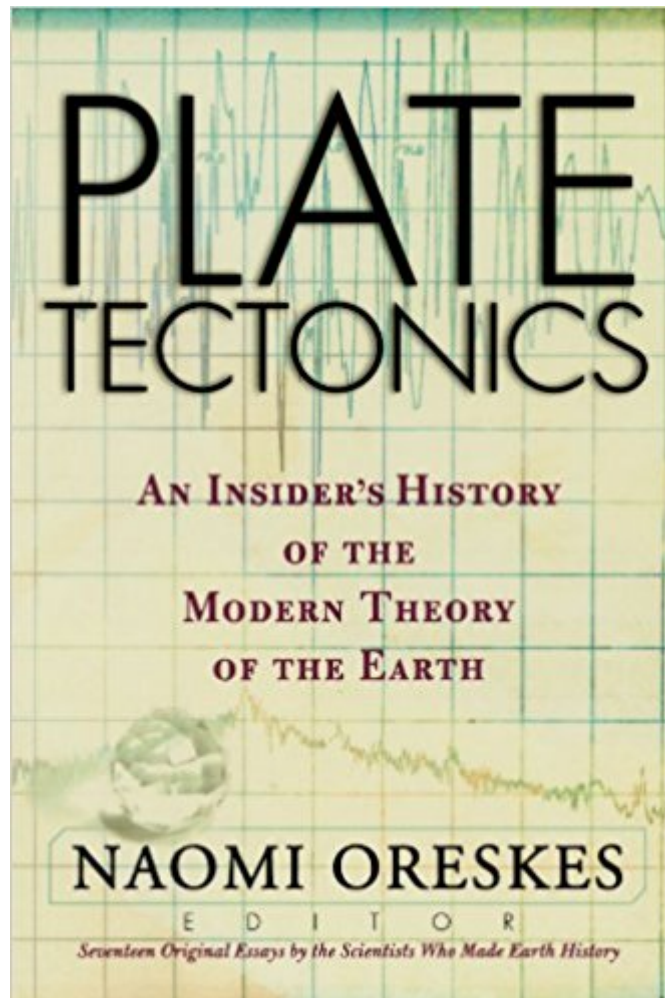


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Plate Tectonics: An Insider's History Of The Modern Theory Of The Earth



Synopsis

Can anyone today imagine the earth without its puzzle-piece construction of plate tectonics? The very term, "plate tectonics," coined only thirty-five years ago, is now part of the vernacular, part of everyone's understanding of the way the earth works. The theory, research, data collection, and analysis that came together in the late 1960's to constitute plate tectonics is one of the great scientific breakthroughs of the 20th century. Scholarly books have been written about tectonics, but none by the key scientists-players themselves. In *Plate Tectonics*, editor Naomi Oreskes has assembled those scientists who played crucial roles in developing the theory to tell - for the first time, and in their own words - the stories of their involvement in the extraordinary confirmation of the theory. The book opens with an overview of the history of plate tectonics, including in-context definitions of the key terms that are discussed throughout the book. Oreskes explains how the forerunners of the theory, Wegener and du Toit, raised questions that were finally answered thirty years later, and how scientists working at the key academic institutions - Cambridge and Princeton Universities, Columbia University's Lamont Doherty Geological Observatory, and the University of California-San Diego's Scripps Institution of Oceanography - competed and collaborated until the theory coalesced.

Book Information

Paperback: 448 pages

Publisher: Westview Press (February 4, 2003)

Language: English

ISBN-10: 0813341329

ISBN-13: 978-0813341323

Product Dimensions: 6 x 1 x 9 inches

Shipping Weight: 1.7 pounds (View shipping rates and policies)

Average Customer Review: 4.5 out of 5 stars 12 customer reviews

Best Sellers Rank: #1,691,865 in Books (See Top 100 in Books) #18 in Books > Science & Math > Earth Sciences > Geology > Plate Tectonics #365 in Books > Science & Math > Earth Sciences > Geophysics #3815 in Books > Textbooks > Science & Mathematics > Earth Sciences

Customer Reviews

Widely dismissed as crank science in earlier generations, the theory of plate tectonics--which explains the movement of continents in geological time, as well as the formation of the earth's major

features--is now largely accepted as fact within the scientific community. Drawing on the memories of major theoreticians in the field, scientist and historian Naomi Oreskes offers a vivid history of just how that transformation occurred. She describes the early quest on the part of James Dana, Alfred Wegner, J. H. Hodgson, and other scientists to account for the mechanics of earthquakes and certain puzzling features of geomorphology, a quest widened and strengthened by the work of deep-ocean explorers who were able, beginning in the 1960s, to study tectonics at work far below the surface of the world's waters. Such advances, as pioneer Peter Molnar and others explain, did not immediately change the way geologists went about their work, but they quickly went on to revolutionize science--and then, as such things do, to become orthodox. A useful reference for students of geology and the history of science, this book is also easily accessible to nonspecialists. --Gregory McNamee --This text refers to an out of print or unavailable edition of this title.

