religion and the role of the church where those interactions are critical to the historical narrative; however, unlike the previous volume, these interactions are not the main focus. Numbers is a renowned historian of science and medicine, having written or edited more than thirty books. Kampourakis's interests in science education meld with Numbers's expertise to make *Newton's Apple* noteworthy.

As with all compiled volumes, this one is built upon the expertise of its twenty-seven individual contributors: these include Peter Harrison, Michael Ruse, Bruno Strasser, Mansoor Niaz, and Patricia Fara. The slate of authors is impressive, each author bringing their own personal expertise to bear on one specific commonly taught idea that lacks historical accuracy. The questions in this compilation range from the general (e.g., that religion has typically impeded the progress of science) to the specific (e.g., that the Millikan oil-drop experiment was simple and straightforward) and are organized into four sections: Medieval and Early Modern Science, Nineteenth Century, Twentieth Century, and Generalizations.

The importance of *Newton's Apple* lies in its honest ability to define and provide historical depth and context to the events surrounding commonly taught myths. Strasser defines a myth in his essay as "a way of collectively expressing something about values, beliefs, and aspirations, even though, taken literally, the content of the myth is not true." He continues to say that "myths not only (imperfectly) reflect the past but also shape the future. For this reason, explaining how and why a myth crystallized in a particular community at a specific time in history is often more illuminating than simply debunking the myth by showing its inaccuracies" (pp. 179-180). Both this volume and *Galileo Goes to Jail* serve this role well by providing succinct, historically informed essays aimed at explaining a variety of myths that have been shaped over time to serve the purpose of their advocates, rather than conveying precise historical events.

Overall, the essays included in this volume address important myths that continue to hinder the public understanding of science and its history. *Newton's Apple* questions myths such as the oft-taught idea that Columbus believed in a flat earth and that a falling apple led Newton to postulate the Law of Gravity. A number of essays are devoted to various aspects of evolution, as postulated by Charles Darwin and interpreted by others. Historical context is also provided for more modern myths, including the role of *Sputnik* in spurring changes to scientific education in the United States and the story that medical practice was revolutionized when Linus Pauling discovered that there was an underlying molecular basis for sickle-cell anemia. Perhaps the most compelling essays, however, are the four included in the final Generalizations section, which provide a useful overview of the field and the major reasons for trying to debunk these myths in the first place. In a classroom setting, engaging these final essays first might provide a useful foundation for the discussion of the other more temporally placed myths, which occur earlier in the volume. With almost thirty percent of the essays in this compilation addressing some form of Darwinian evolution, there are sections of the collection that feel a bit repetitive; however, as evolution and Darwin in general remain major points of debate on the modern stage, the inclusion of so many different myths in relation to this topic may be justified.

I believe that this book has brought together the right group of scholars to address, in intelligent yet accessible ways, the stories that many of us were taught and that we continue to teach our students today about science's most famous characters and the way scientific advancement occurs. Engagement with this volume stands to improve scientific accuracy and the general understanding of how scientists actually do science. While both *Newton's Apple* and *Galileo Goes to Jail* address some of the same myths, it does seem that the change in focus from "science and religion" to "the nature of science" renders this latest volume of value, especially to those working in science education at all levels who wish to ensure that their students are capable of interacting with the modern world in an enlightened and accurate way. Context matters, and this volume does an excellent job of placing each of the presented myths within its historical context and identifying important historical details, which in many cases have been skewed for rhetorical, pedagogical, or, occasionally, for more malicious reasons. Regardless of the motivation, it is time to reclaim scientific history, and Newton's Apple serves as an important step in that process.

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HUXLEY'S CHURCH AND MAXWELL'S DEMON: From Theistic Science to Naturalistic Science by Matthew Stanley. Chicago, IL: University of Chicago Press, 2015. 364 pages, including notes, bibliography, and index. Hardcover; $45.00. ISBN: 9780226164878.

That naturalism functions as a guiding point of view or philosophy for the practice of modern science has become a truism. Naturalism is critical of any appeal to the supernatural or of any being or idea that smacks of the transcendent. But how, you may ask, did so many scientists become accustomed

to or convinced that any appeal to God talk is out of bounds in an explanation of natural events? This well-researched book by Matthew Stanley, associate professor at New York University's Gallatin School of Individualized Study, provides an answer as to how British scientists came to believe that "the defining characteristic of science is its *naturalism*" (p. 1).

