could readers, living in different locations, identity with the changes she described to her woodland?

She made me think about the increased frequency of "100-year storms" and record-setting weather events (22 inches of rain in August) in my area. I see the changes in our urban mammal populations (e.g., skunks, rabbits, chipmunks), butterfly and mosquito populations, seasonal temperatures not following predictable patterns, and longer periods of droughts followed by too-heavy precipitation. I remembered (and liked) the warmth of an early spring only to watch the buds of emerging flowers and trees be nipped by a frost occurring on a normal seasonal date. So, yes, I found parallels, and the more I walked with her through her journal, the more connections I was able to make.

The book provides a very good explanation of climate change. Too often, the language of science gets in the way. We need a science conversant-society, but we are far from being there. We need a society that has a healthy trust of science. We are not there either. We need to have a society that believes that science and religion can be on the same side. Still, not there. What this book provides is good, understandable science and gentle reading. And, if you allow it, you will realize that the changes she describes in a woodland in Iowa are the same ones you find in your own backyard.

Mutel points out that, initially, climate change will not affect all of us the same way. Poor nations will find it more difficult to recover from severe weather events. The poorest people will be the least likely to prepare for the changes to come. I think of how difficult the recovery process was for hurricanes Katrina and Sandy or the number of deaths of elderly people during the extended heat waves in Chicago. Climate change is a social justice issue. Christians know of God's love for his creation and for all his children. As Christians, we need to mirror God in our actions.

Mutel has faith in this planet's people and in her nation, that they will act to slow climate change. She suggests meaningful ways in which people can act. She is optimistic, and she made me a little more so. However, it is difficult to be optimistic. I watch politicians continue to block basic measures to address the issue, and I see how corporate wealth influences decision making. I would like to believe that my reducing my energy footprint, and Mutel saving her woodland, is all that it will take. But I am wrong. We cannot have national elections without this issue being discussed and debated. We cannot have the world's religions ignore the symptoms. The world communities differ in their contributions to climate change, in their ability to respond to climate change, and in their ability to bear the costs involved. Whatever the imbalance, we will all suffer the consequences.

It is important to have books like *A Sugar Creek Chronicle* written for nonscience citizens. We need gentle, firm persuasion. We need a better understanding of the issues. We need hope. All of these are provided in this book. Get a copy, read it, and pass it along.

Reviewed by John Mickus, Professor Emeritus, Department of Biological Sciences, Benedictine University, Lisle, IL 60532.

Earth Sciences

EARTH SCIENCE: God's World, Our Home by Kevin Nelstead. Austin, TX: Novare Science & Math, 2016. xxii + 501 pages. Hardcover; $75.00. ISBN: 9780096352911.

I spent many years teaching science to young adolescents in Christian schools. Throughout those years, I generally preferred using a secular text, because I found that the science content was often stronger, even if a distinctively biblical perspective was lacking. I believed that I, as a middle school teacher, was better equipped to infuse a biblical perspective into my lessons than to develop the science content for myself, and so I made my curriculum choices along these either/or lines. Thankfully, with the ongoing development of new texts, this sort of either/or decision making may no longer be necessary. Nelstead's *Earth Science: God's World, Our Home* is a strong offering in terms of both the science content and the faith perspective. The text invites students and teachers to do "good science" while also presenting a faithful biblical worldview.

Before becoming a teacher at a Christian school, Nelstead served as Senior Cartographer, Geospatial Analyst, and Natural Resources Specialist for the United States federal government for seventeen years. His educational background is strong in Earth science, particularly in geology. He developed this text for middle school teachers in Christian schools based on three core principles: (1) Mastery: aiming for deep understanding and retention rather than the coverage approach prevalent in many science curricula; (2) Integration: deliberately uncovering the connections between the sciences and other disciplines; and (3) Kingdom Perspective: teaching students to "effectively engage issues" and "perceive God's fingerprints in creation" (pp. xiv–xvi).

The text begins with two helpful prefaces: one for teachers and one for students. In these prefaces, Nelstead explains the approach taken in the text in a way that is appropriate for each of these audiences. He includes an exposition of the faith perspective,

beliefs about science, and pedagogical assumptions that underlie the text, as well as suggestions for how to use this text, both as a teacher and as a learner.

