Desert Landscapes

Geomorphology in Deserts. RONALD U. COOKE and ANDREW WARREN. University of California Press, Berkeley, 1973. x, 374 pp., illus., + index + plates. $15.

Serious interest in the peculiarities of desert landscapes dates from the opening of the American West and found its first synthetic expression in J. Walther's *Gesetz der Wüstenbildung* (1900) and W. M. Davis's conception of the arid geographical cycle (1905). Interest remains unabated, and the literature on eolian processes and, above all, pediments is prodigious. Consequently, Cooke and Warren, in attempting a general survey of desert landforms, soils, and geomorphic processes, have done students of geomorphology a service.

Their rigorous and terse presentation focuses on processes—weathering and pedogenesis, fluvial erosion and deposition, and wind. The efficacy of insolation in weathering is questioned (but the impact of pressure "unloading" is not explored). The treatments of frost and salt weathering are useful. Vertical migration of solubles is discussed, including various duricrusts, with attention to red desert soils (but none to clay mineralogy), pavement formation (by deflation, water sorting, and upward migration of coarse particles), patterned ground development by volume changes (including gilgai, subsurface salt, desiccation cracks, and piping). Slopes, stream channels, alluvial fans, and pediment and playa systems are described in terms of morphometry and observed processes, with discussions of alternative theories of evolution. Finally, there is an exacting, often mathematical treatment of eolian processes and forms.

The basic weakness of the book is epitomized by the absence of a synthetic or concluding chapter, just as each section and chapter lacks any overview or summation of results. Individual segments are excellent, but the beginner will find it difficult to assemble a landscape out of the bits and pieces. The preface calls the concept of parallel desert slope retreat a "march hare," but the text never confronts the issue, and the reader is ultimately left in limbo as to what the authors really think about the nature of composite desert landscape evolution. In their concern to do homage to the "modern," quantitative, process approach, Cooke and Warren remain largely oblivious to the impact of morphoclimatic "shifts" in arid lands, occasionally equating cumulative effects of time and unidirectional processes with the changing processual rates and trends due to climatic change. The significance of historical studies of desert geomorphology lies as much in isolating paleoforms as in establishing denudation chronologies. At fault here is the almost total neglect of the French and German literature (for example, "eolation" is a dead horse in the 1970's), and despite several citations, it is apparent that a standard such as Tricart and Cailleux's *Le Modèle des Régions Sèches* (S.E.D.E.S., Paris, 1969) has not been digested. These flaws, while not marring the technical aspects of *Geomorphology in Deserts*, will circumscribe its usefulness to those seeking a comprehensive and explanatory introduction to a fascinating field.

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Body of Water

North Sea Science. Proceedings of a conference, Aviemore, Scotland, Nov. 1971. EDWARD D. GOLDBERG, Ed. MIT Press, Cambridge, Mass., 1973. xviii, 500 pp., illus. $18.95.

Despite its small size and volume, the North Sea is one of the most important bodies of water in the world. Although it contains only .004 percent of the volume of the world's oceans and adjacent seas, it furnishes 5 percent of the world's supply of seafood. It also supplies large quantities of natural gas, sand, and gravel to surrounding countries and shows promise of large oil reserves. One of its prime continuing roles is as a dumping ground for large quantities of industrial and human wastes.

The risk of conflict among the various uses of the North Sea is increasing rapidly. At present, only the margins of the sea appear to be suffering from major pollution, but the potential for damaging the whole sea must be considered. The North Sea is very shallow. It takes almost two years for its waters to be completely renewed, and it is being subjected to a rapid increase in utilization, particularly for waste disposal.

Facts and a free exchange of data are needed to provide grounds for unemotional decisions by which a practical middle course between unrealistic preservation and careless exploitation of the North Sea can be charted. To determine current conditions and to recommend research that needs to be done a North Sea Science Conference was organized by NATO. The conference, as documented in these proceedings, has succeeded very well indeed in both its primary assignments.

The editor's preface and introduction clearly outline the importance of the North Sea to man and the needs for further study and exchange of information. Immediately following the editor's remarks are 12 pages of specific recommendations for research. The most important subjects for study are listed for use in setting priorities. Seven following sections, with a total of 23 papers, cover the general subjects of Physical Oceanography, Geology, Meteorology, Biology, Chemistry, Living Resources, and Non-Living Resources. The volume ends with the first attempt to provide a series of resource maps of the North Sea.

The book is valuable not only as a guide to future priorities. With its extensive, up-to-date list of references covering most of the subjects of interest concerning the North Sea it provides the long-needed reference book on the subject. It will be of use to national and international governmental agencies, research workers, and industry. It also may be used as a text for graduate seminars.

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Economics and Bilharzia

Disease and Economic Development. The Impact of Parasitic Diseases in St. Lucia. BURTON A. WEISBROD, RALPH L. ANDREANO, ROBERT E. BALDWIN, ERWIN H. EPSTEIN, and ALLEN C. KELLEY, with the assistance of Thomas W. Helminiak. University of Wisconsin Press, Madison, 1973. viii, 218 pp., illus. $12.50.

Schistosomiasis, alias bilharzia, is a water-borne disease of complicated epidemiology and endemic in large parts of the tropical world. Its precise effects on human health are a matter of some controversy, but at least there is general agreement that it usually causes sub-