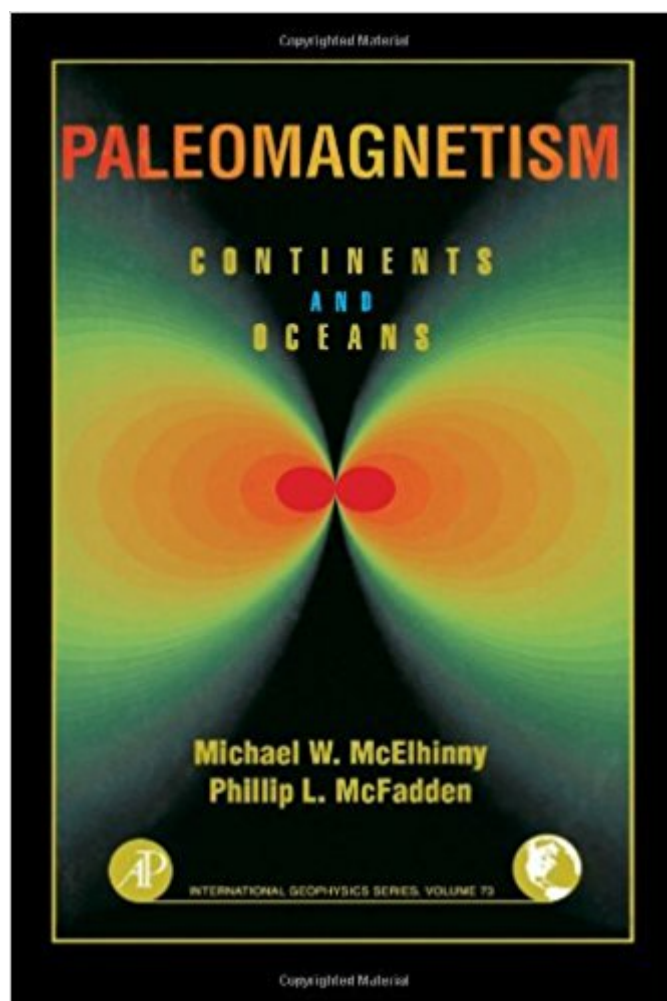


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# Paleomagnetism, Volume 73, Second Edition: Continents And Oceans (International Geophysics)



## Synopsis

Paleomagnetism is the study of the fossil magnetism in rocks. It has been paramount in determining that the continents have drifted over the surface of the Earth throughout geological time. The fossil magnetism preserved in the ocean floor has demonstrated how continental drift takes place through the process of sea-floor spreading. The methods and techniques used in paleomagnetic studies of continental rocks and of the ocean floor are described and then applied to determining horizontal movements of the Earth's crust over geological time. An up-to-date review of global paleomagnetic data enables 1000 million years of Earth history to be summarized in terms of the drift of the major crustal blocks over the surface of the Earth. The first edition of McElhinny's book was heralded as a "classic and definitive text." It thoroughly discussed the theory of geomagnetism, the geologic reversals of the Earth's magnetic field, and the shifting of magnetic poles. In the 25 years since the highly successful first edition of *Palaeomagnetism and Plate Tectonics* (Cambridge, 1973) the many advances in the concepts, methodology, and insights into paleomagnetism warrant this new treatment. This completely updated and revised edition of *Paleomagnetism: Continents and Oceans* will be a welcome resource for a broad audience of earth scientists as well as laypeople curious about magnetism, paleogeography, geology, and plate tectonics. Because the book is intended for a wide audience of geologists, geophysicists, and oceanographers, it balances the mathematical and descriptive aspects of each topic. Details the theory and methodology of rock magnetism, with particular emphasis on interpreting crustal movements from continental and oceanic measurements. Outlines Earth history for the past 1000 million years, from the Rodinia super-continent through its breakup and the formation of Gondwana to the formation and breakup of Pangea and the amalgamation of Eurasia. Provides a comprehensive treatment of oceanic paleomagnetism. Provides a set of color paleogeographic maps covering the past 250 million years. Written by two internationally recognized experts in the field.

