on evolutionary processes, followed by a classification of the vertebrates and an index. The book is well edited and is virtually free of typographical errors. There is even at least one joke (p. 487). The illustrations are good, copious, and apposite, although I wish that some drawn by the stipple technique could have done more justice to foramina, to sutures between bones, and to details of dental patterns. Translucence of the pages is occasionally an annoyance: illustrations and text sometimes show through and can be confusing.

Vertebrate Paleontology and Evolution is a worthy successor to Romer's textbook. We need books like Carroll's in order to keep track of an explosively expanding subject and to serve as introductory texts for courses on vertebrate evolution.

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Oceanic Island Evolution

Islands. H. W. MENARD. Scientific American Books, New York, 1987. xvi, 230 pp., illus. $32.95. Scientific American Library, vol. 17.

This book, H. W. Menard's last to be published, presents a lifetime of observations and research on oceanic islands, including their discovery and exploration, their geologic, economic, and political histories, and the adaptation of their plants and animals to life on (as Menard terms it) "a down escalator." The book clearly departs from a dispassionate view of the subject, with frequent references to the impact of humans (Polynesian and European) on the idyllic island setting during periods ranging from the time of first population through World War II and its destructive battles to the recent era of selective annihilation by nuclear testing. Menard was ahead of his time (or perhaps old-fashioned) in believing that scientists need a social conscience.

The emphasis of the book is on the subject that Menard knew best: the geologic evolution of oceanic islands and the theories about why it occurred as it did. He presents many topics central to earth science, such as the drifting of plates, subduction of oceanic lithosphere, and eustatic changes in sea level, in terms accessible to nonspecialists before explaining their relevance to the study of oceanic islands. The point is well made that islands are major departures from the otherwise fairly uniform process of oceanic crust and lithosphere production and therefore may figure prominently in unexplained phenomena such as the segmentation of downgoing slabs and the formation of accreted terranes. Particular attention is paid to vertical motions of islands and the various processes contributing to them that Menard documented, such as cooling of the oceanic lithosphere, thermal rejuvenation of midplate swells, erosion and reef development, and flexural warping of the sea floor. I noted only a few inaccurate statements in the book: for example, the San Andreas Fault is described (p. 33) as a ridge-ridge transform instead of a ridge-transform transform (since the Mendocino Ridge is actually a transform fault), and one of the figure captions indicates that the oceanic crust (rather than *lithosphere*) thickens with age.

Most readers will appreciate this book for its breathtaking photographs, lavish illustrations, absence of jargon, and lively narrative style. The text is punctuated by Menard's wit, with its tendency toward understatement. For example, in explaining how the European discovery of various island groups was influenced by the distribution of the trade winds, he writes of Magellan: "After beating his way through the straits that bear his name, it could hardly have escaped his attention that he was in the wrong latitude to sail west" (p. 8).

But in my opinion, the book's principal value stems from the author's ability to distinguish facts based on observation from currently accepted models and untested hypotheses. It represents a unique resource of new ideas concerning geologic evolution of the ocean basins from an island perspective as well as of suggestions about where to test them. It is a book that only Menard, whose encyclopedic knowledge of the oceans inspired so much of the work of his students and colleagues, could have written. For those who never had the opportunity to work with him, and those who miss that interaction now, this book carries on the Menard tradition.

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Microbial Metabolism

Phosphate Metabolism and Cellular Regulation in Microorganisms. ANNAMARIA TORRIANI-GORINI, FRANK G. ROTHMAN, SIMON SILVER, ANDREW WRIGHT, and EZRA YAGIL, Eds. American Society for Microbiology, Washington, DC, 1987. xii, 316 pp., illus. $49; to ASM members, $39. From a symposium, Concarneau, France, 1986.

Unlike many volumes of symposium proceedings, this book reads as an engrossing whole. The timing of the symposium from which it derives was adroit—a number of areas in the large and active field of phosphate metabolism are now on the verge of major advances; the symposium was well planned, with an outstanding selection of

"Lord Howe Island, east of Australia, sits well off center on its shelf. The isolated pinnacle in the distance is Ball's Pyramid." [Promotion Australia; from *Islands*]