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Active Tectonics and Alluvial Rivers

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Aller au sommaire du numéro

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REVIEWS

Active Tectonics and Alluvial Rivers

By Stanley A. Schumm, Jean F. Dumont and John M Holbrook
Cambridge University Press
40 West 20th Street
New York, NY 10011-4211 USA
2000, 276 p., US$80 hardcover
ISBN 0-521-66110-2

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The theme of this relatively slim book is that river patterns are a sensitive indicator of structural movements. Drainage networks may reveal underlying structural control, channel patterns adjust to changes in slope, asymmetric meander belts may indicate lateral tilts, and so on. There may be corresponding effects on the architecture of the resulting fluvial deposits. Complex uplift and unroofing histories may be deduced from fragments of valleys and terrace deposits uplifted and erosionally isolated by subsequent movements.

These are not new ideas, and in fact most of the material in this book has appeared elsewhere in research papers and books published by the senior author and his former students. The work of Ouchi, for example, on the response of rivers to tectonic movements across their path, was published in Geological Society of America Bulletin in 1985, and there is repetition of material from more than one of Schumm's many previous books; for example, a discussion of the river Nile that appeared in his 1994 work, "The variability of large alluvial rivers." The material that will probably be new to most geologists is that contributed by co-author Dumont based on his numerous studies of the Amazon basin. Most of this work has appeared previously in geomorphological journals or in South American publications that will not be familiar to most Canadian earth scientists.

Applications of this information to the geological record seem a little thin, such as discussions of the tectonic controls of sedimentation that can be deduced from alluvial stratigraphy, and discussions of the relevance of the work to economic activity, such as petroleum and coal development. Most of these topics have been covered in much greater detail by other authors. There is little here about modern work in such areas as sequence stratigraphy.

The book is physically well produced, with mostly clear, elegant diagrams, but there is no author index, and the subject index is barely more than a page long, half of it consisting of a list of modern rivers mentioned in the text. Altogether I would have to say I am disappointed by this book. However, those new to the subject of tectonic geomorphology who are not familiar with Schumm's previous work would find it useful to start here.

Roadside Geology of Ontario: North Shore of Lake Superior

By E.G. Pye
ROCK ON Series 2
Ontario GEOservices Centre
Ontario Ministry of Northern Development and Mines, Publication Sales
933 Ramsey Lake Road
Sudbury, Ontario P3E 6B4
1997, 164 p., $16.95
ISBN 0-7778-5850-9

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Ed Pye, Director of the Ontario Geological Survey until his retirement in 1983, is the author of this fine guidebook, an updated and extensively revised version of an earlier edition he also authored (1969). This is an interesting and highly scenic area of Ontario with a wide variety of rock types, and an array of classic names including Keweenawan, Sibley, Animikie, Huronian, Rove, Gunflint, and others. I have driven through this area a number of times, but without the useful geological information at hand that this guidebook provides. It is attractive, well-organized and illustrated, and easily used, especially so because it has a ring binder format that on opening *stays* open (guidebook authors take note). The writing style is brief and informative, concentrating on what can be seen in outcrops and view locations, and what this means in layman's terms. One does not have to be a practicing earth scientist to understand this book: every effort has been made to keep the technical terms to a minimum.