

thickness variations in profile section. It does not consider fault-related folding kink band style folding, polyphase fold patterns and the representation of foliations and schistosity on maps and sections. Chapter 6 comes somewhat late in the book and deals with unconformities. Chapter 7 deals with landforms but contains little on structural control of landforms. Chapter 8 deals with ocean-floor geology often ignored in other books. Chapters 9 and 10 are a detailed case history of the geometrical and geological interpretation and synthesis of BGS sheets 39° west and 39° east in the Midland Valleys of Scotland. These are well-argued analyses that conclude by comparing this area with modern-day environments. However, in general terms, the analysis of maps to produce cross-sections is not well covered, with little attention paid to the projection of data down plunge and the construction of true profile cross-sections and the construction of perspective and block diagrams. Some consideration is given to considering the compatibility of cross-sections but not to the modern concepts of balancing and restoring cross-sections.

In summary, whilst this book aims to guide a student through the processes of interpreting a geological map, it has a number of serious drawbacks that limit its usefulness. The areas dealing with structures and cross-sections are limited and do not deal with modern concepts of structural geology. I believe that these features (discussed above) can and should be introduced to students at an early stage. The maps analysed in detail are largely of similar style—i.e. BGS maps, and the methodology developed in the book largely relates to this. In other countries where maps may often just show the outcrops, this style of analysis may not be suitable.

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Roberts, J. L. *The Macmillan Field Guide to Geological Structures*. London (Macmillan Press Ltd), 1989. 250 pp. Price £12.95.

This 14 × 18.5 cm hardcover field guide contains 254 illustrations (almost all of them high-quality colour photographs) of geological structures in the field. The features covered include sedimentary structure, igneous and metamorphic rocks, unconformities, tectonic structures (faults, folds, veins, joints, boudinage, shear zones and metamorphic fabrics), fold relationships, and structures in basement rocks. Each section consists of a brief descriptive introduction followed by colour photographs illustrating the structures as seen in the field. The photographs are usually three to a page, each with a detailed caption and

usually with a detailed field locality. Descriptive notes are on the facing page to the photographs. The superb quality of the colour photographs and that of the reproduction means that the features are very clearly illustrated. The book is completed by a brief appendix on guidelines for structural fieldwork, an appendix of field localities for the photographs, a glossary, selected references and an index.

John Roberts is to be congratulated on this superb compendium of small and mesoscale structures in the field. The majority of the examples are from the British Isles with the localities fully documented. The descriptive text is in places limited and does not include a full discussion of how various structures form. There is a lack of examples of large-scale structural features, e.g. faults and folds and their topographical expression, but this is a minor criticism. For the professional geologist this field guide is an enviable collection of photographs illustrating the beauty of structures in the field. For the serious student of geology the book provides classic text book examples of most of the structures that one would encounter in the outcrop. For the amateur this book provides an excellent compendium that enables identification and recognition structures seen in the field. The quality of the photographs and the reproduction will mean that most geologists will want to have this book.

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Karato, S.-I. and Toriumi, M., eds. *Rheology of Solids and of the Earth*. Oxford (Oxford University Press), 1989. 440 pp. Price £60.00.

This text, edited by Shun-Ichiro Karato and Mitsuhiro Toriumi, is a translation of the original Japanese version of this book which was published by Tokai University Press in 1986. The text is a collection of review papers that were originally given at a symposium 'Plastic flow and microstructural development in solids: from crystals to Earth' which was held in Tokyo in November 1985. This English version of the book contains an additional paper by Mervyn Paterson on the role of water in quartz deformation.

The quality of the translation of the original papers is excellent, and the text is well organized. It is divided into four parts: Defects and plastic deformation in metals and oxides; Defects and plastic deformation in minerals; Deformation microstructures; Flow in the Earth.

The first section contains six papers dealing with a range of topics including dislocation motion, grain boundary behaviour, diffusion and creep in various metals and oxides. The treatments are