likely to have done so with William Gilbert, whose researches on magnetism were "more complete, more scientific and more intellectually stimulative" (p. 44) than anything achieved by Chinese investigators.

In this case, Qian's background as a physicist provides him with a valuable perspective on Needham's theory of how a Chinese analogue of the Scientific Revolution might have occurred. However, Qian's focusing so narrowly on the issue of scientific revolutions and progress makes it difficult for him to visualize Chinese science in the context of the culture and society in which it arose. Chinese scientists of premodern times may not have split the atom, recombined DNA, or formulated the anthropic principle. But the science and technology they developed were in many respects well adapted to Chinese civilization, perhaps more so than modern science would have been. They provided a unified worldview, a coherent and profound explanation of man's place in the cosmos, a technology generally appropriate for the social and economic needs of the time, and even a basis for the conduct of human relations. Can the same be said for present-day science?

JOHN B. HENDERSON
Department of History, Louisiana State University, Baton Rouge 70803

The Australian Coastline

Coastal Geomorphology in Australia. B. G. THOM, Ed. Academic Press, Orlando, Fla., 1984. xvi, 349 pp., illus. $45.

Australia has some 30,000 kilometers of coastline containing a diversity of environments, including expanses of barrier beaches and dunes, estuaries in all stages of evolution, the sheltered coast behind the Great Barrier Reef, and shorelines fringed by mangroves. This natural laboratory has attracted coastal scientists throughout the years, but in the last decade there has been an explosion, a renaissance, of research on the Australian coast. The major themes of this research are reflected in this volume, which contains contributions by many of the leaders in that research.

Australian contributions have been important to studies of sea level, Australia in the 1950's and '60's being the center for the so-called "Indo-Pacific school," which maintained that sea level had been 2 to 4 meters higher within the past few thousand years. The last decade has seen numerous Australia-wide studies of relative sea-level change, and the results of these are evident in virtually every paper in this volume. It is now apparent that there has been a local and regional variability in sea-level histories governed by land-level changes, but for the most part the results indicate a rapid rise in sea level to about 7000 years ago followed by a nearly constant level with respect to the land. This pattern contrasts with observations in North America and Europe, the sources that previously have dominated our models for coastal evolution, where the rise in sea level with respect to the land has continued up to the present (in part owing to land subsidence).

This difference in sea-level history has produced a contrasting coastal response in Australia, landward-migrating barrier islands being a rarity, for example. The pattern instead is one of a seaward progradation of the shoreline whenever adequate sources of beach-forming sediments are available. This pattern is especially apparent from the several papers that report on "morphostratigraphic" studies that combine the observed morphology of the present-day coast with the stratigraphy of the underlying sediments, which has been determined by drilling. For example, a chapter by Grindrod and Rhodes reports on a mangrove-fringed coast where drilling, carbon-14 dating, and pollen analysis document in detail a sequence of deposits that result from the sea-level transgression followed by a nearly horizontal seaward advance of the deposits during the time the sea level has remained constant. In a similar way, in an investigation of the origin of a chenier plain in northern Australia by Chappell and Grindrod the nearly constant sea level permitted the researchers to focus on the role of mud availability versus the production of the shells that form the cheniers. This morphostratigraphic approach is also followed in papers on the origin and evolution of estuaries (Roy), episodic dune formation (Pye and Bowman), barrier-island development (Thom), and the longer-term Quaternary history of sea level as revealed in coastal-plain beach ridges in South Australia (Schwebel) and Tasmania (Bowden and Colhoun).

Researchers investigating the response of coral reefs have achieved some of the best control documenting changes in sea level. Marshall and Davies summarize the results of a reef-drilling program, 69 holes that penetrate from 6 to 76 meters, the "stratigraphy" and numerous carbon-14 dates revealing the reestablishment of the reefs under the rising sea level. Hopley explores the concept of a "high energy window," a period during which reef growth could not keep pace with the rising sea and so did not protect the adjacent coast from ocean waves. Hopley compares rates of reef growth with rates of sea-level rise and reviews the evidence from the coast itself in the form of boulder beaches and other features that indicate higher energy levels between 8500 and 6000 years ago.

The "process studies" approach to Australian coastal research, as it is defined by Thom in his introduction, is represented chiefly in a chapter by Short and Wright, which summarizes the authors' numerous contributions over the past decade on the subject of the role played by wave energy level and beach-sediment grain size in controlling the nature of beach processes and geomorphic response. In this useful paper, the authors synthesize their results from several beaches into a process-controlled model that should be applicable over the full ranges of normally encountered wave and sediment conditions.

This carefully edited and handsomely bound volume provides a good summary of the coastal research that has been under way in Australia during the past decade, with most of the chapters reporting on studies that illustrate this research but have not been published previously. The principal value of the book will be to researchers interested in Holocene sea-level changes, geologists interested in coastal sediment facies, and any coastal scientist interested in beach processes, dunes, estuaries, and coral reefs.

PAUL D. KOMAR
College of Oceanography, Oregon State University, Corvallis 97331

Stigma

Social Stigma. The Psychology of Marked Relationships. EDWARD E. JONES, AMERIGO FARINA, ALBERT H. HASTORF, HAZEL MARKUS, DALE T. MILLER, and ROBERT A. SCOTT, with a chapter by Rita de S. French. Freeman, New York, 1984. x, 347 pp., illus. $23.95; paper, $14.95. A Series of Books in Psychology.

Twenty-two years ago, the late Erving Goffman wrote the classic *Stigma*. In it, he combined telling anecdotes with keen observation to demonstrate the commonalities associated with such diverse conditions as physical handicap, mental illness, and race. Goffman's breezy and insightful approach stimulated research. But it did not offer a tidy, systematic theory.