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Encyclopedia of Sediments and Sedimentary Rocks

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The index is particularly useful. The volume will be of general interest to geochronologists and metamorphic petrologists. Its message of employing multiple analytical techniques to fully interpret geochronological data within petrological context represents the current benchmark for accurate geochronological calibration of polymetamorphosed rocks in orogenic belts.

Encyclopedia of Sediments and Sedimentary Rocks

Edited by Gerard V. Middleton
Kluwer Academic Publishers
P.O. Box 17, 3300 AA Dordrecht, The Netherlands
2003, 928 p., US$390.00, hardbound
ISBN 1-4020-0872-4

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Encyclopedias occupy an uncertain position on the intellectual landscape. Embattled teachers may revile them as purveyors of superficial information, much favoured by students seeking to complete term papers with minimal research. And yet, a well-prepared, rigourous encyclopedia is an invaluable learning resource and reference compendium that can command immense loyalty from its users. So enamoured was Aldous Huxley of *Encyclopedia Britannica* that he seldom travelled without at least one volume, and his entire set once accompanied him on a world cruise. Now, Gerry Middleton has edited a new encyclopedia devoted to sediments and sedimentary rocks, a Herculean volume that runs to 821 pages of main text (including index), divided among more than 250 subject entries. Reviewing so massive a distillation of sedimentological information would daunt even the most enthusiastic polymath, and so we six scientists who have contributed to this review have divided our labour. Each of us has read a number of entries, some in our areas of specialty, some not. Although we have not tried to read every entry in the volume, we have studied enough of it to form a group consensus regarding its many merits, tempered by the recognition of some problems that are probably unavoidable in any book of this scale. We are unanimous that this volume is user-friendly, broadly summarizes an immense body of knowledge, and should become the intellectual travelling companion of any student or professional of the field of sedimentary geology.

The encyclopedia has benefitted from an army of top-notch workers, helmed as it is by Professor Middleton and four associate editors (Michael Church, Mario Coniglio, Lawrence Hardie, and Frederick Longstaffe) and anchored by an impressive roster of authors, the names of many of whom will bring nods of agreement at the propriety of their having been chosen to contribute. Thanks to the good efforts of so many people, many things about the book deserve unalloyed praise. It provides an entry point into numerous topics through entries that are, on the whole, up to date and of high quality. At their best, the sections in the encyclopedia provide adequate background data, sufficient illustrations to support their written explanations, and appropriate references for the interested reader wishing to delve into more specialized aspects. Indexing is thorough and the editors provide a very powerful tool by cross-referencing related topics. Treatment of topics is relatively basic and thus accessible to the broadest range of users, and coverage of historical developments is balanced with current thinking. A specialist may not learn much that is new about her or his field but will find much new and interesting information when reviewing entries from unfamiliar fields. The book is attractively and durably bound, the paper, typeface, and page layouts are easy on the eyes, and line drawings are generally clear and reproduced at an appropriate size.

It is probably inevitable that any volume of this size and scope, written by one-hundred and ninety-three contributors, will suffer from some unevenness in tone and level of treatment. Editors must make decisions about how material is to be partitioned and not everyone will agree with an editor's choices. Editors must also impose standards as to writing style and level of treatment, but not all authors will faithfully follow an editor's instructions. It is also probably inevitable that six geologists will not stay unanimous for very long. Thus, our opinions diverge on the question of how consistent the book is in its overall treatment of its subjects. Four of us, in particular, were struck by some unevenness, wondering if the editors had wielded sufficient control on the format, length, and general level of treatment of various subjects. Although variability in these matters does not detract excessively from the encyclopedia's overall usefulness, it does mean that some entries are more helpful than others.

An example of this variability is provided by significant variations in depth of treatment. In some cases this reflects the relative significance of topics. Yet in other instances the handling of subjects is genuinely uneven. Some contributors seem to have written their articles with an encyclopedic format very much in mind. Such articles concisely but thoroughly cover the history of a concept, as well as its modern context. Those topics presented with a methodical approach are fine examples of how the encyclopedic format should work, e.g. the treatments of alluvial fans and of fluid inclusions. Some other entries are all right as far as they go but are marked by odd omissions or curious redundancies. For example, the rather terse section on storm deposits deals at moderate length with the formation of hummocky cross-stratification, a subject dealt with at length in a separate entry. It also briefly discusses currents and suspended sediment, but it essentially ignores carbonate and mixed carbonate-siliciclastic storm deposits. Similarly, the section on debris flows is almost entirely devoted to subaerial examples. There are entries that ably document a concept's history but say little about the state of the art (see, for example, "Sedimentary Structures as Way-up Indicators"); others present only a summary of the latest research. Neither approach is necessarily invalid, but the emphasis in some entries seems to depend more on authorial enthusiasms than on editorial oversight. Of course, it may just as well be to the credit of the editor and associate editors that the book is as uniform in style, content, and breadth as it is!

