

# The Abyss of Time

Albritton

THE ABYSS OF TIME

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*Changing Conceptions of the Earth's  
Antiquity after the Sixteenth Century*



Claude C. Albritton, Jr.

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*for* Jane Christman Albritton

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## *To the Reader*

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I am confident that someday the concept of geological time will be acclaimed as one of the more wonderful contributions from natural science to general thought.

Geological time measures the age of the earth, from its beginnings as a planet to the present. By this definition, the *prehistory* of the archaeologists and the *historical time* of the historians are respectively the next-to-last and last intervals in the continuum of geological time.

A debate about the earth's age has been going on for centuries, and though a precise figure in years remains to be determined, an order of magnitude now seems firmly established. The earth originated several thousands of millions of years ago. In that perspective, the intervals of time covered by prehistory and history are seen to be astonishingly brief.

The concept of the vast extension of our world in time, one which grew from investigations seeded in the seventeenth century, has surely been no less revolutionary than the concept of vast stellar space emerging after Copernican astronomy appeared during the century preceding. However, outside a relatively small community, which includes most practitioners, historians, and philosophers of science, many conservationists and writers of science fiction, and a growing number of artists and poets, the idea of geological time as often as not has been greeted with indifference, skepticism, or downright hostility.

Charles Lamb probably delivered the majority opinion for the literate minority when he declared: "Nothing puzzles me more than

time and space; and yet nothing troubles me less, as I never think about them.” And yet Lamb must have been thinking about time and space when he wrote that sentence, and he hit on the right words too when he chose “puzzles” and “troubles.”

Assuredly time is one of the more puzzling of human inventions. Time can take various shapes according to our choice. Time can be conceived as circular or linear, continuous or interrupted, finite or infinite. The Stoics thought of time as circular and continuous, as though historical events were arranged in sequential order around a great celestial wheel, which in its turnings causes history to repeat itself world without end. In the Stoic view, events are like the succession of sounds on a turning phonograph record with a “hung” needle, or like the markings on a roulette wheel which in its spinning causes the same succession of numbers to move again and again past some point on the perimeter. On the other hand, the ancient Mayas seem to have conceived time as linear and without repetition of events, but with periodic pauses in its flow when nothing happens. Modern historians and practitioners of historical science assume that time is linear and continuous, without cyclical recurrence of events. Indeed, if time were not puzzling, there would not be an International Society for the Study of Time, which has published three thick volumes of proceedings since 1971.

The concept of time can also be intimidating, to institutions as well as to individuals. Father Time—that animated skeleton armed with a scythe—will mow each of us down soon or late. Most metaphors for time are discouraging: time is a poison, or an acid that dissolves life, or a thief in the night, or a vast and lifeless desert, or a river that sweeps us away in its flood. The comparison of time with a fearsome abyss is common in writings from the seventeen hundreds, though this conceit goes back much earlier, as we know from lines in *The Tempest* recording Prospero’s query to Miranda about “the dark backward and abysm of time.” And, as standing on the lip of a canyon and looking downward may arouse that species of space-related fear called acrophobia, so pondering the conceptual abyss of geological time may bring on a bad case of chronophobia.

To my knowledge, there are no formal organizations of acrophobiacs. But the chronophobiacs are well organized, and vocal. Their organizations go by different names, of which the Creation Research Society is one. Members of the CRS persistently seek to promote teaching in the public schools of their creationist doctrine, as an “al-

ternative" to evolutionary biology. Though evolution is their avowed target, they must necessarily confront the formidable array of evidence that fossils provide in support of evolutionary theory. And to explain away that evidence they insist that the earth cannot be nearly so ancient as the geologists claim. In the last chapter I call attention to some of the interesting convolutions in their arguments.

I must add that the purpose of this writing is not to air my disagreements with members of the Creation Research Society. I mention them only to make the point that modern scientific estimates for the duration of geological time are not universally accepted, even by persons who hold academic degrees.

