by means of complex interactions. They guide the reader through a plexus of related processes at varying scales that eventually converge to result in a phosphorite deposit. Global oceanic circulation, local tectonism, changing sea level, evolutionary events, calcium and phosphorus enrichment, biochemical (and perhaps inorganic) precipitation, and reworking of initial deposits all play roles leading to final concentrations in generally organic-rich sediments. The contributory processes must act in concert in order for major phosphorite deposits to form, often contemporaneously with records of onshore aridity. Such deposits, as a result, are unevenly distributed in time and space, resulting in phosphogenic episodes and provinces, both in the Proterozoic and Cambrian and also later.

This work is a major and timely resource for students of nonmetallic mineral deposits, mineral economics, and historical geology. It is likely to remain so for decades to come, and one hopes it will soon be joined by the promised three companion volumes.

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Icy Estuaries

Fjords. Processes and Products. JAMES P. M. SYVITSKI, DAVID C. BURRELL, and JENS M. SKEI. Springer-Verlag, New York, 1987. x, 379 pp., illus. $85.

Much has been written about estuaries, but books about "fjords," deep, high-latitude estuaries that have been evacuated or modified by land-based ice, are few. This volume presents an excellent summary of the geological, physical, chemical, and biological aspects of the complex fjord system, as well as demonstrating the interaction of these aspects.

The authors have done their homework, carefully documenting and supporting the information they present. Their 328 pages of text, containing 216 figures and 20 tables, are supported by an additional 38 pages of references, containing more than 1100 citations. As a convenience for readers, four of the book's nine chapters contain summaries of the symbol notation used.

Since I devote most of my time to assessing needs and priorities in several icy-polar disciplines, I was glad to see that the final chapter of the book carefully identifies problems and projects that need to be resolved in fjord oceanography, fjord biogeochemistry, fjord biology, and fjord geology. Suggestions for a methodology and approaches to answering these questions are also presented.

"Characteristic U-shaped profile of McBeth Fiord, Baffin Island." [From *Fjords*]

The authors identify advanced students, research professionals, and environmental scientists in the earth science and oceanographic communities as their intended audience. The book is divided into three parts: an introduction with two chapters that define the fjord environment; a processes and products section that details the fluvial-deltaic environment, circulation and sediment dynamics, subaqueous slope failure, biotic processes, and biogeochemistry; and an implications and applications section that presents case histories of environmental problems caused by various types of pollutants and points to future fjord research needs. The long-standing involvement of each of the authors in fjord studies is evident in the completeness of the presentation. The only aspects of the book with which I find fault are: the very limited mention and attention paid to Southern Hemisphere fjords (of more than 230 fjords presented in the book, only 14 are south of the equator); the failure to include many references to foreign-language sources on Chilean and Argentinian fjords and the fjords of Antarctica, a consequence of not examining the Southern Hemisphere fjords in detail; the omission of any mention of the recent work by Austin Post and Mark Meier on the factors responsible for the advance and catastrophic retreat of tidewater glaciers; and the fact that the authors barely touched on the south-central Alaskan fjords I study.

Despite its few shortcomings, I like this book very much. It nicely blends information from at least ten different disciplines (biogeochemistry, biology, environmental geology, geomorphology, geophysics, geotechnology, glaciology, hydrology, oceanography, sedimentology) into a readable presentation that can serve as both a reference and textbook. There is a place for this book in all earth sciences libraries.

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Wind Processes

Aeolian Geomorphology. WILLIAM G. NICKLING, Ed. Allen and Unwin, Boston, 1986. xx, 311 pp., illus. $39.95. From a symposium, Guelph, Ontario, Canada, Sept. 1986.

The characteristics of aeolian (wind-formed) landscapes and the processes involved in their development have attracted increasing attention in recent years, as a result of the problem of desertification, the recognition that wind action is a significant process on Mars, and the importance of aeolian sandstones as oil and gas reservoirs. The 16 papers in this volume are not, as the editor admits, fully representative of the state of aeolian research today, but they do show clearly the diversity of approaches to aeolian geomorphology and the variety of disciplines involved.

There is a major emphasis in the volume on studies of aeolian processes, especially the mechanisms of sediment transport by the wind. These latter studies are characterized by a rigorous experimental approach and a sound theoretical basis, continuing a tradition established by R. A. Bagnold. Wind tunnel modeling of processes is an