long flights of stairs to keep working so that she could provide co-workers, who depended on her, a position even after she died? Or a man who used her data without full authorization or an offer of credit, and who then sullied her reputation after her death? In her answers to these questions, Maddox is never simplistic. She uses Franklin's newly available personal letters and papers as well as interviews and careful study of previously published accounts to provide a nuanced rendering of this important scientist.

Many introductory biology courses still use the DNA story, as told by Watson, to exemplify the glory and excitement of scientific discovery. I plead with the teachers of such courses to read Maddox's book. Then they need to ask themselves, when they use *The Double Helix*, what message do they send to young women who might have the talent and interest to become scientists? And what message do they send to all future scientists—male and female alike—about research ethics and the value of generous collaboration? Indeed, in choosing a narrative of individual glory developed at the expense of a pioneer woman scientist, what message have they sent to all future citizens who take a biology course in college about the ethical status and trustworthiness of science? Isn't now the moment to switch to a careful, well-documented account of scientific practice? Why not assign Maddox's *Dark Lady*, and consign *The Double Helix* to a dark backshelf of history?

BOOKS: COSMOLOGY

Lucifer in the Sky with Dinosaurs

Marcia L. Triunfol

Contrary to a common belief, science is not immune to influence by other views or trends. In *The Prophet and the Astronomer*, Marcelo Gleiser, a professor of physics and astronomy at Dartmouth College, argues that from pre-Socratic philosophers to contemporary cosmologists, our scientific understanding of the cosmos has been greatly influenced by religion. Gleiser shows us that whereas most people have accepted that science can explain how nature works, many continue to believe that only God can tell us why.

The Prophet and the Astronomer
A Scientific Journey to the End of Time
by Marcelo Gleiser

Norton, New York, 2002. 272 pp. $26.95, C$38.99. ISBN 0-393-04987-6.

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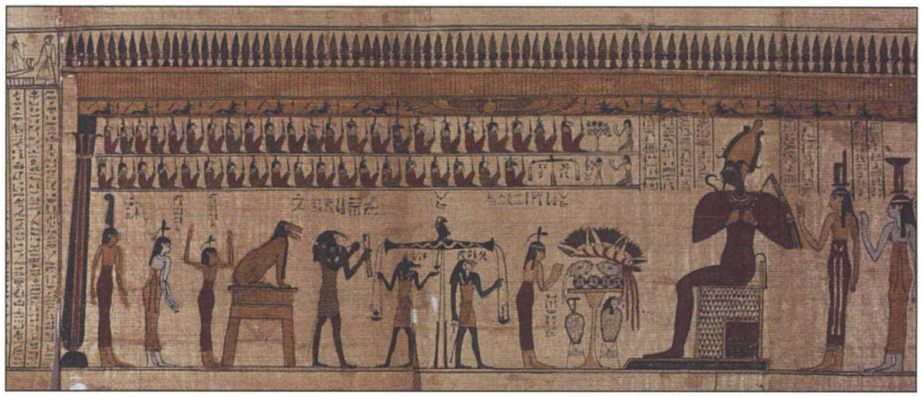

Judgment circa 1025 B.C. Before the dead were admitted to his kingdom of the afterlife (which some accounts placed in the Milky Way), Osiris presided over a trial of how virtuous they had been.

Gleiser claims that our struggle against death in addition to the inescapable reality that our lives are limited by space and time have driven us to a desperate search for answers to the meaning of our brief tenure of existence as well as our purpose in the cosmos. Science and religion can play different but complementary roles in this search for understanding and in the persistent dream of eternal life. Pursuit of immortality has produced paintings, books, offspring, theorems, songs, and ideas—anything that can remain after we die. The author believes that it is the hope that we can create the infinite and the eternal that has inspired painters and writers, philosophers and priests, and the rest of us as well. He leaves us with the impression that religion, science, philosophy, and popular culture are different but real manifestations of this hope.

And, he senses, the sky seems to be where all our fears and dreams come together. The sky is the place where God writes messages of doom and inspiration through stars and comets. Newton had seen comets as God's tools for creating and destroying worlds in the universe. Kant believed only God could have given order to that same universe. At present, God has faded from the heavens and been replaced in modern pop culture by E.T., who returns to worlds unknown to us after performing countless miracles on Earth (such as bringing the dead back to life and allowing kids to fly on their bikes). And the reader may remember other less wholesome "things" that, according to pop culture, can come from the skies. Whereas E.T. is an emissary of love, frightening aliens and other unpleasant cosmic figures reflect our fear of the skies. This contradiction of looking to and shying away from the sky illustrates why, in our human consciousness, Lucifer can be either the terrifying devil or the brilliant morning star. As scientific progress shifts our ignorance to different areas of nature, our fears shift as well, Gleiser says.

In popular lore, modern science was born in an attempt to answer the question "How does an apple fall?" An immense amount of scientific knowledge has been produced since Newton's time. Yet, the author observes, we still hold in awe and fear the sky above us. We still speak of eternal salvation and damnation. We still worry that, as the apocalyptic texts have prophesied, a cosmic cataclysm will condemn us to the fate of the dinosaurs. Gleiser claims that our collective eschatological imagination mixes science and religion and is as active as ever. To reinforce his point, he cites three polls conducted over the last 20 years in the United States and Canada. In each of these polls, the majority of the respondents believed that Christ would come back and his return to Earth would be followed by cataclysmic events.

Along with its discussions of the interactions between the scientific and the spiritual, the book continues Gleiser's efforts at popularizing science, as in his earlier *The Dancing Universe* (Dutton, New York, 1997). Using examples such as the demonstration of angular momentum by spinning on a rotating stool, the author explains the physics behind our limited scientific understanding of the cosmos with charm and ease.

Over all, *The Prophet and the Astronomer* offers a well-written and interesting account of how humans, inspired by a mix of fear and fascination with the sky, have tried to defy our time-bound existence. Gleiser is equally comfortable describing apocalyptic accounts such as the Revelation to John and explaining Einstein's general theory of relativity while paraphrasing John Lennon. He provides a careful and pleasant blend of philosophy, astronomy, and religion along with a seasoning of literature and pop culture.