## Book Information

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## Customer Reviews

"Overall, there are many impressive things about this book. The concise writing style, objective assessment of data, rigorous numerical analysis, and the sheer breadth of material covered all combine to convey an overwhelming sense of authority. However, what pleased me most was the way in which it grew from the nuts and bolts of geomagnetic and paleomagnetic measurements and analyses, to finish with something approaching a unified theory of a billion years of geological history. In the end, I was enthralled!" --Brad Pillans, Research School of Earth Sciences, Australian National University, Canberra "McElhinny and McFadden's work follows up the excellent volume, *The Magnetic Field of the Earth: Paleomagnetism, the Core, and the Deep Mantle*, by Ronald T. Merrill, McElhinny, and McFadden (CH, Feb '97), which necessitates some overlap. It represents an excellent effort by the authors... It is probably the most up-to-date work available paleomagnetism. ...the best book for teaching paleomagnetism. Upper-division undergraduates and up." --M.S. Field, U.S. Environmental Protection Agency; CHOICE MAGAZINE, 2000 "The book focuses more on natural aspects of paleomagnetism and its importance for geology. Some fields, e.g., statistical methods in paleomagnetism and paleomagnetism of the oceanic floor are covered extensively, showing current state-of-the-art to the extent hardly met in other geophysical books. This book also has its own well balanced scientific philosophy which is based on well selected, firm observations." --Pure and Applied Geophysics, 158, 2001

*Paleomagnetism: Continents and Oceans* is an up-to-date synthesis and analysis of global paleomagnetic data for the major crustal blocks over the past 1000 million years. The volume will be of interest to geologists, geophysicists, and oceanographers and can be used as the basis for a lecture course on paleomagnetism. To make the text accessible as possible to students, the mathematics has been kept to a minimum. It can be considered as a companion volume to *The Magnetic Field of the Earth*, published in this series in 1996. KEY FEATURES\* Details the theory and methodology of rock magnetism, with particular emphasis on interpreting crustal movements from continental and oceanic measurements.\* Outlines Earth history for the past 1000 million years,

from the Rodinia supercontinent through its breakup and the formation of Gondwana to the formation and breakup of Pangea and the amalgamation of Eurasia.\*Provides a comprehensive treatment of oceanic paleomagnetism.\* Provides a set of color paleogeographic maps covering the past 250 million years.\* Written by two internationally recognized experts in the field.Michael W. McElhinny is a Fellow of the Australian Academy of Science and recipient of its Mawson Medal, a Fellow of the American Geophysical Union and recipient of its Fleming Medal, and an Honorary Fellow of the Geological Society of America.Phillip L. McFadden is Chief Scientist at the Australian Geological Survey Organisation, a Fellow of the Australian Academy of Science, Fellow of the American Geophysical Union, and recipient of the Jubilee Medal of the Geological Society of South Africa.

great book. Just what I needed. Some parts hard to understand, but mostly was good, and easy to understand. Shipped fast and is in excellent shape.

There was a desperate need for a book pitched at the general audience -- until now.The 1st edition of McElhinny's book was heralded as a "classic and definitive text". It thoroughly discussed the theory of geomagnetism, the geologic reversals of the Earth's magnetic field, and the shifting of magnetic poles. In the 26 years since the highly successful first edition of *Palaeomagnetism and Plate Tectonics* (Cambridge, 1973) the many advances in the concepts, methodology, and insights into paleomagnetism warrant this new treatment. This completely updated and revised edition will be a welcome resource for a broad audience of earth scientists as well as laypeople curious about magnetism, paleogeography, geology, and plate tectonics.I particularly enjoyed the set of Chris Scotese's color paleogeographic maps covering the past 250 million years.

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