stopping to delve into those that piqued my interest. In the chapter on terraforming a planet, Martin describes his own doctoral research on trilobites in coastal Georgia, including details that provide insight into how we construct the past with the evidence at hand. This section alone would intrigue my students and allow them to see how science is done, as well as how professors interact with graduate students.

Moving on to the chapter “Playing Hide and Seek for Keeps,” I read with interest about trace fossils and body fossils of the Ediacaran. It was at this point that I realized the deeper story here: the narrative of how the evolution of complex life depended, and still turns, upon the knack of animals that burrow. Martin paints a vivid picture of the pre-animal world, and the effect of “mobile, grazing animals” upon that world, composed almost entirely of biomats:

Think of the biomats as barriers to animal progress . . . the first mobile animals had no claws, teeth, or other anatomical attributes to cut through them. Try to open shrink-wrapped CD cases . . . but without scissors, fingernails, or teeth, and you will quickly identify with Ediacaran animals. These films also effectively sealed underlying sediments from oxygen introduced by overlying seawater. As a result, oxygen-deprived sediments below biomats constituted hostile territory for animals. (pp. 195–196)

Martin goes on to describe in detail how the burrowing of animals not only disturbs the biomats, but also fundamentally alters what had been pristine anoxic sediments beneath them. In effect, burrowing animals began to transform the sea bottom while simultaneously positioning the animals for the burst of adaptive radiation we call the Cambrian explosion.

Every chapter takes a different slant, told with disarming personal information and entertaining turns of phrase that effortlessly pull in contemporary references, even Disney movies: “For a long time, the Earth was frozen – but let it go” (p. 197). From how burrowing mammals survived the asteroid 66 million years ago to how pocket gophers recovered from the eruption of Mount St. Helens, the big picture is rendered more real by the inclusion of vivid details and clear rationales:

This evidence for burrowing synapsids and their mammaliaform descendants before and after the Triassic extinction shows not only how these animals would have lived through major ecological calamities, but also how they avoided direct competition with dinosaurs on the surface. Does your world have predators with nasty, big, pointed teeth? Then go underground. Does your world also have animals large enough that, when they step on you, instantly turn you into a furry crepe? Then go underground. . . . Are forest fires, volcanic eruptions, . . . or other disasters making life a little more difficult? Then, well, you get it. (pp. 273–276)

The details of animal history, biology, related geology, and techniques of studying burrows all add up to a satisfying journey through the worlds of burrowing animals. Martin ends with an examination of the Anthropocene and how studying ancient burrows informs our understanding of current and projected future changes:

How do burrows of the past relate to our future, and perhaps hold the key to better predicting how we and the rest of life will

Mate Choice is an extremely thorough gathering of studies and analysis of how organisms choose mates. Many fields of science, including evolution, behavior, statistics, and economics, are used to explain how organisms go about choosing a mate. In the first chapter, the author distinguishes mate choice from sexual selection. He argues that mate choice is not as closely tied to sexual selection as is often implied, but that “mate-choice decisions can be adaptive, non-adaptive, or maladaptive” (p. 13). The first third of the book covers the history, definition, measurements, and studies on mate choice. The middle section covers variations in mate choice as well as how choice is affected by ecological interactions. The rest of the book describes how mate choice affects and is affected by evolution, including sexual selection. The final chapters specifically address mate choice among humans, and the author finishes with a suggested theory about how mates are chosen.

At first glance, this book is overwhelming. It is rich with example after example from multiple types of organisms. Sensory mechanisms such as chemoreceptors, vision, hearing, and touch are the beginnings of the process of mate choice. The author notes that these mechanisms are often the subject of arguments that they are adaptations, since many of them require differing amounts of energy in order to attract a mate. The book doesn’t consider mate choice to be over once the mate has been selected. “Mating, therefore, is just the end of the beginning in mate choice” (p. 176). Once a mate is chosen and copulation has occurred, there are still choices to be made.

From females rejecting sperm to resource allocation, there are still quite a few mechanisms that allow for choice in which offspring survive. The author refers to this as cryptic mate choice, noting that “it may be useful to think about a chooser’s preferences before, during, and after mating as part of an integrated phenotype” (p. 200). Additionally, the book has a chapter on mutual mate choice and extensive chapters on the influence of genetic variation, the environment, and social interactions on choosing a mate.

Later chapters connect mate choice with evolution. “When sex is about producing zygotes, there will be coevolution between the sexes; part of the coevolutionary dynamic will involve mate-choice mechanisms” (p. 482). One of the more interesting parts of this section is one of the last chapters, focused on humans. Humans are “astonishingly diverse in their preferences” (p. 475), which makes studying them in a quantitative or qualitative manner rather difficult. The author makes some suggestions about how to study humans but admits that this will continue to be a challenge.

One of the things I really appreciate about Mate Choice is that the author ends each chapter with a section titled “Synthesis.” After the very detailed, and often statistics-heavy, discussions about the different topics, the synthesis sections sum up the main points. This makes what seems like a very difficult and technical read more user friendly. High school teachers and professors will find this book a useful reference when teaching behavior, evolution, and sexual selection. The examples span prokaryotic as well as eukaryotic organisms. Additionally, the examples of how studies were conducted and analyzed can be utilized as case studies for scientific method and statistical analysis.

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