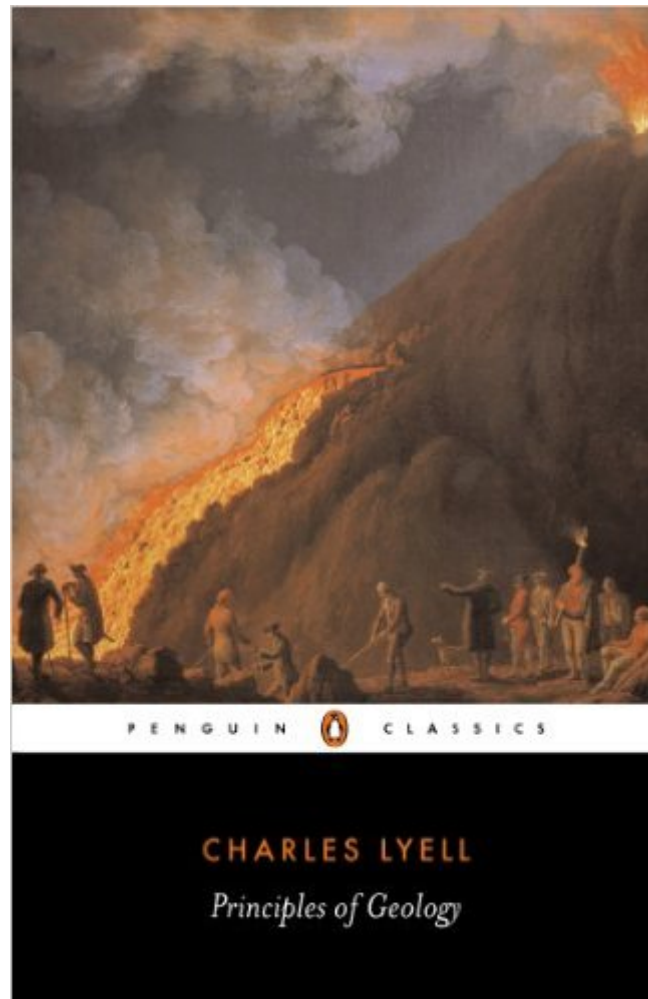


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# Principles Of Geology (Penguin Classics)



## Synopsis

One of the key works in the nineteenth-century battle between science and Scripture Charles Lyell's *Principles of Geology* (1830-33) sought to explain the geological state of the modern Earth by considering the long-term effects of observable natural phenomena. Written with clarity and a dazzling intellectual passion, it is both a seminal work of modern geology and a compelling precursor to Darwinism, exploring the evidence for radical changes in climate and geography across the ages and speculating on the progressive development of life. A profound influence on Darwin, *Principles of Geology* also captured the imagination of contemporaries such as Melville, Emerson, Tennyson and George Eliot, transforming science with its depiction of the powerful forces that shape the natural world. For more than seventy years, Penguin has been the leading publisher of classic literature in the English-speaking world. With more than 1,700 titles, Penguin Classics represents a global bookshelf of the best works throughout history and across genres and disciplines. Readers trust the series to provide authoritative texts enhanced by introductions and notes by distinguished scholars and contemporary authors, as well as up-to-date translations by award-winning translators.

## Book Information

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## Customer Reviews

Lyell's contribution to science is most often reduced to a bullet point in a list titled "Influences on Darwin". In fact, Lyell stands as a bridge roughly halfway between Newton and Darwin. Call him, if you will, the missing link. But it seems a funny thing happens when you contribute to one of the

greatest breakthroughs (evolution) in the history of thought: your work is only seen in relation to its intellectual cousin and, thus, much of the heart of your contribution is overlooked. This might even be expected, but what is a little more surprising is that even those Lyellian insights of major importance for Darwin never make it into the bullet point.\* Lyell 1830: deep time, gradualism, 'present key to past' A variety of scientists, including Lyell's (and Darwin's) forerunner Hutton, were already discussing gradualist change over deep time spans, by the time Lyell came on the scene. Lyell presented more empirical evidence than his predecessors -- an unabridged copy of 'Principles' is a hefty package. You might never get through it unless you're stuck on a sailing ship for three years. And, at least as importantly as the extensive cataloging of evidence, Lyell did a wonderful job at articulating the reasoning behind a different kind of science. Much of the discourse on Earth history before Hutton and Lyell was basically either Biblical literalism or unrestrained fancy: both kinds of "cosmogony" worked with an understanding that prehistoric Earth operated on "principles" very different from those at work presently. In consequence, anything went in making up stories about the past. Lyell argued that, instead, scientists needed to restrict themselves to testable hypotheses.

It was on reading Darwin's *The Voyage of the Beagle* that I became aware of Charles Lyell. Darwin went to the trouble (in the 1830's) of having the volumes of *Principles of Geology* sent out to him in South America as they were published. Lyell's seminal importance was hammered home when Darwin in *The Origin Of Species*, could only advance his ideas thanks to Charles Lyell's insights. In this volume we are treated to Lyell's razor-sharp intellect cutting through prevailing humbug to construct an amazingly accurate picture of the history of the earth's crust. Above all he challenged (with all due respect) religious orthodoxy of a Creation in recent times. Lyell also takes up and successively demolishes many of the erroneous, flabby-thinking, and sometimes cranky theories put forward by various researchers in the field. Lyell's argument for the immense antiquity of the earth is persuasive and provided the foundation for Darwin's argument for evolution, which required immense periods of time to work. He points out how, as rocks get more ancient, so the proportion of extinct marine creatures increases. This was the second insight to inspire Darwin: that in the history of the earth, most species that have ever lived have become extinct. Lyell struggled with the notion that species could die off and others "be called into existence", yet he had the courage to follow his logic to the correct conclusion.

Charles Lyell (1797-1875) was a British geologist, developer and popularizer of the notion of

geological Uniformitarianism, as well as a strong influence on Charles Darwin. He also wrote *The Antiquity Of Man*. This book was written between 1830-1833, and was subtitled, "Being an Attempt to Explain the Former Changes of the Earth's Surface, by Reference to Causes Now in Operation." Uniformitarianism is frequently summarized with the statement, "The present is the key to the past," but Lyell never makes this statement (it came from James Hutton). Lyell's work is an extension of the earlier work of James Hutton and John Playfair. Perhaps the most striking thing to the modern reader of Lyell's book is the degree to which topics other than geology are covered (it contains such chapters as, "Cosmogony of the Koran," for example). He strongly rejects the notion that the "worldwide flood" of Noah caused the geological record, "in the narrative of Moses there are no terms employed that indicate the impetuous rushing of the waters, either as they rose or when they retreated, upon the restraining of the rain and the passing of a wind over the earth. On the contrary, the olive-branch, brought back by the dove, seems as clear an indication to us that the vegetation was not destroyed, as it was then to Noah that the dry land was about to appear.... For our own part, we have always considered the flood, if we are required to admit its universality in the strictest sense of the term, as a preternatural event far beyond the reach of philosophical inquiry...

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