The science content included is comprehensive and rigorous. Topics one would expect to find in a middle school science text, such as volcanoes, earthquakes, the water cycle, and climatic zones, are all present here. However, many other topics are also included to support and extend understanding of the major concepts. For example, the chapter on minerals opens with a detailed investigation of atomic structure, the periodic table, and chemical bonds, as these concepts are helpful for developing an understanding of crystal structure. Similarly, the chapter on climatology begins with topics that would be expected, such as the factors that determine climate and an exploration of climate classifications, but then moves on to more challenging topics such as climate change and the impact of air pollution on climates. These are just two illustrations, but I hope that they serve to shed light on the careful structuring of the content both to explain the underlying concepts and to provide application of the ideas in each chapter.

The content encompasses all of the major aspects of Earth science, including techniques for visualizing the earth: geological concepts, including rocks and minerals, the rock cycle, the structure of the earth, and plate tectonics; environmental science topics, such as weathering and erosion, the hydrologic cycle, and landforms; an exploration of Earth's history and geologic timescale; an introduction to oceanography; and meteorology concepts, including the composition of the atmosphere, weather, and climate. This book provides a faithful elaboration of current scientific theories, explaining the natural features of the earth and the processes at work in creation. On a quick read through the book, some of the content seems demanding for young adolescents. Exploring the overall structure of the text, however, helps one to see the thoughtful design to support students' mastery of this challenging content.

The text is very readable, and it includes appropriate graphics to illustrate concepts and provide examples. Nelstead's warm voice present in the text suggests a caring teacher behind the writing rather than the cold prose typical in many science textbooks. Each chapter begins with a historical vignette to introduce the topics to be investigated in an engaging way. A list of objectives to guide students' learning and to offer a means of self-assessment leads the text of the chapter, which is followed by a list of new vocabulary to be mastered. Each chapter is laid out in outline format, providing a deliberate structure for the content. The section headings are informative about what is included, and each section is well written with a clear introduction and conclusion. Each major section of a chapter concludes with a "learning check" composed of several questions that provide an opportunity for formative assessment, and each chapter closes with a series of exercises in various formats, including writing prompts, potential test questions, projects for application of the chapter concepts, and suggestions for further research. Eight of the fifteen chapters conclude with a suggested experimental investigation that students might conduct.

I very much appreciated the approach to potentially controversial topics for Christians teaching science. It can be a challenge for science teachers to navigate the perceived disparity between what scripture teaches and what is observed in creation. Nelstead addresses this challenge head-on by describing a proper understanding of the nature of science:

> We need to engage thoughtfully with the scientific claims of our day. It is not a scientific claim to say that the universe got here by itself; that is a metaphysical claim based on an atheistic worldview. But it is a scientific claim to say that the universe began with the Big Bang and is now 13.77 billion years old … We do not believe it is appropriate to teach students to be dismissive of claims like this one simply because they do not line up with certain ways of interpreting Genesis. (p. xv)

Nelstead is clear throughout the text that he loves scripture and holds the perspective that the Bible reveals God as the caring, sovereign Creator. He emphasizes the perspective in this text as one that accepts "the strong evidence for an old universe" (p. xvi). However, Nelstead also encourages Christian educators to put the issues of the age-of-the-Earth debate behind them, stating, "Since Scripture and creation both come from the same God, they cannot be in conflict. And when both are rightly understood, they won't be" (p. xvi). I recognize that not all Christian educators will agree with this perspective. However, many Christian educators teach with secular texts that embody a very different worldview than that of the teacher. The fact that Nelstead is upfront about his beliefs and how they influence the writing of the book is encouraging, and a model that Christian educators might follow.

The reader should be aware that this text seems to embody a strongly essentialist philosophy of education, emphasizing the development of vocabulary, understanding of basic concepts, and memorization. This is not necessarily problematic, but it is something to be considered in the process of selecting a text. The emphasis on mastery of the material—as opposed to the "cram-pass-forget" cycle introduced in the preface (see p. xiv)—is admirable. However, the current consensus in science education is that

a constructivist approach, emphasizing exploration, first-hand investigation, and authentic inquiry along with reading and writing in science, may lead to a deeper understanding of the concepts. While eight suggested investigations are included in this text, Nelstead seems to acknowledge that this might not be enough to truly provide opportunities for students to explore concepts firsthand. Included in the preface is a short section on "enrichment activities," which includes the statement, "understanding will be enhanced and memory will be strengthened when students engage with the content in activities outside the text" (p. xviii). Teachers intending to follow best practices for inquiry-infused science teaching will still find this a very valuable text for background reading and development of conceptual understanding related to Earth science topics.