The partitioning of larger subjects is, perhaps, more likely to reflect editorial decisions. Certainly, the editors had little choice other than to group subjects into larger themes; the alternative–to include a heading for every single topic–would have produced a dictionary rather than an encyclopedia. Nonetheless, there is a good deal of inconsistency in how subjects are broken down. For example, topics dealing with carbonate rocks are finely divided, including short, separate entries as limited in scope as "Tufas and Travertines", "Stromatolites", "Ancient Karst", and "Cements and Cementation". Most of these short entries are excellent; they summarize the recent literature and briefly discuss possible interpretations. By contrast, a large subject like "evaporites" is treated in a single entry, in which, in limited space, the authors attempt to produce an encyclopedic entry covering such disparate topics as the economic uses, social history, environment of formation, and geochemistry of evaporites, as well as the Phanerozoic evolution of seawater. Many of these topics could have used a separate entry. Yet, coverage of some topics is repetitive. Soft-sediment deformation structures are treated in detailed entries that focus on individual types of structure, but also in an overview article that is superficial and mainly repeats what is stated more effectively in the detailed entries. There are also strange overlappings and splittings of topics in some of the book's otherwise excellent historical/biographical entries. A brief biographical sketch of R.A. Bagnold is largely repeated in a more entertaining entry focused on his scientific contributions. "Sedimentology, History" is a useful overview but is focused almost entirely on Europe and North America; meanwhile, the history of Japanese sedimentology is in a separate entry. A section devoted to "Sedimentology–Organizations, Meetings, Publications" covers organisations reasonably well and provides a cursory discussion of journals and special publications. However, with regard to conferences, this section provides only a list of generalities and platitudes about what conferences are supposed to achieve. Treatment of economic aspects of sedimentary rocks also is regrettably patchy. Placers are well represented, but laterites are absent and the discussion of "Bauxite" focuses on spectroscopic characterization, omitting any mention of the origin of bauxite. Other sediment-hosted ores (SEDEX, banded iron, or MVT lead-zinc) are not treated.

As noted above, the illustrations are generally of good to excellent quality. However, there are strange omissions here as well; flame structures, which are strikingly visual features, are described without any accompanying photograph or sketch. Sizing and choice of images are not everywhere optimal. In the section on glacial sediments, Figure G12 takes half a page to show a braided river emanating from a glacier terminus that is not even clearly visible in the picture. Referencing is also somewhat uneven, as in the well-written section on "Substrate-Controlled Ichnofacies", which excludes some key references from the past decade. In some cases, the editors have missed an opportunity by not requiring contributors to develop more comprehensive bibliographies, which would have been a particular boon to novice users.

But enough of criticism, for this book's failings pale alongside its virtues. The book will be useful to graduate students, senior undergraduates, and practicing sedimentary geologists of all stripes; every practicioner of sedimentary geology should have access to a copy. It deserves a place on every desktop but the very high price–about $475 in Canadian funds at this writing–probably means it will be found only the desks of workers with generous paycheques or bountiful research grants. Inevitably, it will fall to libraries and research departments to make the book available, although in these days of tight book budgets the price may also give pause to institutional purchasers. Because we do not wish to divide this excellent volume, Solomon-like, into six equal pieces, we are donating the review copy to the G.S.C.'s Calgary library.

Finally, because this review is to appear in a Canadian journal, it is appropriate to comment upon the pleasingly high level of Canadian expertise reflected in this book. Canadian contributors include the editor, three of the associate editors, and many of the individual contributors. This is a tribute to the strength of sedimentology and its subdisciplines in this country. Professor Middleton can take pride in the tremendous accomplishment that this book represents. He can also take pride in the vigour of the sedimentary profession in this country, for this is owed, in no small part, to his sterling efforts and intellectual leadership.

Collapse

By Jared Diamond
2005, Viking

A Short History of Progress

By Ronald Wright
2004, Anansi Press

Reviewed by Ward Chesworth,
Department of Land Resource Science, University of Guelph

"You think that a wall as solid as the earth separates civilization from barbarism. I tell you the division is a thread, a pane of glass. A touch here, a push there, and you bring back the reign of Saturn."

John Buchan, 1916.

Opulent materialism can only be sustained for the relatively few in society - the king and his court, the tyrant and his favourites, the president and his bagmen. The eighteenth century radical, Tom Paine, believed that the prototype of them all was the thief and his gang. The rest of us aspire to the more modest version of opulence called affluence. The problem is that the most fortunate part of the human population has now attained an affluence that approaches historical opulence. The affluence of a Canadian or American for example, is roughly the equivalent of 10 to 15 inhabitants of the third world, in terms of life-time consumption and waste generation (Zen, 2000). All 10 to 15 hope to enjoy our level of luxury someday, and indeed the Brundtland report states its goal to be exactly that (WCED, 1987). If achieved, it would scar the biosphere so badly that the downfall of the civilization we currently enjoy would be assured. Ten thousand years of trial and error, reaching back before Sumer, would simply be another failed experiment. And even if the goal is not achieved, as seems more likely, the stress