

The Work of the River

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Proceedings of the Conference on Changes in the Physical Aspects of Lakes Erie and Ontario

Edited by Robert A. Sweeney
*Bulletin of the Buffalo Society of Natural
Sciences,*
Vol. 25, No. 3, 1975, 93 p.
\$4.00

Reviewed by Robert M. Quigley
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The proceedings of this conference, or more accurately, invited seminar, consist of three invited papers followed by discussions with about 34 invited participants from New York, Ohio, Ontario and Michigan. Featured authors were: - 1) S. B. Upchurch, Michigan State University, speaking on "Impact of coastal dynamics on man in Lakes Erie and Ontario"; 2) C. E. Herdendorf, Ohio State University, speaking on "Shoreline changes of Lakes Erie and Ontario"; and 3) N. Arno, U.S. Army Corps of Engineers, speaking on "Protecting shorelands against erosion damages in Lakes Erie and Ontario".

The paper by Upchurch devotes itself to a qualitative discussion of shoreline processes followed by a discussion of planning alternatives and problems in selection of priorities for research and land protection. A section devoted to relevant references on shoreline processes including erosion on both the Canadian and U.S. sides of Lakes Erie and Ontario was particularly interesting. The sections dealing with planning alternatives, priorities, land usage and protection and political jurisdiction apply chiefly to the United States but nevertheless point out the tremendous complexities of future shoreline management projects.

The paper by Herdendorf devoted itself to circulation and current patterns in Lakes Erie and Ontario followed by descriptions of shoreline drift and erosion/accretion patterns from point to point around both lakes. Although emphasis is placed on the U.S. shores, brief reviews are given for the Canadian shorelines also. No specific reference is

given to the authorship of work done in each drift area, however, the paper coupled with that of Upchurch provides a very useful qualitative overview of the processes operating in Lakes Erie and Ontario.

The paper by Arno is a good, short, but perhaps too simplified review of approaches to be taken in planning shore protection schemes. Reference was made on several occasions to the Corps of Engineers, North Central Division brochure entitled "Help Yourself" which this reviewer agrees is an excellent guide for the small landowner with erosion problems. The problem created by large jetties (Federal, state or private corporations, etc.) did not receive mention even though they create truly enormous changes in regional erosion patterns by creating permanent stable headlands.

In summary, this reviewer enjoyed reading the proceedings booklet and would recommend it as a library holding for anyone working with the shorelines of Lakes Erie or Ontario. It is particularly useful for "beginners" and non-technical planners, zoners and politicians interested in a sound but elementary grounding in shoreline processes.

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The Work of the River

By C. H. Crickmay
American Elsevier, 271 p., 1974.
\$29.50

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This book is not, as the title might suggest, a general account of fluvial processes, deposits, and landforms. Rather, it is mainly concerned with the formation of landscapes by fluvial erosion, a topic to which the latter half of the book is devoted almost exclusively. It reviews the theories of Davis, Penck, and other giants of the past (about 130 out of 150 references are pre-1960), and presents the author's views on landscape evolution. The first half of the book gives a more general account of fluvial activity, but leaves much to be desired.

Data are given without references, equations without explanation of all the symbols used, and key concepts such as "wasting" are not defined. The illustrations are inadequate; many captions are incomplete, for example Figure 2.1: "Discharge frequency of a large river. (An American example)". In this figure discharge is labelled as cusecs or m^3/s ; we are not told which. Imprecise statements abound, such as: "Coarse grit in clear water at medium temperature falls about 0.15 m/s; . . ." The author expresses aberrant views on terminology, for example: "Alluvial fragments should be referred to truthfully as grains of fragments, or descriptively as mud, silt, sand, pebbles, or boulders - never (without good reason) as clasts, and absolutely never as particles". Strange techniques are described: a grain size analysis ("From an American River" again) expressed in terms of a X2 scale in inches, with clay and mud sized particles measured under the microscope.

The most striking deficiency of this book is the lack of discussion of the stratigraphic organisation of fluvial deposits, especially in view of the considerable progress made in this area recently. The only allusion to bedforms concerns Gilbert's discussion of 1914;

sedimentary structures are not mentioned, nor facies relationships in channel and floodplain successions. The reason for this omission may be the author's view that alluvial floodplains rarely have more than a thin veneer of sediment: "There is no cumulative depositing tendency in any specific region of the river's length except its actual outlet into standing water or into a very much slower current". Again, referring to flood stage: "... most rivers sweep their channels clean to expose, though not to direct observation, a flat basement of worn bed-rock; this exposure of rock is part of the broad flattish floor that underlies continuously the flood-plain carpet of alluvium". Contrary to this view, innumerable modern and ancient fluvial successions show that floodplains are commonly depositional landforms, with considerable net accumulation. Another significant topic which is scarcely mentioned is the importance of river studies in engineering practice.

Aside from these shortcomings (of which examples could be multiplied), I found the author's style wordy, repetitive, and replete with philosophical harangues on the virtues of independent thought as opposed to the acceptance of established ideas. Dr. Crickmay is also fond of criticising ill-defined groups, such as "equilibrists", "textbooks", or "accepted theory".

In all honesty, I cannot recommend the first half of this book to anyone, but the latter part is more authoritative, and may be of interest to those concerned with landscape evolution. However, the reader would find a more balanced account of the same topic in the proceedings of a symposium (to which Dr. Crickmay contributed), reviewed in December 1975 *Geotimes*, and to be published shortly by the State University of New York at Binghamton.

MS received January 30, 1976.

Rocks and Minerals Information 1976

*Ontario Division of Mines
Ministry of Natural Resources
Toronto, Ontario M7A 1W3, 31 p., 1976.
Free.*

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This unpretentious yet excellent booklet, revised annually, gives information about those geological maps and reports on the geology of Ontario that are of interest to the general public. It also gives full details of who to write to and how much money to send, as well as providing brief notes on many of the publications listed. It lists not only ODM maps and reports (among which the excellent "Geological Guide Books" are naturally given particular prominence) but also publications of the GSC, Guidebooks of the International Geological Congress, and brochures available (many of them free of charge) from industry and from other government agencies. Sources of rock and mineral specimens are also given, and a list of 73 "rock shops" and 13 mineral clubs in Ontario. Eight "rock hound" magazines and two geological magazines (including *Geoscience Canada*) are also listed.

This is exactly the type of information most frequently sought by school teachers, university students, and amateur mineralogists and geologists. The ODM (and particularly E. B. Freeman of the Geoscience Information Office) have performed a valuable service in producing this booklet - but the job is only half done so long as the public does not know about it. Spreading copies of this booklet around should be the task of every professional geologist in Ontario. Get a few copies and hand them on to those who might be interested!

MS received February 23, 1976.