

due to its openness to dissent and lack of strict religious doctrine. This caricature of post-Renaissance Italy (and by extension, religious conservatism in general) is certainly lacking in historical and philosophical nuance and may aid in perpetuating the modern “warfare model” of the science/religion dialogue.

But despite these relatively minor complaints, I would highly recommend this intriguing book to all who are interested in mathematics or the history of the modern scientific era.

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EARTH’S DEEP HISTORY: How It Was Discovered and Why It Matters by Martin J. S. Rudwick. Chicago, IL: The University of Chicago Press, 2014. 315 pages plus glossary, a section “for further reading,” and bibliography. Hardcover; \$30.00. ISBN: 9780226203935.

In 1972, British brachiopod paleontologist Martin Rudwick penned a judicious and revelatory volume, *The Meaning of Fossils: Episodes in the History of Palaeontology*. This book (now 2nd ed., University of Chicago Press, 1985) remains a treasure store of insight into the impact of discovery—as well as the communication of discovery—upon many individuals of talent during the sixteenth through nineteenth centuries. Many of these historical protagonists were devout Christians (for example, Conrad Gesner, John Ray). Rudwick explored their ponderings and their fraternal debates as to just what these remains meant.

More books followed; I count nine, including the volume under review. These included a volume of translation, from the French, of Georges Cuvier’s work on fossils (*ossements fossiles*)—arguably the birth of vertebrate paleontology—and also a volume (*Scenes from Deep Time*, 1992) analyzing the impact of illustrations of “former worlds” revealed by these exhumed remains, during the eighteenth and nineteenth centuries. The scope of Rudwick’s coverage broadened, to include the history of fieldwork and deliberation upon the history of Earth as well as that of life. Collectively, his writings now comprise the most significant single-author corpus analyzing the history of the earth sciences. Rudwick brings his Christian faith to his scholarship.

The present volume, *Earth’s Deep History*, summarizes the development of a history of Earth. It is written in an accessible style and sparkles with nearly one hundred illustrations, mostly reproductions of original illustrations or text pages from significant individuals ranging from James Ussher to contemporary astrogeologists. Along the way, the geological time-scale develops until it reaches its current scope and detail.

Rudwick painstakingly demonstrates why historical thinking is an essential component of Earth comprehension. Earth and its parts are four-dimensional objects. Rudwick cleanly narrates the step-by-step realization that Earth was an object with a long history. The explanatory power and practical utility of time in analyses were appreciated for two centuries prior to the development of radiometric dating techniques. In fact, through several incidents, Rudwick explicates how spatially—and geometrically—commonsense interpretations of the rock record demanded large volumes of time, and this in the face of opposition based on the “absence of a mechanism.” An example would be the development, over the course of several decades, of what would eventually become known as “plate tectonics” prior to the acceptance of the driving mechanism, mantle convection.

The apprehension of deep time during the eighteenth and nineteenth centuries, far from presenting obstacles to faith, was regarded as an ally:

Closely related to this sense of the providential designfulness of the natural world was a sense of wonder at the romance of vanished deep past that the geologists’ research was disclosing. So, for example, Mantell—who had discovered the *Iguanodon*, the first of the fossil reptiles to be classed later as a dinosaur—exploited a profitable vein of popular science by describing the *Wonders of Geology* (1838). The sheer scale and unanticipated strangeness of the earth’s long history was often treated as welcome evidence for the grandeur of God’s creation. Far from geology being in intrinsic conflict with religious faith, the science was widely regarded in the early nineteenth century as its ally and supporter. (p. 163)

A thread running through *Earth’s Deep History* is the participation of earnest Christians in the development of the historical Earth sciences. Contrary to the wishes of some contemporary vocal atheists as well as some equally vocal Christians, faith and science have never been at war.

What is certainly untenable is any claim that the discovery of the Earth’s deep history has in the past been retarded or obstructed by “Religion” ... In the history of the discovery of the earth’s own history, as in the history of many other aspects of the sciences, the idea of a perennial and intrinsic “conflict” between “Science” and “Religion”—so essential to the rhetoric of modern fundamentalists, both religious and atheistic—fails to stand up to historical scrutiny. (pp. 306–7)

At several points during *Earth’s Deep History*, Rudwick takes fellow geologists, or popular science writers, to task for falling prey to the temptation to frame a historical narrative in terms of a manufactured conflict metaphor.