To trace successive changes in perceptions of the earth's antiquity is the purpose of this book. I do not attempt to cover the earliest speculations on the subject, but begin with developments during the mid sixteen-hundreds—the time when historical geology began to branch from the trunk of natural philosophy. Even with this limitation, the subject is still too big to be covered in a book of this length. So I have concentrated on episodes foreshadowing or signalling changes in views on geological time, and on some of the persons who played prominent roles in bringing those changes about.

None of the chapters has been published previously, but the contents of most have been presented orally by me at various times and places. The second and third chapters are revised and shortened versions of lectures delivered in 1970 at the University of Pennsylvania, in the course of my appointment there as Rosenbach Fellow in Bibliography. The substance of these and succeeding chapters has been presented less formally on other occasions to a selected group of high school students attending Saturday seminars sponsored by the National Science Foundation, to undergraduate and graduate students in classes at Southern Methodist University, and once to a group of university professors and their spouses at a Danforth Conference in Estes Park. To my satisfaction, I have found that sampling the history of thought relating to the earth's age seems to have been an engaging exercise for many persons with reflective turns of mind, regardless of their age or prior exposure to geological principles. I only hope I've chosen the right samples here, from the many available in the literature of more than three centuries.

The idea of summarizing these lectures in book form belongs to W. H. Freeman. That the work of writing has spread over a decade was due to my desire to visit and examine at first hand certain classic

localities abroad. Accordingly, with the aid of a grant from funds provided by the Danforth Foundation and of leaves extended by my university, I have tracked Steno over Tuscany, Lyell around Etna, Scrope across the Auvergne, Hutton to Siccar Point, and many others to places where historical geology finds its roots.

For their help in providing essential source materials, I am indebted to many members of the library staff at Southern Methodist University, especially to Deverett D. Bickston, Mattie Sue Mounce, and James G. Stephens of the Science/Engineering Library, and to James W. Phillips, who of all doctors of philosophy is the one best acquainted with the rare books on geology in the DeGolyer Western Collection.

Wherever possible I have let those writers who have influenced our ideas concerning geological time speak for themselves, through numerous quotations selected from their works. Publishers of writings still protected by copyright have been unanimously generous in permitting the use of quotations from their books and journals. Permissions granted by the American Association for the Advancement of Science, Random House, St. Martin's Press, Taylor & Francis Ltd., University of Chicago Press, and University of Wisconsin Press are referenced at appropriate places in the text and are gratefully acknowledged here.

In order to obtain copy for the illustrations, I had to appeal to the good offices of many individuals and institutions. Professors Donald B. McIntyre of Pomona College and Harry B. Whittington of the University of Cambridge together provided portraits of Hutton, Playfair, and Sedgwick. Dr. Whittington volunteered the additional favor of placing me in correspondence with Ms. Rosemary Evans, Archivist to the Geological Society of London, who graciously sent me prints from freshly prepared negatives portraying Scrope, Lyell, Murchison, and William Smith. Permissions to reproduce portraits of Rutherford and Chamberlin were granted respectively by the Royal Society of London and the National Academy of Sciences. With the concurrence of Professor Albert V. Carozzi, the University of Illinois Press gave permission to reproduce his drawings illustrating de Maillet's theory of the earth, together with a portrait of de Maillet. The two illustrations of geological subjects from the lost drawings of James Hutton are reprinted with the permission of Sir John Clerk of Penicuik; and the remaining illustrations were assembled from local sources with the expert aid of Dr. Phillips.

Ms. Eleanor Swank has not only typed most of the manuscript but also served as a critic for clarity of expression. Professor Konrad B. Krauskopf has reviewed the text for scientific accuracy. Mrs. W. H. Freeman has tended to the onerous task of copy-editing, and from time to time has given me much-needed encouragement to bring this work to completion. For any residual and undetected flaws, I am of course solely responsible.

CLAUDE ALBRITTON  
*Dallas, Texas*

Summer, 1980

We regret the following error in the first printing:

Page 125. Charles Lapworth was British, not a Scot.



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Time is but the stream I go a-fishing in. I drink at it; but while I drink I see the sandy bottom and detect how shallow it is. Its thin current slides away, but eternity remains. I would drink deeper; fish in the sky, whose bottom is pebbly with stars.

THOREAU