I thoroughly enjoyed reading this text, and I believe Christians teaching science will find it a valuable resource. It may prove to be an excellent textbook choice for an earth science course for students in grades 7–9, and I would recommend that science teachers in Christian schools examine it for themselves for possible adoption. Christians involved in teaching science at other grade levels or in different types of schools would also benefit from this text as a resource to keep on the shelf. I believe that anyone interested in a thoughtful elaboration of Earth science that holds a biblical perspective as integral to that study would benefit from reading this book.

Reviewed by David J. Mulder, Dordt College, Sioux Center, IA 51250.

PALEOBIOLOGY

CETACEAN PALEOBIOLOGY by Felix G. Marx, Olivier Lambert, and Mark D. Uhen. Chichester, UK: Wiley-Blackwell, 2016. 345 pages, including contents, preface, color plates, and index. Hardcover; $149.95. ISBN: 9781118561270.

Cetaceans, including modern whales, dolphins, and porpoises, have long been enigmatic animals. In the first edition of *On the Origin of Species* (1859), Charles Darwin speculated how natural selection could have given rise to aquatic mammals like cetaceans, but his example, which was based on observations of black bears swimming in the water and eating insects, was so ridiculed that he removed much of it from subsequent editions. Some key cetacean fossils, hinting at their terrestrial ancestry, were recovered in the mid-to-late nineteenth and early twentieth centuries, but the origin of cetaceans was largely considered a mystery well into the mid-twentieth century. Discoveries of fossils in Pakistan and Egypt in the 1970s and 1980s spurred renewed interest in the early history of these animals, and in the past several decades, the evolution of cetaceans has become one of the most widely cited examples of large-scale evolutionary change evident in the fossil record.

Cetacean Paleobiology is a detailed look at what is currently known about this remarkable evolutionary transition based on the fossil record. The book aims to provide a complete and thorough overview of cetacean evolution, including basic principles of anatomy and taxonomy, summaries of extinct and modern families, explanations of techniques and concepts used to study fossils, detailed analyses of the fossil record, and various case studies. It was cowritten by three authors who have focused on different aspects of cetacean evolution. Felix Marx has worked primarily on the fossil record of the earliest baleen whales (mysticetes), while Olivier Lambert has studied principally the fossils of extinct toothed whales (odontocetes). Mark Uhen has focused his work on the earliest known cetaceans (archaeocetes), which bridge the gap between the terrestrial ancestors of cetaceans and the first fully aquatic forms. Between the three of them, they provide expertise on virtually all aspects of the cetacean fossil record.

Chapter 1 provides a brief overview of cetaceans and how different forms are classified. It includes a short introduction to functional anatomy and a thorough discourse on the methodology that is used to infer evolutionary relationships. This chapter also introduces some of the methods that are used to infer habitat and feeding preferences in fossil animals, including a detailed explanation of stable isotope ratios, and discusses the interplay between evolutionary trends and the biotic and abiotic factors that drive them.

The cetacean fossil record is detailed in chapter 2, and it includes a brief history of exploration and some of the key early figures involved in studying whale fossils. The basics of fossilization are discussed along with its major effects on the fossil record of cetaceans. Much of the chapter is devoted to descriptions of major cetacean fossil localities in the world, including sites such as Wadi Al-Hitan in Egypt, deposits all along the southeastern coast of the United States, and the Pisco and Sacaco basins in Peru.

I suspect that, for many readers, it is in chapter 3, which involves a detailed look at morphology, that the rubber meets the road. The chapter begins with an overview of the skeleton before moving into a detailed look at the skull. The ear region, which is vital for understanding cetacean taxonomy and ecology, is described in extensive detail. Comparatively little of the chapter is devoted to the postcranial skeleton, but the discussion of osteological correlates of soft tissue structures (e.g., muscles, baleen, brain) is