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As a coda to this manufactured war, Rudwick provides a brief appendix on the late twentieth-century “young-Earth geology” movement. Having thoroughly documented the hard toil, physical and mental, of sincere and gifted Christians in the recovery of Earth’s deep history, he is taken aback at the “startling reinvention of the idea of a ‘young Earth,’ which the sciences of the earth outgrew for very good reasons back in the eighteenth century” (p. 309). He concludes, “Sadly, creationists are utterly out of their depth” (p. 315; last sentence of the volume).

For its comprehensive scope, intelligibility, delightful illustrations, and at times bluntly personal approach, this volume is a treat. I highly recommend it as a solitary read or as an introduction to Martin Rudwick’s other authoritative works.

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PHILOSOPHY & THEOLOGY

PROCESS AND PROVIDENCE: The Evolution Question at Princeton, 1845–1929 by Bradley J. Gundlach. Grand Rapids, MI: Eerdmans, 2013. 374 pages, including bibliography and index. Paperback; \$39.00. ISBN: 9780802868985.

One does not have to be directly involved in science or religion to have been affected by the often divisive discussions surrounding the topic of creation versus evolution. It is a topic that has captivated western culture for nearly two centuries. For the most part, this debate is depicted as a battle between atheistic, rational science versus an antiquated religious folklore about the existence of a higher creative being. Having degrees in biology and geology as well as theology, I have been in the middle—often a target—of both sides of this conversation. The book reviewed herein elucidates how committed Christians have responded to this conflict from the genesis of the controversy.

One of the points of contention is the debate over evolution as a natural process versus God’s directional providence. It is these two supposed antithetical ideas that Bradley J. Gundlach, Professor of History at Trinity International University, Deerfield, Illinois, draws from for the title of his book *Process and Providence*. Gundlach takes a historical look at the rising cultural interest in evolution beginning in the mid-nineteenth century. He frames his exploration in the context of the variety of responses from faculty at Princeton, both seminary and university, between 1845 and 1929. Princeton was chosen, according to the author, because “Princeton was the most important center of conservative Protestant think-

ing on matters of science and religion in America” (p. 6). Gundlach notes that his approach to history was less of a systematic analysis and more of a historical narrative. He introduces the cultural context in each of the decades, outlining the emerging scientific ideas in evolution and the social implications arising from natural science’s philosophical conclusion that God can be rejected. As the book works through the emerging issues, Gundlach highlights key individuals at Princeton and presents, uncritically, their responses based on letters, lectures, and publications as well as Princeton’s larger reactions through faculty hirings.

Through this process, Gundlach’s book highlights the manner in which professors at Princeton—in the disciplines of both theology and natural science—avoided a reactionary, confrontational clash, but instead sought a collegial, critical dialogue with the direct and indirect issues arising in popular culture as a result of the proposed theory of evolution. Rather than rejecting outright these new proposals, as many Christians were doing, faculty at Princeton sought to affirm the scientific method and consider evolution, while at the same time upholding God’s providence. Even by the late 1860s, in the aftermath of Darwin’s *Origin*, Gundlach points out,

Only reluctantly did the Princetonians describe the relations of science and religion in terms of conflict. After all, their whole apologetical point was that knowledge was no enemy to faith, that the two were neither hostile nor indifferent to each other, but the closest of friends. (p. 51)

Gundlach even notes that the mechanism of progression was embraced, not only for changes seen in plant and animal life but also for interpreting developments in the biblical text as well as culture as a whole.

As thinkers began to draw philosophical conclusions from evolutionary thought, Princeton’s faculty sought to engage the metaphysical and epistemological implications (including the loss of teleology for creation and the rise of atheism along with the deterioration of longstanding morals and values). In an effort to encourage the church to confront the potential sociological ramifications of evolutionary theory, the military metaphor of war was used to describe this struggle. The counter-offensive to “science’s” destruction of Christian foundations consisted of five strategies: watch, detect, expose, confront, and overpower. The remainder of the book explores how this tactic played itself out over the next sixty years, focusing predominantly on the roles played by Princeton’s leading figures—Charles Hodge, James McCosh, and their “Bright Young Men”—as they continued to wage the war for a Christian perspective on evolution by “taking the best that science had to offer and bringing it back ‘under God’ at Princeton” (p. 160).