

dyes from the workplace, or by not smoking.

Greaves has strong views about “lifestyle factors” in relation to cancer causation, partly because it has overtones of “blaming the victim”. (Although he does not mention this issue in his chapter on smoking.) Instead, he considers that many cancers are “products of social engineering over which any one of us exercises limited deliberate or informed choice in the normal course of events”. This he embraces under the term “the social ratchet”, which I found puzzling and confusing. I cannot understand the essential difference between these positions, as all epidemiologists would agree that social factors may make choice more difficult.

An evolutionary perspective, it might be thought, could help forecast something of the future, and a final chapter is devoted to this. The author is no pessimist and foresees new treatments, including ‘designer’ drugs that will more accurately attack the cancer clone. Surprisingly, the prospect of identifying more infective causes of cancer is not mentioned, although viral causes of two of the world’s most common malignancies (cervical and primary liver cancers) were identified only recently.

The book is well written, full of vivid metaphors, succinct descriptions and arresting headings. I found it persuasive at the cellular level, and enjoyed the accounts of specific causes of cancer. However, the evolutionary perspective did not seem to me to provide a useful framework for investigating the causes of cancer or for its prevention, nor were any specific novel measures proposed. Perhaps this perspective is too long-sighted and the concept of “the social ratchet” too vague to be helpful here. ■

Leo Kinlen is in the CRC Cancer Epidemiology Unit, University of Oxford, Radcliffe Infirmary, Oxford OX2 6HE, UK.

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## A sermon on the mounts

### Sedimentology and Sedimentary Basins: From Turbulence to Tectonics

by Mike Leeder

Blackwell Science: 1999. 592 pp. £35, \$69.50

Chris Paola

Among the accumulated scraps of Earth’s tectonic system is an immense library of sedimentary rocks, stacks of former planetary surfaces. The oldest entry dates back some 3.8 billion years. The scriptoria for these ancient books are mostly low places: alluvial plains, lakes, deserts and ocean depths. The archive is run by tectonics, which, by slowly driving down the basement, allows the pages to accumulate. For the most part, the archive

is read as it is destroyed, when tectonics raises the ancient books from their depths and opens them to us via erosion.

If the keeper of the vaults is tectonics, the hand that writes most is fluid flow. The ambitious goal of Mike Leeder’s engagingly written and well-produced new book is to take us from the details of turbulent flow all the way up to tectonics, and in the process show us how the sedimentary record is created. He is thorough without choking on the details, and comprehensive without simply cataloguing the outcomes of as many studies as he could find. Beyond its remarkable scholarly range and depth, this sequel to Leeder’s popular text *Sedimentology* (Chapman & Hall, 1982) is also a lively and informal read.

Leeder makes no secret of having been seduced by the enigmatic beauty of the sedimentary record. His passion shows in the writing, and in the prose and poetry that begin each chapter. (He has been criticized for this. Is sedimentary geology some kind of haven for grinchers? Geology is one of the most romantic of scientific disciplines; the literature that graces Leeder’s book illustrates this, and gives the book a soul.)

Sedimentary geology is a descriptive enterprise. The sedimentary record ranges from exquisite detail to yawning gaps: one can marvel at the delicately preserved traces of a Precambrian rain shower, then lose a hundred million years of record just by walking a few steps up the section. This makes it hard to piece together the history of the Earth’s surface even at a qualitative level.

Despite this, the application of methods and results from more quantitative sciences is slowly making inroads. Most sediment is deposited after transport in water or air, so there is an obvious connection between sedimentary geology and fluid mechanics. This is emphasized early on in Leeder’s short introduction to fluid mechanics followed by material on sediment transport and various sedimentologically relevant flow types. He is clearly fascinated with turbulence, and this topic is presented in great detail, albeit somewhat descriptively. He includes nice treatments of important topics, such as rotating flows, not typically found in introductory fluids courses. Equally impressive is the attention paid to putting geochemical aspects of sediments, especially carbonates, on a fundamental footing. Most sedimentary geology texts of recent years pay lip-service to these topics; Leeder’s treatments are substantial.

A few things might be improved in subsequent editions. The quantitative treatment suffers from an uncritical acceptance of some of the more dubious ideas of R. A. Bagnold, whose undisputed status as a giant in sediment mechanics does not make him infallible. Climate is only cursorily

## New journals

This year, *Nature’s* annual new journals review supplement will appear in the issue of 21 September. Publishers and learned societies are invited to submit journals (including electronic journals) for review, taking note of the following criteria:

- Journals must have first appeared during or after June 1998, and paper journals must have published at least four separate numbers by the end of May 2000.
- Journals covering any aspect of science are eligible, although those dealing with clinical medicine and pure mathematics are excluded, as are newsletters and publications of abstracts.
- Frequency of publication must be at least three times a year.
- The main language must be English.
- Deadline for submission is 5 June.

Please send at least four different issues (the first, the most recent and any two others) of each eligible title, or the URL and access information for electronic journals, together with full details of subscription rates, to: Isobel Flanagan, Nature, Porters South, Crinan Street, London N1 9XW, UK. Tel: +44 (0)20 7843 4542. e-mail: i.flanagan@nature.com

connected to sedimentology at the end of the chapter. Also missing is much on the very active subfield of organisms and sediments, including the study of ‘trace’ (behavioural) fossils and their considerable impact on the stratigraphic record. Sedimentary basins, in whose dynamics lies the strongest connection between sedimentary geology and tectonics, are covered very briefly. There is nothing on seismic or sequence stratigraphy, or on stratigraphic modelling — a shame, as quantitative stratigraphic modelling is perhaps the one area that spans the full range from turbulence to tectonics.

On the whole, though, what is missing is far less important than what is there. Nothing else approaches this book in scope, depth or liveliness of presentation. Sedimentary geology today is like a medieval bazaar in which scientists speaking languages as disparate as particle physics and geography, civil engineering and evolutionary biology, are all contributing to the mix. Very few people could have drawn as much of this work together as coherently as Mike Leeder has. Anyone who would translate the Book of Sediments should start here. ■

Chris Paola is in the Department of Geology and Geophysics and St Anthony Falls Laboratory, University of Minnesota, 3rd Avenue SE and Mississippi Rivers, Minneapolis, Minnesota 55455-0219, USA.