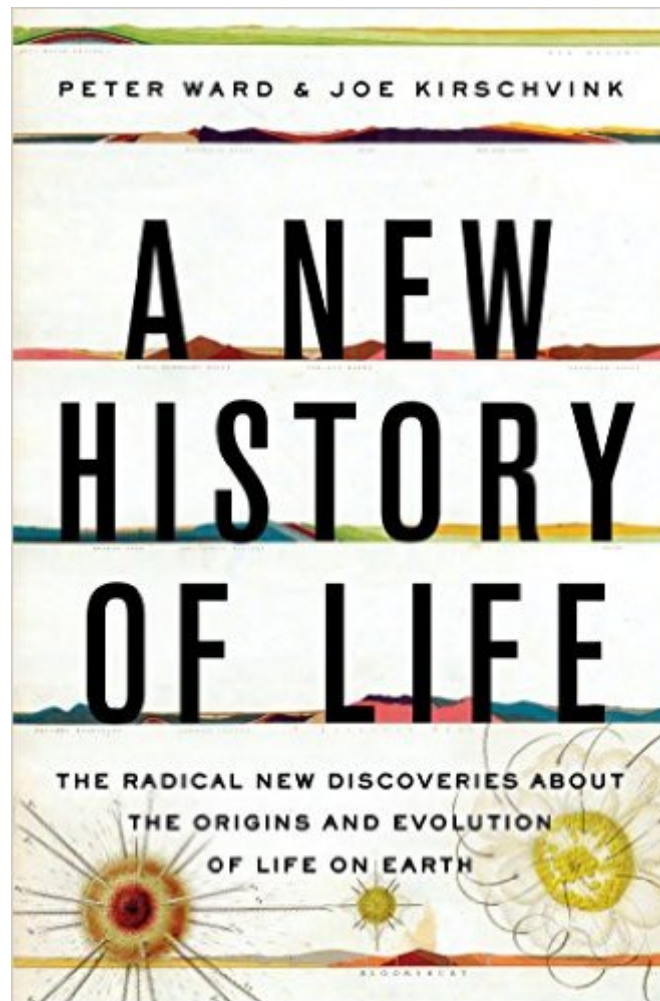


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A New History Of Life: The Radical New Discoveries About The Origins And Evolution Of Life On Earth



Synopsis

Charles Darwin's theories, first published more than 150 years ago, still set the paradigm of how we understand the evolution of life--but scientific advances of recent decades have radically altered that understanding. In fact the currently accepted history of life on Earth is flawed and out of date. Now two pioneering scientists, one already an award-winning popular author, deliver an eye-opening narrative that synthesizes a generation's worth of insights from new research. Writing with zest, humor, and clarity, Ward and Kirschvink show that many of our long-held beliefs about the history of life are wrong. Three central themes emerge from the narrative. First, the development of life was not a stately, gradual process: Catastrophe, argue Ward and Kirschvink, shaped life's history more than all other forces combined--from notorious events like the sudden extinction of dinosaurs to recently discovered ones like "Snowball Earth" and the "Great Oxygenation Event." One startling possibility: that life arrived on Earth from Mars. Second, life consists of carbon, but three other molecules have determined how it evolved: oxygen, carbon dioxide, and hydrogen sulfide are carbon's silent partners. Third, ever since Darwin we have thought of evolution in terms of species. Yet it is the evolution of ecosystems--from deep-ocean vents to rainforests--that has formed the living world as we know it. Drawing on their years of experience in paleontology, biology, chemistry, and astrobiology, Ward and Kirschvink tell a story of life on Earth that is at once too fabulous to imagine and too familiar to dismiss. And in a provocative coda, they assemble discoveries from the latest cutting-edge research to imagine how the history of life might unfold deep into the future.

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Customer Reviews

On the positive side, this book has some fascinating, detailed and up-to-date information about the evolution of life on earth. The authors focus on the environment as opposed to the growth and development of taxonomic hierarchy. Astronomical, geophysical, climatic and biological processes create an environment, and species proliferate to fill niches. In many cases, it is primarily biological processes that drive the climate change that leads to the next round of destruction and innovation. Particular attention is paid to lags in the process, biological innovations that remain rare for millions of years before conditions arise to support their explosive expansions; and niches that went unfilled for millions of years. Despite covering billions of years, the history of life itself occupies only a quarter or less of the book. The other material is only tangentially related, and is poorly organized and intrusive. I have no idea why there is so much on astrobiology, except that it is a specialty of one of the authors. I understand that there may someday be links between life and climate on one hand, and conditions on non-Earth planets on the other; and also between events on other planets and the origin of life on Earth. But not today. Today it is a mix of highly technical material not germane to what we know about the history of life on Earth, and some pretty wild speculation. Another focus of a lot of pages is the history of fossil hunting and other field investigation of the history of life, especially with respect to the oldest finds. Relegated to a single chapter, this could be interesting for specialists and historians, and skipped by the rest of us. But it is inserted more or less at random throughout the text.

The authors, Peter Ward, a professor of biology and earth & space sciences, and Joe Kirschvink, a professor of geobiology, get high marks for presenting an account of science at work, with competing interpretations and theories, explanations of just what is measured and how it is interpreted— in other words the gory details of how science actually works. Their topic— the geological, biological, chemical and physical history of the evolution of the earth and life upon it— is of great interest to everyone. The material presented should be understandable by any serious reader, but a great deal of effort will be required to remember the plethora of categories and dates and causes for this and that from chapter to chapter. A summary chart of the names and times of the periods of geological time and for mass extinctions and their causes, and the major events that happened within each geological period would have been helpful. I made such a chart, which unfortunately does not format on , to help myself and others who lack this familiarity. I would also fault the authors for cluttering the book with unnecessary details about which scientist working for which university discovered this or believes that. The necessary technical details of how fossils are dated, how the carbon cycles work, etc. are well-described, but could be better highlighted and

indexed for the continual reference that will be necessary by readerâ€™s unfamiliar with the subjects. However, the wealth of information contained in the book makes it well worth reading. The first question to be addressed in a history of life is what do we mean by life? This has been dealt with by philosophers since time in memoriam, but this is a science book and more precise definitions are needed.

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