tion. Instead of relying on just the technical facts of evolution, it seeks to take readers historically through the science's development as well as launching a philosophical defense of its legitimacy as a rigorous, testable science.

The defensive posture is apparent from the first chapter, which introduces readers to the philosophy of a historical science that is not immediately observable. The chapter introduces some key concepts in the philosophy of science as they apply to evolution. Bryson's discussion here is especially clear, and makes effective use of commonsense examples to make the point about the reliability of historical knowledge. I especially liked his use of the assassination of John F. Kennedy as an instance of a historical event that we all know happened, yet did not all observe. This is followed by a nice exposition on fallibilism, and idle and selective skepticism. There is also clear explanation of the use of evidence in evolution along with the proper technical use of the term theory, as in the "theory of evolution."

The remaining chapters then introduce readers to the diversity of life, historical attempts to order it based on relationships (as in the history of the science of systematics), and the historical events leading to the formulation of Darwin's celebrated theory. This is then followed by a chapter on the history of heredity, the work of Gregor Mendel, and the modern synthesis of evolution, which incorporated Darwinian selection theory with Mendelian genetics in a manner that accounted for the origin of biological diversity. There are two additional chapters that introduce more recent developments in biochemistry and molecular biology, and a chapter on the origins of life. The final chapter, Our Place in the Natural World, returns to the big philosophical picture delving into evolution as worldview. The appendix includes a useful timeline of major events in the history of evolution, as well as an informative glossary.

The chapters follow a fairly conventional chronological sequence, but are well organized. There are many helpful illustrations, diagrams, pictures, portraits, and graphs. The boxed inserts are especially useful when clarifying technical points. The writing is clear, although at times a bit dry; and the frequent shifting from the present tense to the historical past tense is at times frustrating.

For the most part, the history is accurate, although I really wish a bit more had been said to convey something of the context of discovery. The section on the history of geology that included mention of William "Strata" Smith and the development of the first geological map of England would have benefited from more recognition of the importance of canal building and mining during Britain's Industrial Revolution. Even though some reference is made to social Darwinism, I really wish there had been a bit more discussion, especially given the way that it has been erroneously used to link Darwin and his theory with ideologies such as Nazism (see Ben Stein's contribution to the "infotainment" industry entitled *Expelled* for one egregious example). Here perhaps, Bryson might have benefited from reading some more of the available historical literature by scholars such as Peter Bowler and Janet Browne (both authors and their books seem to be missing from the otherwise useful bibliography). More might have also been said about evolution's codiscoverer, Alfred Russel Wallace (whose middle name is spelled with only one "l"). This would have also been a splendid way to bring in more about island biogeography and its contributions to conservation biology. So, too, more might have been said about biodiversity studies.

What has been included is, however, laudable, and very nicely organized; for instance, we see in later chapters how much Bryson has tried to include new developments in "applied" evolutionary biology such as examples from evolutionary medicine and virology to fortify his case for evolution, as well as including new and promising insights from evolutionary developmental biology ("evo-devo"). Altogether this is very nice book, and one that will be very useful to introducing younger scientists and general readers to what many of us who work in evolutionary biology and its history take for granted.

Vassiliki Betty Smocovitis, *Zoology and History, University of Florida, Gainesville, Florida*

Relics of Eden: The Powerful Evidence of Evolution in Human DNA.

By Daniel J. Fairbanks. Amherst (New York): Prometheus Books. $24.95. 281 p.; ill.; index. ISBN: 978-1-59102-564-1. 2007.

In this delightful book, the author takes readers on a tour of genomic variation, from strikingly simple chromosomal differences between humans and chimpanzees to highly complex patterns in genes and gene families. At each stop, Fairbanks treats a new pattern of variation as if it were a puzzle to be solved, demonstrating the simple logic one can use to figure out how, and even when, genomes change over time.