Readers who went to school before the late 1960s will probably remember that their science teachers couldn't explain why South America and Africa seemed to fit together like pieces in a jigsaw puzzle. It was not until 1968 that the theory of plate tectonics was formulated and quickly accepted by scientists around the world. This collection of 18 essays is written by the researchers (such as Frederick J. Vine and Lawrence Morley) who made the discoveries that established the phenomenon of plate tectonics. While the idea of "continental drift" had been proposed as early as 1596 and reappeared at various times throughout history, scientists had always rejected it. Then in the late 1950s and '60s, geologists discovered great rifts in the undersea mountain ranges that girdle the ocean, as well as regular patterns of alternating magnetic polarities in the ocean floor. These and other findings confirmed continental drift and explained the existence of volcanic islands and even earthquakes en masse. Readers with little or no background in geology will be able to follow these well-written and generally jargon-free personal accounts, but the book will appeal most to hard-core science buffs and budding geophysicists. Copyright 2002 Cahners Business Information, Inc. --This text refers to an out of print or unavailable edition of this title.

This book is way too technical for the layman. I had an introductory class in geology in college which did not address plate tectonics and I had difficulty in keeping up with the terminology in this book. I was able to manage a rudimentary understanding of this book. Here is what I got out of this book. Plate tectonics on the oceanic mantle is basically the movement of basalt rock from the mantle to the surface at rifting valleys extruding molten rock that shoves upper rock aside in the process creates a bulge. As the oceanic rift builds up, gravity starts the process of moving the oceanic

mantle on each side of the rift. Another force acting on the oceanic mantle are convection currents from the molten interior that acts on the bottom of the oceanic mantle pushing away from rifting valley in each direction. The friction between oceanic mantle and the molten mantle causes the oceanic mantle to move in the same direction that gravity is pushing the oceanic mantle. As the oceanic mantle travels further away from the rifting valley, it becomes level in which case, gravity is not contributing to the motion of the oceanic mantle. Now, I don't clearly understand the extrusion of the molten rock at the rift produces any forces, if it did, it would probably be minor. Now as the oceanic mantle is being pushed by gravity near the rifting bulge and the convection currents, it finally reaches a continental plate in such case the oceanic mantle is subducted under the continental plate in which gravity now comes back into play pulling the oceanic mantle back into the interior of liquid mantle. With the forces of gravity and convection currents along with immense amount of time, continents drift, tectonic plates grind against each other along with being subducted and Earth will change causing changes in environment along with the changes in life. We are the products of this continental drifting.

Bought this book on the basis of rave reviews but found it in part disappointing. In early text an illustration is repeated three times but barely used in adjoining articles. The wonderful results of the Eltanin-19 are cited several times, but there is no map. Some illustrations are presented, obviously from a previous article, at too small a scale to be readable, and some refer to another figure that isn't there. Mixed reviews as to the articles, though some are outstandingly clear and certainly the principal players are there. I'm a geologist and long-time map addict, hence my views may be biased! And I was introduced to drift in a college course by a wonderful teacher in 1942 and have followed the development of PT ever since with great fascination - from the middle of the continent.

Exciting atmosphere in research labs are well reflected. Last chapter describing current status of geology and related field is very interesting with some author's concern in future.

I really enjoyed the book, it gives you the view the scientific articles don't give, I love the personal notes, the views of the scientists that wrote the different chapters, and the insights on their personalities and character which the scientific articles always are void of. You learn things about plate tectonics that are not in the books and makes you remember what is good science and how it is done. A must for any earth science student, but also for any science lecturer.

Wonderful book! The first person accounts of the scientists involved in the validation of Wegener's ideas were memorable and interesting. Great way to humanize a fantastic time in science!

Accounts written by the individuals directly involved in the generation of a new way of looking at the earth. The authors present a clear picture, when taken together, of the various measurements, evidence, and intellectual efforts that went into the discovery that the surface of the earth is continually changing, and how.

I initially read this book from the public library and liked it so well, I decided to buy it for my technical library. It is an excellent history of how our understanding of plate tectonics developed and the tremendous contributions made by the scientists who worked on the various aspects of it.

Scientific America published the first article on Plates that ever read. Sorry I did not keep that issue. The article tracked the plates from their origin as Gondwanaland (forgive my spelling as I was looking for updated info and spelling) and their movement into the present positions. However it is an interesting book especially the connection to weather. Thanks. wnjensen@tiac.net

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