equally elegant and there is reference to plate tectonic influence upon palaeogeography and the stratigraphic record. Such references are, however, so restrained as to seem reluctant. Perhaps because we now have so many working hypotheses in this area, Dr Rayner has deliberately avoided them and has confined herself to making few changes to her previous account. The individual stratigraphic trees have not lost their identity in the collective crustal evolutionary wood. The diagrams are clear and good — many more of the same standard would have been welcome.

The teaching of stratigraphy now involves emphasis upon correlation and interrelationships of many different kinds of phenomena; essential in all of this is the use of fossils. Without palaeontology stratigraphy will fail, and the reference to biostratigraphy in this text remains far too meagre. Lists of strata commonly are as short of meaning as are lists of fossils to most students, but it ought not to be so — here is a missed opportunity to remedy the one substantial criticism that I had of the original edition. All in all, however, the book is adequate for the undergraduate "who may have only a general acquaintance with the broad principles of geology".

Structural geology has made some significant strides since the first edition of Anderson and Owen's book was published in 1968, and not only in the field of plate tectonics. Ideas about the formation of sedimentary basins and about both shallow and deep geological structures in Britain are changing and debate is lively. This text has not gone as far as might have been expected in presenting new ideas and integrating them with previous knowledge. It remains an orthodox description of structural units, one by one, grouped as Precambrian, Caledonian, Hercynian and Alpine terrains, Tertiary igneous terrain and with a chapter on "The Seas around Britain" (an unfortunate and inaccurate title) that contains material that should have been integrated into the preceding chapters. The geographical distinction between structures on land and those on the submerged continental shelf is, to an increasing extent, untenable.

Chapters 2 and 3 deal with the tectonic evolution of the British Isles. A simpler outline of palaeogeographical changes might have served better at this stage, with a fuller, more decidedly plate-tectonic-orientated discussion at the end of the book. The style of this volume is very dry; the illustrations are generally poor and many are very poor indeed. The authors advise that the book should be read with the aid of the appropriate geological maps published by the Institute of Geological Sciences, but there are very few pointers in the text as to which maps should be consulted regarding specific features or terrain. The list of references is extensive, but the standard bibliographical abbreviations are not used and several entries are inaccurate. The printing, direct from authors' typescript, the errata and the poor diagrams give the book the air of having been compiled in a great hurry. One would have expected better.

A book to turn students' attention and interest towards how (a local) stratigraphy or structure is discovered, examined and recorded seems doubly welcome in the context of what has been said above. Hail, then, Moseley's students' manual of field geology! Principles of geological mapping are nicely stated and readable case histories are provided to illustrate them. The latter cover diverse terrains, from Greenland's icy mountains to the seared wastes of Oman, with Cumbria, Andalusia and even a Quaternary torment in between. Igneous, metamorphic, sedimentary and surficial geological examples are treated with just about the right level of technicality and with commendable care. The book shows how aerial photographs, field survey and data logging of many kinds are pressed into map-making. Abundant and generally excellent illustrations complement the text very well.

This is an attractive book and something of a bargain, especially since it seems to capture the essence and spirit of geological exploration. Congratulations to author and publisher for a brave new book. □

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Geological classics

K.G. Cox

Basalts and Phase Diagrams: An Introduction to the Quantitative Use of Phase Diagrams in Igneous Petrology. By S.A. Morse. Pp.493. ISBN 0-387-90477-8. (Springer-Verlag: 1981.) DM62, $36.60.

IN THE teaching of igneous petrology the study of phase diagrams for compositionally-simple synthetic systems occupies an honourable niche similar to that of Latin in the arts subjects. It is thought to be good for the soul, though the precise benefits are sometimes difficult to define.

Professor Morse's book is probably the most comprehensive survey available for all those systems which are relevant to the study of natural igneous rocks, particularly though not exclusively, basalts. It is written with clarity, humour and a loving attention to detail. The diligent reader, undergraduate or postgraduate, will acquire a good feel for the way igneous processes work, by absorbing the many, but inevitably rather diffuse, parallels between synthetic and natural systems. Our old friends such as Ab–An–Di, Fo–Di–SiO_2, the ternary feldspars and many more, are dealt with in detail, and there are good sections on the effects of volatiles and the interpretation of layered intrusions. On the level of simple, every-day problems of how magmas crystallize, fractionate or originate by partial melting, this is an excellent book.

I am less happy when the author becomes involved with more major issues of basalt genesis. The decision to restrict discussion to synthetic systems means that problems arising from work on natural materials (basalts and peridotites), and no less from geochemistry and field studies, cannot be adequately dealt with. In itself this might be acceptable — any author has to decide what to leave out — were it not for the misleading nature of some of the comments which do appear. I doubt, for example, if many petrologists really would agree that "the heart of the basalt problem lies in the eruption, often from the same vent, of tholeiitic basalts at one time and alkali basalts at another time" (p.2), though they might have in the mid-1960s. Other examples, which are consistent with this rather dated viewpoint are numerous, and constitute something of a hazard to the incautious reader. Nevertheless, as a book on phase diagrams this is first rate — it is only the basalts which should be taken with a pinch of salt. □

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Plants of the past . . .

Keith Allen

Paleobotany: An Introduction to Fossil Plant Biology. By Thomas N. Taylor. Pp.589. ISBN 0-07-062954-4. (McGraw-Hill: 1981.) $41.25, £22.95.

I HAVE awaited this publication with much interest, because it is the first general palaeobotany textbook to be written in the English language for almost 20 years. During that time, new discoveries, new interpretations and a much wider use of both stereoscan and transmission electron microscopes have greatly increased knowledge of fossil plant morphology and anatomy. Interest in the origins of plant life, the earliest land plants, the evolution of flowering plants, fossil fuels and the palynological correlation of strata has sparked an awareness of palaeobotany which now reaches far beyond university botany departments.

In writing a palaeobotany textbook, one must choose either to make it very botanical, giving comprehensive