BOOK REVIEWS

Brindley, G. W. and Brown, G., Editors. *Crystal Structures of Clay Minerals and their Identification.* London (Mineralogical Society), Monograph 5, 1980. viii + 496 pp., 103 figs., 7 pls. Price £28·00 including postage.

There has long been a need for a source of information concerning this subject and this book furnishes this need in a comprehensive manner. The book is very well organized and has an excellent table of contents for each chapter.

Since the authors have assumed that the reader knows something about clays, it is not a book for the beginner. However, it is an excellent source for a vast amount of information that should be on the shelf of every clay mineralogist and anyone who has an interest in clay mineralogy.

The chapter on 'Structures of Layer Silicates' is very well presented and is all inclusive. The chapter on X-ray diffraction procedures is of particular interest. It thoroughly details methods that should be followed to obtain reliable data. The inclusion of X-ray powder data for the many clays and clay minerals is an outstanding feature of the book. This information, plus a table relating reflections likely to occur in clays in order of decreasing d (Å) values provides excellent information for clay identification.

For those interested in the adsorption of water and/or organic compounds by clays, a chapter is provided that treats the subject in a logical and comprehensive manner. The subject of quantitative analysis of clays by X-ray diffraction techniques is also presented. The many papers and symposia on this subject have never given it a thorough treatment. However, this chapter provides a wealth of information concerning procedures and the problems associated with such determinations. A 'Final Evaluation' at the end of the chapter effectively summarizes the problems that can be encountered with this type of analysis.

Many references are provided for each chapter and the author and subject indexes are certainly adequate. An added bonus is the appendix which contains tables for converting d in Ångstroms from 2θ from K-α and K-β radiations of copper, cobalt, and iron.

The authors should be congratulated for this excellent contribution to clay mineralogy.

W. F. HOWER

Putnis, A. and McConnell, J. D. C. *Principles of Mineral Behaviour* (Geoscience Texts, 1). Oxford and Boston (Blackwell Scientific Publications Ltd.), 1980. x + 258 pp., 212 figs. Price: cloth £18·00, paper £9·80.

This interesting new book on the thermodynamics and, particularly, the kinetics of mineral transformations is aimed at an undergraduate mineralogy audience, primarily. Assuming a moderate amount of crystallography and thermodynamics (although the basics are covered succinctly), the reader is introduced to an atomistic, microstructural view of crystal structure (chs. 2–3) and processes in minerals (ch. 5). The thermodynamics and kinetics of transformations are covered briefly in chs. 4 and 6, the latter in terms of time–temperature–transformation (TTT) diagrams. The last three chapters provide a very interesting, largely qualitative, description of mineral transformations in some systems of geological interest.

Although one could argue about minor points of development or organization, the book successfully achieves the stated aim of the preface and ch. 1: to provide a largely descriptive account of mineral transformation, thus plugging a major gap in the geological literature. However, I doubt whether the book will be used much at an undergraduate level (though it should be of considerable, if not compulsory, interest to postgraduate and other research workers in mineralogy and petrology). There are several reasons for this. The first is that the scope of the book is not wide enough. My prejudice is that mineralogy taught as part of a geology degree should have as its aim an illumination of petrological processes. Thus a book which has on p. 1, 'we . . . will not discuss the broader aspects of transformations such as chemical weathering and reactions between minerals during metamorphism', is ignoring the major application of this sort of approach in petrology. The second comes out of the first. Although the blind acceptance of quenched-in equilibrium between/within minerals should be deplored, many mineral assemblages can be considered in terms of equilibrium (regardless of whether cooling has been accompanied by transformations in the individual minerals—provided that the minerals do not suffer much chemical exchange between minerals during cooling). Although the polemic against the assump-