Stanley provides a clear-eyed look at scientific practice in Victorian Britain by tracing the expulsion of God language, religious ideas and values from scientific discourse. Stanley is interested in showing that the rise of naturalism and the displacement of theistic science has a history; naturalism did not arrive surreptitiously, nor was its rise inevitable, but scientists were passionately involved in arguing for the benefits of naturalism, as well as raising potential objections to its ultimate success. Stanley fixates on two intellectual giants of nineteenth century British society: Thomas Huxley (Darwin's acknowledged agnostic bulldog), and James Clerk Maxwell (the great "evangelical" unifier of electricity and magnetism). Stanley also gives a close reading of some of their contemporaries. Two, of many, quotations typify the underlying tension between Maxwell and Huxley's interpretations: Maxwell, "I have looked into most philosophical systems and I have seen that none will work without a God," and Huxley, "Extinguished theologians lie about the cradle of every science."

At first blush, the title of the book seems rather forced: any association of Huxley with "church" seems outlandish, and to suggest that Maxwell's demon (or Maxwell's use of the metaphor of a railway "pointsman") might be appropriate in a discussion of theistic science and naturalistic science, seems equally out of place. Stanley wishes to mollify the "warfare thesis" between science and religion by suggesting that "valence values" (values common to theists and naturalists) undergird the Victorian transition to naturalism. "Practices were the basic methodological assumptions and goals of science itself" (p. 5). These values help bond scientists despite deep-seated differences as to the meaning of, say, the uniformity of nature.

In addition to the Introduction and Conclusion, seven chapters form the heart of this book. The second chapter, in particular, "The Uniformity of Natural Laws," is crucial to Stanley's argument. Stanley asks, "How can it be that uniformity was seen as rooted in theism in the early Victorian period, when it was presented as an enemy of theism by the end?" (p. 34). He concludes, "The shared value of uniformity allowed for a transition between the two groups, but was surely not sufficient" (p. 79). In chapter 7, "How the Naturalists 'Won,'" Stanley details the events which pushed the transition in a definitive direction. Huxley's efforts to publicize the advantages of embracing scientific and secular ideas, to advantage the cultural preeminence of men of science, to argue that there is but one kind of knowledge and but one method of acquiring it, and to present naturalism as an alternative to Christianity rather than an attack upon it, won the day. As natural theology moved ever closer to the near identification of God with the uniformity of Nature, there was little to choose between the devout and the agnostic. The rise of Huxley's church, a secular (agnostic) religion which challenged the Anglican institutions of the day as well as its intellectual theology, became ever more difficult to counter.

Although there may have been differences concerning the extent, interpretation, and applicability of the uniformity of nature, common practices seemed to trump. However, in the application of scientific concepts to human beings a fault line developed. As Stanley expresses it in the introduction to chapter 6, "Free Will and Natural Laws": "Theistic and naturalistic scientists had been able to find common ground in a lawful nature (chap. 2), the role of hypotheses (chap. 3), educational systems (chap. 4), and intellectual freedom (chap. 5). But free will was the fault line from which they began to diverge profoundly" (p. 179). Huxley, and other closely allied scientific naturalists, extended the scope of the uniformity of nature to the mind, considering both animals and humans to be *automata*. For Maxwell, this was a bridge too far. He thought humans had a soul and clearly displayed free will. Stanley describes Maxwell's ingenious efforts to safeguard free will in a world described and prescribed in terms of mechanical laws governing the motion of material particles. For Maxwell, the soul was like a railway "pointsman" (or demon). This argument was ultimately to fail due to considerations of the Second Law of Thermodynamics. Even the demon (or "soul") expends some minimal energy in its actions.

For Maxwell and his theistic colleagues, ontology superseded methodology. They adhered to an ontological richness which saw God's faithful governance of creation in law-like terms. Methodology was secondary. The prospect of a nascent "methodological naturalism," they thought, would eventually eradicate all sense of the mysterious and the divine. A few decades later, the suggestion from quantum physics of the uniqueness and individuality (indeterminateness) of physical entities would comport much better with the theists' belief in the radical character of all creatures and their dependence on the Creator.