The author's approach is example-based—a series of exceptionally interesting molecular evolutionary case studies. These are well and clearly written. Chapter 1 is typical; Fairbanks offers a discussion of chromosomal structure, especially repeated motifs in telomeres, and shows that human chromosome 2 looks to be the result of an accidental fusion of two sepa-

rate chromosomes carried by our ancestors, but which are now joined. Subsequent chapters take on progressively more complex pattern variation in transposable elements, mitochondrial DNA, genes, and gene families. Most of these examples focus on comparisons between humans and the other primates, gradually assembling a scaffold of evidence that, in system after system, the human genome shows evidence of both its ancient origins and its close alliances with those of the great apes.

Although easy to read, *Relics of Eden* is not light. In many ways, the chapters are reminiscent of *Nature*'s News and Views. For this reason, the book will probably have its greatest impact on advanced undergraduate and graduate students, although it is certainly worth reading even if you already know a lot about the topic. One feature of the volume that is especially enjoyable is that most chapters stand on their own, with each introducing and fleshing out a different molecular evolutionary process. This makes for enjoyable reading, but also suggests that the book would make an excellent supplement to a graduate course or journal club.

STEPHEN WOODING, *McDermott Center for Human Growth & Development, University of Texas Southwestern Medical Center, Dallas, Texas*

BEHAVIOR

EVIL GENES: WHY ROME FELL, HITLER ROSE, ENRON FAILED, AND MY SISTER STOLE MY MOTHER'S BOYFRIEND.

By Barbara Oakley. Amherst (New York): Prometheus Books. $28.95. 459 p.; ill.; index. ISBN: 978-1-59102-580-1. 2007.

From Darwin on, great effort has gone into understanding how moral (or altruistic) behavior could emerge from an evolutionary process. Barbara Oakley turns this question on its head by asking how natural science can explain the "successfully sinister" among us. By "successfully sinister," or "Machiavellian," she means those who tend to bend their moral compass to fit their goals, and who use their charisma to achieve those goals. Individuals who exemplify this nefarious behavior range from Hitler, Stalin, Milošević, Ceauşescu, and Mao Zedong (who is responsible for the most deaths), to her own sister and the family of Paris Hilton. Oakley's combination of historical and personal storytelling is captivating, but it raises the question of whether there is an underlying psychological or biological explanation for the wide range of individuals and behavior. Can the backstabbing coworker be explained similarly to a murderous and brutal despot? All of us are an admixture of nature and nurture; genetics plus environment. Although noting the role that the environment contributes to creating the successfully sinister, the author emphasizes the supposed genetic correlates of their behavior.

Oakley's discussion encompasses the psychological, biological, and evolutionary roots of Machiavellian behavior. Especially nice is her discussion of the neurophysiology and behavioral characteristics of a range of disorders, such as borderline personality disorder and psychopathy. The link between brain and moral behavior, as she explains, is the role that emotions play in moral deliberations. Less good, however, is her discussion of the evolutionary roots of evil. She uses the fact that some despots, such as Genghis Khan, had a prodigious number of offspring as evidence of the selective advantage of Machiavellian behavior. However, this sort of evidence does not seem convincing; the case linking behavior to genetics is not strong enough.

This work of popular science writing strikes the right tone, digesting a wide range of scientific material while telling a crackling good tale. But there are dangers in discussing the evolutionary roots of evil. Using evolution as a tool to understand the evil tendencies of individuals may inadvertently imply a social Darwinian justification for evil. In fact, Oakley argues that many traits, such as narcissism, are common in the "successfully sinister" and often contribute to their effectiveness in achieving their success, such as in dictators, CEOs, and politicians. Alternatively, it may seem that in order to be moral we have to shed our evolved, innate nature, whatever that may be. Or, more troublingly, one might infer that there is nothing that can be done to eliminate evil in the world, since it is rooted in our genes. To be sure, Oakley does not make these connections, but she does not take care in distancing herself from such thoughts either.

JASON ZINSER, *Philosophy, University of North Florida, Jacksonville, Florida*

MORAL MINDS: HOW NATURE DESIGNED OUR UNIVERSAL SENSE OF RIGHT AND WRONG.

By Marc D. Hauser. New York: HarperCollins. $27.95. xxi + 489 p.; ill.; index. ISBN: 0-06-078070-3. 2006.

Quite early in the construction of his theory, Darwin realized that he had to explain the distinctive features of the human animal to forestall the return of the Creator. For most British intellectuals,