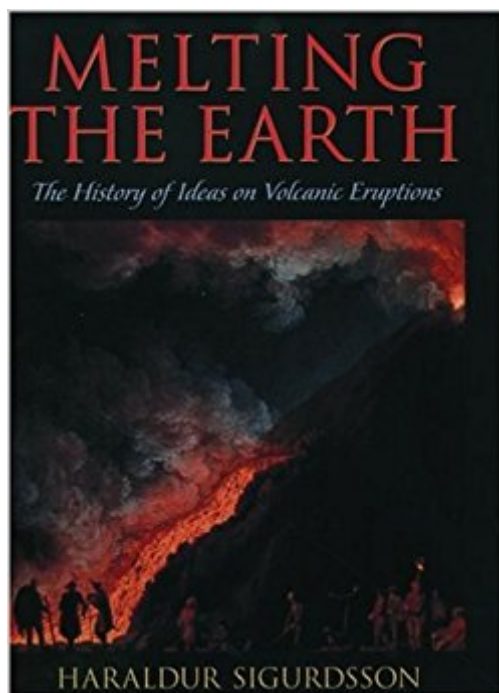


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# Melting The Earth: The History Of Ideas On Volcanic Eruptions



## Synopsis

From prehistoric times to the fiery destruction of Pompeii in 79 A.D. and the more recent pyrotechnics of Mt. St. Helens, volcanic eruptions have aroused fear, inspired myths and religious worship, and prompted heated philosophical and scientific debate. *Melting the Earth* chronicles humankind's attempt to understand this terrifying phenomenon and provides a fascinating look at how our conception of volcanoes has changed as knowledge of the earth's internal processes has deepened over the centuries. A practicing volcanologist and native of Iceland, where volcanoes are frequently active, Haraldur Sigurdsson considers how philosophers and scientists have attempted to answer the question: Why do volcanoes erupt? He takes us through the ideas of the ancient Greeks--who proposed that volcanoes resulted from the venting of subterranean winds--and the internal combustion theories of Roman times, and notes how thinking about volcanoes took a backward, symbolic turn with the rise of Christian conceptions of Hell, a direction that would not be reversed until the Renaissance. He chronicles the 18th-century conflict between the Neptunists, who believed that volcanic rocks originated from oceanic accretions, and the Plutonists, who argued for the existence of a molten planetary core, and traces how volcanology moved from "divine science" and "armchair geology" to empirical field study with the rise of 19th-century naturalism. Finally, Sigurdsson describes how 19th and 20th-century research in thermodynamics, petrology, geochemistry and plate tectonics contribute to the current understanding of volcanic activity. Drawing liberally from classical sources and firsthand accounts, this chronicle is not only a colorful history of volcanology, but an engrossing chapter in the development of scientific thought.

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## Customer Reviews

What is a volcano? Why do some have slow-flowing lava and some explode with fire and rocks? How are volcanoes and earthquakes related? Sigurdsson (oceanography, Univ. of Rhode Island) looks at these questions and more from various points of view: prehistoric legend, religion, superstition, and science from the 17th century to date. He has done his research well. Some of the theories he relates appear foolish in hindsight, but most of them were taken quite seriously in their time. His subtitle is apt, as each chapter adds to the evolution of scientific thought in this area of geology. He shows the importance of other disciplines, including chemistry, physics, and thermodynamics, in understanding how the study of volcanoes has changed over time. He also notes how points of view shift with field research and experimentation. In the end, we are left with more questions, which is one of the excitements of science. For larger public libraries and academic collections supporting the earth sciences. A Jean E. Crampon, Science & Engineering Lib., Univ. of Southern California, Los Angeles Copyright 1999 Reed Business Information, Inc.

"Dr. Harold Sigurdsson's new book *Melting The Earth* is a wonderful journey through time as he traces the history of man's fear and love of volcanic eruptions. I can't think of a better guide on this epic journey." --Robert D. Ballard, Ph.D., President, Institute for Exploration "An attractive and readable account of the history of ideas about volcanoes." --Nature "Evolving philosophical and theological debate, tempered by a growing body of scientific knowledge, flavors the beautifully written text.... The author, born and raised in volcanic Iceland and an international volcanologist, wrote this rich history of his science for deeper appreciation and perception into the role of human interaction with a mighty natural force. Historians and scientists will thoroughly enjoy this book." --Choice "In *Melting the Earth*, Haraldur Sigurdsson draws on his Icelandic heritage to show how man has long been fascinated by volcanoes, particularly in parts of the world where they are a dynamic presence and potential cause of disaster. Many ancient cultures have extensive volcano myths whose origins may be even older. After the Dark Ages and with exploration of the globe and skies, a vast amount of new information became available, and efforts to explain how the world works developed at an ever-increasing pace. A major conceptual advance was considering that the earth could have a vast amount of primordial heat. The discovery of radioactivity in the current century provided an adequate heat source, and detailed geophysical observations led to plate tectonics. Sigurdsson emphasizes ideas that prevailed at each stage of history, and thus spends as

much time on ideas eventually discarded as those still incorporated in the modern view." - William Green, *The Leading Edge*, April 2000

Haraldur Sigurdsson is a professor in the Graduate School of Oceanography at the University of Rhode Island. As a practicing volcanologist and native of Iceland, where volcanoes are frequently active, Sigurdsson chronicles humankind's attempt to understand volcanic eruptions and provides a fascinating look at how our conception of volcanoes has changed as knowledge of the earth's internal processes has deepened over the centuries. Drawing liberally from classical sources and firsthand accounts, this chronicle is not only a colorful history of volcanology, but also an engrossing chapter in the development of scientific thought." - *California Geology*, May 2000

Good state of conservation and excellent book, the time of arrival was ok, I'm very satisfied of this acquisition. It is a great book and crowded of references and citations of older books very difficult to localize otherwise

An interesting study of how we got to where we are today in the study of volcanos.

