

REVIEWS

THE DARK SIDE OF THE EARTH, by Robert Muir Wood. Published by George Allen & Unwin, London, 1985, x + 246 pp., illus., hard cover, \$19.95

The author reviews geological thought (in the broad context of the Earth as a whole) from the emergence of geology (about 1800) to the present. He paints with a bold brush, imputing to changing concepts over eighteen decades a series of Kuhnian paradigms rooted in the conflicts and competition between geologists and physicists for theoretical supremacy and leading to a revolutionary "science of the whole Earth", an unified Theory of the Earth known as Plate Tectonics.

Though the text is well written and polished, he fails to prove his thesis, "almost a century of silence" leading to "an eruption of activity" at the "culmination of the 1960s." The later history of conceptual geology is not catastrophic as many writers such as Wood would have us believe. The "Revolution" of 1965 is the culmination of decades of devoted research by thousands of geologists and geophysicists contributing to an orderly progression (dare I call it uniformitarian? - but NOT steady state) leading inevitably to Plate Tectonics. The pages of this scholarly volume confirm the unbroken progression; there was no hiatus.

GEOLOGY OF NATIONAL PARKS, third edition, by Ann G. Harris and Esther Tuttle. Published by Kendall/Hunt Publishing Company, Dubuque, Iowa, 1984, viii + 554 pp., illus., paper bound, \$27.95

This, like previous versions, is a veritable text book of physical and historical geology, illustrated by the National Parks. The volume is arranged in six parts based on fundamental dynamic geology, e. g., stream erosion and weathering, glaciers and glacial processes, igneous activity and vulcanism, mountain building and uplift, ground-water action, and the spectacular "last" frontier of geology, the seven new national parks in Alaska.

At this time, there are forty-eight Na-

tional Parks; twelve are new since the previous edition of this work. Each is described and discussed in clear language designed to be intelligible to readers not schooled in the earth sciences as well as for trained geologists. Some, especially the more famed and accessible ones, are presented in detail; others less well-known and not as thoroughly studied are less fully described. This volume is well done and most useful.

MIGRATION OF SEISMIC DATA, edited by Gerald H. F. Gardner; Geophysics Reprint Series, No. 4 (series editor Franklyn K. Levin). Published by Society of Exploration Geophysicists, Tulsa, Oklahoma, 1985, viii + 462 pp., illus., paperbound, \$19.00

The thirty-three papers selected for this reprint volume sample the literature on migration between 1937 and 1984, arranged in chronological order to demonstrate the evolution of migration studies from the simple ruler-and-compass constructions used in earlier years to the present-day computer algorithms for depth migration in three dimensions.

The interpretative value of migration was recognized early in the 1920's, when single fold reflection profiles were used to pick two-way traveltimes for echoes from the interfaces between formations. Circular arcs were drawn with their centers at shot-receiver midpoints on the ground and radii equivalent to half the product of the traveltimes and the velocity of propagation in the subject lithology. Ideally, the circular arcs would define the interface, but time shifts in the measurements and velocity anomalies in the formation being traversed would cause variation in the radii. The interpreter of such data would then make a geologically reasonable "fit" from the construction. This simple construction is the basis for migration which is the summation of the wavefronts constructed from each sample value. The papers reprinted here trace the development of migration evaluation from simple graphical procedures to the modern computer-based techniques.

--H.C.S.