sedimentary rocks under the microscope*. Harlow (Longman Group/Wiley), 1984, vi+104 pp., 217 colour figs. Price £9.95.

This is a companion to the *Atlas of igneous rocks and their textures* and from the same stable as the *Atlas of rock-forming minerals in thin section*: Manchester University Geology Department. Like the other two, the text is intended as a laboratory handbook to assist in the study of rocks and minerals in thin section. The text is divided into three parts. The first deals with terrigenous clastic rocks, the second with carbonates and the last with 'what's left'—ironstones, cherts, evaporites (in very considerable detail), phosphates, coals, and coal-balls. Only one example for each of the last two categories is given.

The clastics section concentrates on sandstones with just a few examples of siltstones. The text is essentially descriptive and the authors stress that this is their intention. Interpretation is kept to the minimum necessary. Sequence is logical; grain types are described first, followed by matrix and cement. Good examples from each of the major sandstone groups are then illustrated. Part 2 which deals with limestones, is necessarily more extensive. This is because of the very many bioclast types which are found with regularity. Most of the sections illustrated are stained with a combination of Alizarin Red S and potassium ferricyanide to differentiate between ferroan and non-ferroan varieties of calcite and dolomite. Both staining and acetate-peel preparation techniques are described in full in appendices. The final part deals with a range of less common sediment types, all of which, however, are quite likely to be encountered in sedimentological investigations.

A particular strength of this handbook as far as I am concerned is that the authors have chosen their classification schemes (upon which rock nomenclature depends) carefully. For example, both sandstone and limestone classifications are the same as used in Tucker's *The field description of sedimentary rocks* (Geological Society Handbook Series) and *Sedimentary petrology, an introduction* (Blackwell). Both seem to be fairly widely used by undergraduates who will now be able to use the *Atlas* without introducing conflict or confusion.

I'm sure that students will find this volume helpful. The quality of illustration is excellent and most sections are presented as PPL/XPL pairs. Account is taken of commercial applications by illustration and discussion of porosity. Perhaps this

aspect could have been developed more fully but that, of course, would have increased costs. Whilst I agree with the authors that clay minerals cannot be readily identified using an ordinary light microscope (if at all!), I think that a couple of plates could have been set aside for (say) laminated and unlaminated mudrocks. These implied criticisms are very minor and probably reflect my own prejudices. I strongly recommend this volume to all geology students with a serious interest in sedimentology. It complements perfectly the three or four excellent texts which have emerged in recent years and which have made teaching this important branch of geology both simpler and more interesting.

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Saxena, S. K., ed. *Kinetics and Equilibrium in Mineral Reactions* (Advances in Physical Chemistry, Vol. 3). Berlin, Heidelberg, and New York (Springer-Verlag), 1983, x+273 pp., 83 figs. Price \$42.00.

This book, like previous volumes in the series, presents a heterogeneous assemblage of papers written by various eminent petrologists with a theoretical or experimental bent. Certainly it should fulfil the editor's intent of being highly engrossing and informative to other research workers of this genre and doubtless they will wish to add a copy to their bookshelves. Whether a wider body of mineralogists and petrologists will be prompted to open a library copy and find the time and the will to delve deep is more uncertain. However, if not, they will be missing out since within its pages is to be found some subject matter which is both thought-provoking and of fundamental importance to the advancement of more rigorous petrological analysis and understanding.

Particularly educational are the in-depth review of compositional zoning in crystals by Loomis, with its emphasis on the interpretation of garnet zoning in metamorphic rocks and plagioclase zoning in igneous rocks, and the article on geospeedometry by Lasaga which outlines how the pressure-temperature-time history of metamorphic rocks may be deduced from consideration of the kinetics of the diffusion processes involved in ion-exchange reaction geothermometers. The review article by Bohlen, Wall and Boettcher on geobarometry in granulites presents data and interpretations which should again be of general interest.

The remaining five chapters are on the whole