Two of my favorite subjects are history and geology, so this was a double treat for me, since it's sort of a history of geology! Sigurdsson has created a marvelous compendium of sources on the subject of volcanism from mythologies among people native to areas of tectonic activity through Roman authors on the natural sciences to European and American scientists and philosophers into the early 20th Century. Probably one of the most significant things I discovered in reading the book was the underlying cause for the disdain of the average person for the "rational" approach of the scientist. In laying before me the various theories for the cause of volcanism and earthquakes, Sigurdsson indirectly makes it clear that the "logical" assumptions of men of science can prove to be wrong, and the best research--for the technology of the time--can still lead to erroneous evaluations shaped by preconceived notions of the world, whether those concepts are biblico/religious ideology or a strongly held school of scientific thinking. Only by reading the entire book does one realize, also indirectly, that the scientific method of enquiry is the only way of gaining ground on the principles underlying natural processes. While the various authors of different theories may be in part or even entirely wrong, it is only through the testing and retesting of theories against the sterling measure of reality, that a clearer, working model of how nature works will arise. What is truly amazing is that so many early thinkers came to have at least a partial understanding of volcanism and of planetary and solar formation in modern terms. Also impressive were the novel approaches to experimental

geology that were achieved. Many of the early investigators were truly creative people. Sigurdsson appears to be very well read, and his appreciation of the value of the visual documentary record, in forms such as pre-literate paintings and woodcut and engraved illustrations from rare books, is impressive and worthy of an individual trained in historical research rather than in the sciences. For anyone with an interest in geology, an interest in history, or simply someone who appreciates a good job of research, this is an excellent volume. It would also be a useful starting point for research on most other topics in the history of science, as many of the better resources are mentioned in the text and in the bibliographic entries for each chapter at the end of it. Some of the latter are in German, French or Italian, although many are in English translation in Sigurdsson's citing or can be found in English translations elsewhere.

Why do volcanoes erupt? Humans have struggled with this question for many thousands of years, no doubt ever since our ancient ancestors first saw the beauty and power of volcanic eruptions. There are other books available that will tell the reader what we now know about volcanoes, but this is the first book that describes how we have come to understand how they work. It is a wonderful and rare type of book, as it combines history, philosophy, science, and art. The illustrations, many from old lithographs, are very well reproduced. Some come from unlikely sources such as "The Travels of Baron Munchausen". Munchausen's author, the brilliant rogue Rudolph Raspe, was in fact a student of volcanoes and made some significant contributions before his bad behavior led to his disgrace. His story is just one of the many fascinating tales in *Melting the Earth*. I know this book well, as I reviewed the original manuscript. I am very pleased to see it published and have no hesitation to recommend it to all readers interested in volcanoes, including professional volcanologists and students. Dr. Rosaly Lopes-Gautier

"Melting the Earth" The history of ideas on volcanic eruptions By Haraldur Sigurdsson First Draft By Matt Lindsey Geo 103 The book I chose to read was "Melting the Earth" by Haraldur Sigurdsson. This book covers two of my most favorite subjects History and geology, which made this book even more interesting to read. Early Sigurdsson writes on subjects from, the Polynesian people and their fire myth Maui, who lives in the far depths of the earth, and when he turns while dreaming. He causes earthquakes on the earth above to the discovery of radiology. If you want to read a captivating and educational book about the history of volcanoes containing a wide variety of historical and mythical facts, I truly recommend this book. In the beginning of this book, Sigurdsson explains early source of fire, some possible ways it was first introduced and used throughout the

years to come. An excellent example was 600,000 year old ovens in china to burnt clay found in Africa that dated a staggering 1.5 million years old. Once the early homo-erectus learned of fire there culture changed forever, now they were able to heat and shape rocks more efficiently. But the earliest know form of tools made by homo-erectus was 2.5 million years ago in eastern Africa, made of obsidian (volcanic black glass). Later in this book, Sigurdsson touches on such people as, Kelvin, Zeus other Greek gods, Homer, Socrates, Plato. Then he moves on to discuss the bible, and many more verities of philosophers and legends in several different cultures from around the world. World tragedies and accounts of mass destruction are accounted throughout this book, from risky sulfur mining in very active volcanoes to earthquakes that kill 800,000 people, with one major eruption. About 3/4ths the way through the book he starts delegating a lot about the sources of volcanoes and the cause for there mass eruptions, he also discusses many different geologists that have also studied in this area, comparing both his ideas and theirs to form an overall complete analysis of the history of volcanoes. It isn't till the last part of the book, he actually starts describing the earth and its mantel strictly on plate tectonics and magma generation. With the discovery of the solid mantel below our feet. In the very last page, he also talks about how major volcanic activity is not limited to earth alone, in fact many planets have had explosions almost 10 times what we do today. Leaving the everlasting question, is there life elsewhere in the galaxy? I thought this was a very good book, mainly the fact that it was able to keep your attention throughout the whole thing, by bringing up myths from the pacific islands to actual catastrophes, from the first know use of fire to radio carbon of today, this book hits you with just about everything from every angle you could possibly imagine, from the philosophers point of view to the geologists findings through many long tedious expeditions. Something's I really did not like about this book, was that he made constant reference to others work, and many books surrounding this field, though the points made with Sigurdsson references were helpful it was just that in my opinion he had to many and made it a little hard to fallow. Overall I think this was a good book. I recommend that if you are interested in volcanoes and the earth around us, you should definitely read this book. The good out weights the bad aspects in this book, you will be in for a great treat as you read about the myths and legends of the past world to the facts and seemingly strange properties of the world today.

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