

across these diverse categories. Sometimes the papers make strange bed-fellows. For example Tunell's paper seems totally out of place here.

It seems to me that a book of this kind provides an ideal opportunity to proselytize about thermodynamics in geology. The papers should be fundamentally educational although maybe presenting new research, certainly summarizing and rationalizing old research. Holland's paper comes in this category. Straight research papers like the one of Lindsley *et al.* surely should be found in a research journal. The authors may even have benefited from the more stringent reviewing thus entailed.

It might seem churlish to criticize the conception and content of a book in this way. Given that the book now exists, there is much to be learnt from many of the chapters. It is a valuable addition to any theoretical petrologist's library. Unfortunately, the lack of an attempt to educate makes much of the material inaccessible to 'ordinary' petrologists, sadly, as the book is of profound relevance to them.

R. POWELL

West, D. R. F. *Ternary Equilibrium Diagrams* (2nd edn.). London and New York (Chapman and Hall), 1982. viii + 149 pp., 101 figs. Price £13.00 (hardback), £5.95 (paperback).

This is the second edition of a book first published in 1965. The main text of the book is little altered but the overall size is enlarged by the addition of problems (with answers) and a chapter on 'selected case studies of ternary systems'.

It is a book for metallurgy students and therefore pays little, if any, attention to topics of importance in geology such as evolution of melt composition, pressure as a variable, and effect of volatiles. The nomenclature used is somewhat different from that used by geologists: it was interesting to learn that 'eutectic', a word restricted to isobaric invariant situations in ceramics and earth sciences, is used in a wider sense to include univariant situations, i.e. 'field-boundary' is never used, being replaced by 'binary eutectic curve' or 'eutectic valley'. Similarly for peritectic, so that 'peritectic curve' is used in place of 'reaction curve'. West also describes a 'monotectic reaction' but I failed to grasp the meaning of this. His use is certainly different to that of Ricci's.

I was not too happy with West's descriptive treatment of the subject (i.e. the material carried forward from the first edition), certainly a sound knowledge of binary systems is a pre-requisite and greater use of the bounding binary systems would have been appreciated. A few vertical sections are shown but the method of sectioning is not explained. The text deals with plotting on equi-

lateral triangles and then without any explanation certain systems (e.g. Al-Cu-Mg, C-Cr-Fe) are shown on rectilinear diagrams. The Fe-O system surprisingly gets only a brief mention and no attempt has been made to show oxygen isobars on either a binary or ternary diagram.

The strong points of the book are threefold: (1) the very good 3-D drawing (2) the problems with answers; (3) the presentation of a few 'real systems'. A diligent student will learn a lot by answering the questions.

The book is possibly of much use to metallurgists but I can only give it a moderate recommendation for earth scientists.

D. L. HAMILTON

Hughes, C. J. *Igneous Petrology* (Developments in Petrology, 7). Amsterdam and New York (Elsevier Scientific Publishing Co.), 1982. xvi + 551 pp., 79 figs. Price Dfl. 70.00 (\$28.00).

Textbooks on igneous petrology usually fall into one of two categories. On the one hand there are those texts which deal mainly with field relationships, mineralogy and petrography, and form essential references for any student of the subject. On the other hand there are the more advanced texts, dealing with magma series, geochemistry, thermodynamics, isotope systematics and so on— invaluable reading for the more senior undergraduate and research student. This latest book on igneous petrology by Dr Hughes of Memorial University, Newfoundland, seeks to bridge the gap between the two types of text by integrating the various aspects of igneous petrology within a framework of modern global plate tectonics.

The book comprises fourteen chapters covering a wide range of subjects, including mineralogy, petrography, volcanic activity, forms and structures of intrusive rocks, classification of igneous rock series, and degradation of igneous rocks. Chapters 8 to 10 deal with igneous rocks from specific tectonic settings (oceanic areas, continental areas, and supra-Benioff zone regions); Chapter 11 deals with Precambrian igneous rocks; and Chapter 12 deals with the petrogenesis of igneous rocks. In general, the layout of the book is not dissimilar to texts already available, and is aimed ostensibly at more senior undergraduate and higher levels.

The book is lucid and well-referenced, but certain features (or their absence) give rise to serious misgivings. For example, the three chapters on petrography, volcanic activity, and forms and structures of intrusive rocks contain *only one illustration* among them; this, surely, is a serious shortcoming? Indeed, in its present form, the