For anyone who wants to read an insightful and novel way of understanding the rise of naturalism in the English-speaking world, this book is invaluable. I highly recommend the book and encourage the reader to take its historical lessons to heart.

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Religion & Science

RE-VISION: A New Look at the Relationship between Science and Religion by Clifford Chalmers Cain, ed. Lanham, MD: University Press of America, 2015. 164 pages. Paperback; $29.99. ISBN: 0761865462.

As someone who has long been interested in the relationships between faith and science, I was intrigued when I saw that this book claimed to provide a "new look." Sadly, not only is this "look" not new, but its depiction of God is not one with which I or many *PSCF* readers would be comfortable.

Written by various faculty members at Westminster College of Missouri, the format of the book is promising enough. Clifford Chalmers Cain is Professor of Religious Studies and the primary author of the book. Other chapters, written by colleagues in the sciences and philosophy at Westminster, deal with "hot button" issues in religion and science: the Big Bang, evolution, nature-nurture, and intelligent design (ID). Cain responds to each of these chapters, showing how in his view religion interacts with these issues.

Those familiar with the literature on religion-science interactions will know Ian Barbour's four models: conflict, independence, interaction, and integration. Cain acknowledges Barbour but instead chooses the models of conflict, contrast, and conversation (p. 7). Cain rightly rejects the conflict model, which distorts the evidence and has plagued the study of religion-science interactions. Likewise, he points out the impossibility of the contrast model, which holds that religion and science are independent. He sees the most promise in conversation between religion and science, in which each can inform the other to advance potential mutual knowledge (p. 9). In omitting the integration model, Cain evidently sees science as free from worldview presuppositions. However, in his response chapters, Cain absorbs the naturalistic worldview espoused by these authors and accommodates it into his theology. Cain holds to process theology, which denies God's omnipotence and omniscience but argues that God acts by persuasion, not decree. Thus the conversation between religion and science seems more of a capitulation on the part of religion than a conversation, which Cain acknowledges but sees as more of a correction than an acquiescence (p. 15).

The Big Bang implies a beginning and thus someone who began the process. In his discussion of this topic, Cain confuses God's omnipotence with the speed of his action and sees the drawn-out process of creation as evidence for process theology (p. 38). Likewise, the anthropic principle is thought to be guided, not directed, by the God of process theology, even though the form of this guidance is not given.

One theological question raised by evolution is how the randomness of evolution relates to God's providential hand. When the biologist McNett states, "It requires no supernatural guidance or great cosmic direction for its operation. It cares not a whit for our destiny, hopes, or salvation …" (p. 57), he is making a theological statement, not a scientific one. Cain, in his response, affirms the doctrine of providence but cannot reconcile an omnipotent God with the naturalistic processes of evolution or with human freedom (78 ff.). Instead, he again invokes the impotent God of process theology. By contrast, I would argue that God's omnipotence is maintained in the doctrine of concurrence, which holds that God is acting directly (God's omnipotence) and we are acting (our freedom).

In his response to the chapter on the nature-nurture question, Cain rightly criticizes genetic determinism and acknowledges the role of environmental influences that shape who we are. Cain asserts that the failure of genetic determinism gives room for the human freedom that is necessary for religion's standard of morality (p. 116). Maybe so, but what then does account for human freedom? When we are converted and transformed by the renewing of our minds (Romans 12:2), do these changes come about by our actions or God's?

In the chapter on ID, the philosopher Geenen's claim (equating ID with creationism) that ID attempts "to make room for God's causal role in the physical and biological world" (p. 140) is a questionble statement. One could claim that God created the world solely through natural processes, but Geenen rejects any causality by God. Does this also exclude the persuasive God of process theology? Moreover, if the God of the Bible performed miracles in redemptive history, what about miracles in creative history? Cain rejects that the intelligent designer could be God because such a god would be a dictator, not the winsome God of his process theology.

All of this leads me to question the validity of process theology. Cain argues (p. 147) that an omnipotent