stronger and vice versa. Thus in handling marine stratigraphy Anderson uses stock diagrams and makes subtle but definite errors in the handling of the biology and oceanography. On the other hand, his account of the subduction terrains of the western Pacific is entirely up to date, and illustrated with fine and striking graphics. It is unfortunate, though, that some of the diagrams in the book are reproductions in murky greys of colour originals, for which I fear the publisher must take responsibility. In addition to the more standard material of marine geology the book contains chapters on plate tectonics and continental geology, on the evolution of sedimentary basins and on mechanisms of plate tectonics. I shall be recommending this book to my students, and especially to those who are struggling with some of the more complex early papers.

Cox and Hart's book is very different. It is much more unconventional, taking a quantitative approach that is difficult to characterize in a word. Much of it deals with the geometry of plate tectonics, Eulerian poles, evolution of triple junctions (explaining McKenzie and Morgan very clearly), instantaneous rotations and finite rotations. But there are sections on earthquake focal mechanism solutions and on palaeomagnetism (not altogether surprisingly, considering the authors). Another way of seeing a unifying theme would be in terms of spherical geometry, which many of the topics in the book have in common. In some ways this theme is also the book's undoing, especially as finite rotations are gradually developed, and there are pages of detail that tend to obscure the flow of the argument. Another irritation is the folksy style of some of the linking prose — not that I'm against folksiness in itself, but when it is inaccurate (as in the fictionalization of a submersible dive) then I start to have doubts.

However this book is a most important addition to geological textbooks. It provides clear and systematic treatment of some of the most difficult and elusive aspects of plate tectonics, aspects which I suspect many people omit from their courses because of the problems of teaching them, but which are really fundamental to the subject. This is not a general text on plate tectonics, despite the title, but it is an excellent book that deserves to be widely used. □

J.R. Cann is a Professor in the Department of Geology, University of Newcastle upon Tyne, Newcastle upon Tyne NE1 7RU, UK.

• *The Physics of the Earth's Core: An Introduction,* by Paul Melchior, is intended to provide a basis upon which astronomers, geodesists and others can build an understanding of the latest developments in the study of the Earth's interior. Publisher is Pergamon, price is hbk £26.75, $39.95; pbk £13.35, $19.95.

Resourceful science

Stephen E. Kesler £33

The Geology of Ore Deposits. By John M. Guilbert and Charles F. Park, Jr. *W. H. Freeman: 1986. Pp. 985. Hbk $47.95, £29.95; pbk £19.50.*

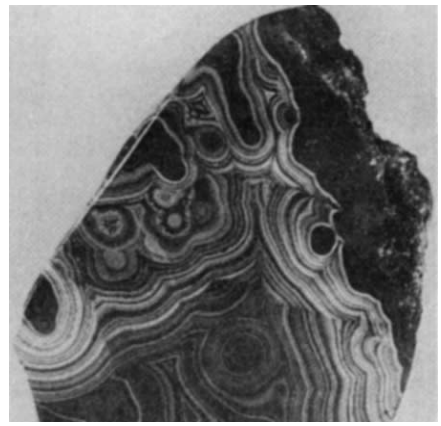
Ore Deposit Geology. By Richard Edwards and Keith Atkinson. *Chapman & Hall/Methuen: 1986. Pp. 466. Hbk £40, $75; pbk £19.50, $33.*

MOST geologists are descended from the early naturalists, whose interest in the Earth reflected purely intellectual curiosity. Not so the economic geologist, who traces his roots in part to the pragmatic prospector. Perhaps driven by a need to purge this non-scientific skeleton from our ancestral closet, modern economic geologists have emphasized the scientific aspects of the subject. Western students of economic geology rarely learn about the engineering and economic factors that make an ore deposit mineable, and they have little or no understanding of how to explore for new deposits. It is worthwhile contemplating whether this is partly responsible for the poor showing of many mineral companies during the lean years of the 1980s.

The two books under review reflect the schizophrenic heritage of economic geology. Guilbert and Park emphasize "the principles and data fundamental to understanding the genesis and localization of ore deposits", whereas Edwards and Atkinson attempt to "redress the balance between theory and practice" by focusing on "practical implications of the geological setting and genetic models of particular ore deposit types". Guilbert–Park, with over twice as many pages, would qualify as a reference book if the author-laden index could be improved. The difference in length between the two books reflects the amount of introductory material that precedes the ore-deposit descriptions, with only 17 pages in Edwards–Atkinson versus 306 pages in Guilbert–Park.

Both books wrestle with the perennial problem of classifying the wide diversity of mineral deposits and both adopt field-based schemes. Guilbert and Park organize their book around geological settings, whereas Edwards and Atkinson use the 'model' approach common in modern exploration thinking. The contents of both books reflect these classification schemes as well as the authors' backgrounds, with the Guilbert–Park system providing a more comprehensive, flexible coverage. Important deposit types, such as epithermal vein, sediment-hosted gold and magmatic iron deposits, are found only in Guilbert–Park, whereas sedimentary exhalative deposits are better covered in Edwards–Atkinson. Deposits of recent interest, such as hot spring and detachment gold, are missing from both books. The classification of some deposits, such as volcanogenic massive sulphide under the "Magmatic Hydrothermal" class in Edwards–Atkinson, and Mississippi Valley-type lead–zinc and Athabasca-type uranium under "Epigenetic Deposits of Doubtful Igneous Origin" in Guilbert–Park, is confusing at best.

The main shortcoming of both books is the degree to which they integrate their approach to economic geology into the deposit descriptions. Edwards and Atkinson's persuasive call that more attention should be paid to the role of mining,



W. K. Bilodeau

Geological patterns — colloform banding in a sample of malachite from Zaire. The picture is reproduced from the book by Guilbert and Park, reviewed here.

metallurgical, economic and political factors in economic geology, is not matched by their coverage of these topics in the short introduction. The discussions of exploration-related aspects at the end of each chapter are also too short and generalized to be of use to students. Numerous topics ranging from middlings to induced polarization need to be described and related directly to the deposits if the approach is to succeed. Guilbert and Park do a better job of covering the geochemical and other research aspects of economic geology, with the exception of solubility controls on specific metals and minerals, but they do not use this information adequately in the descriptive sections of the book.

In spite of these shortcomings, both books contain a great deal of worthwhile material, are well presented, with clear illustrations and complete references, and would serve as satisfactory texts. Guilbert–Park would probably be the first choice of most geologists because of its much greater coverage, but if economic geologists are ever to stop being hired, and fired, by engineers, accountants and lawyers, they should also read Edwards–Atkinson. □

Stephen E. Kesler is Professor of Economic Geology at the University of Michigan, Ann Arbor, Michigan 48109, USA.