



NEW BIOLOGICAL BOOKS

The aim of this section is to give brief indications of the character, content, and cost of new books in the various fields of biology. More books are received by *The Quarterly* than can be reviewed critically. All submitted books, however, are carefully considered for originality, timeliness, and reader interest, and we make every effort to find a competent and conscientious reviewer for each book selected for review.

Of those books that are selected for consideration, some are merely listed, others are given brief notice, most receive critical reviews, and a few are featured in lead reviews. Listings, without comments, are mainly to inform the reader that the books have appeared; examples are books whose titles are self-explanatory, such as dictionaries and taxonomic revisions, or that are reprints of earlier publications, or are new editions of well-established works. Unsigned brief notices, written by one of the editors, may be given to such works as anthologies or symposium volumes that are organized in a fashion that makes it possible to comment meaningfully on them. Regular reviews are more extensive evaluations and are signed by the reviewers. The longer lead reviews consider books of special significance. Each volume reviewed becomes the property of the reviewer. Most books not reviewed are donated to libraries at Stony Brook University or other appropriate recipients.

The price in each case represents the publisher's suggested list price at the time the book is received for review, and is for purchase directly from the publisher.

Authors and publishers of biological books should bear in mind that *The Quarterly* can consider for notice only those books that are sent to The Editors, *The Quarterly Review of Biology*, 111 Nassau Hall, 100 Nicolls Road, Stony Brook NY 11794-5004 USA.

REVIEWS AND BRIEF NOTICES

History, Philosophy, and Ethics of Biology . . .	17	Anatomy and Physiology	45
General Biology.	23	Cell and Molecular Biology	46
Paleontology	24	Genetics	48
Ecology	25	Microbiology	50
Conservation Biology	30	Botany.	50
Evolution.	32	Mycology	51
Taxonomy, Systematics, and Phylogenetics . .	36	Zoology	52
Behavior	36	Human Biology and Health	58
Neurobiology.	39	Miscellaneous	60

HISTORY, PHILOSOPHY, AND ETHICS OF BIOLOGY

DEBATING DARWIN.

By Robert J. Richards and Michael Ruse. *Chicago (Illinois): University of Chicago Press.* \$30.00. xvi + 299 p. + 19 pl.; ill.; index. ISBN: 978-0-226-38442-9 (hc); 978-0-226-38439-9 (eb). 2016.

Fierce controversies rage among 21st-century evolutionary biologists, but controversy also rages between two 21st-century erudites, science historian Robert

Richards and science philosopher Michael Ruse, who argue with each other passionately and eloquently in *Debating Darwin* about the influences that affected and inspired Darwin's 19th-century evolutionary ideas. The controversies of practicing evolutionary biologists will—after all is said—be quieted when the convincing experiments are done, but in a debate between an historian and a philosopher about what inspired the mind of Darwin, I suspect that neither side will “win,” but all readers will find new ways to explain “the mind of Darwin” (p. viii).

When I opened *Debating Darwin*, I thought I already knew a lot about 19th-century Darwinism: I have been reading *On the Origin of Species* and *The Descent of Man* since my first months in graduate school almost 45 years ago, and I have also been an avid reader of Alfred Russel Wallace's tomes. And, even today, intellectually situated as I am, I daydream about what Darwin would think about the developments in modern evolutionary biology. Unlike my self-centric imagining of "what would Darwin say," these authors are trying to catch a glimpse of Darwin's mind in his own time. Richards would say my daydreaming is nothing but a "backward slide" (p. 152) and I suspect he would enjoin me to study my own mind, for he insists that the first job of readers of history is to "study the historian" (p. 152), a perspective that implies that among the first jobs of readers of philosophy is to study the philosopher. All good advice, as far as I can see.

The litany of contention includes Richards' claim that Darwin's reading of Alexander von Humboldt, and his shore excursions during the *Beagle* years, seriously affected Darwin's theory of evolution by natural selection and made Darwin far more cosmopolitan than Ruse asserts. Ruse fervently argues that Darwin's ideas percolated through his place in the social, economic, and intellectual foment of industrializing England. The two contend over the meanings of Darwin's metaphors, his teleology, their methods of analyzing Darwin's words, and Darwin's own claims about the development of his thoughts. They argue whether the external environment that Darwin experienced was more important or less important than the mind he created in his study, his notebooks, and his sandwalks. They argue over Darwin's supposed commitments to religious and social ideologies. Ruse exclaims that he and Richards are in different paradigms: they use the same language, but they "refer to different things" (p. 179) and as far as Ruse is concerned, Richards and he sometimes talk past each other. They argue over whether Darwin was a committed individual selectionist or a group selectionist. Ruse is insistent on the primacy of individual selection. And, so it goes on.

The texts of each author of *Debating Darwin* were arrestingly interesting. I suspected that each would be animated about their views, but I was unprepared for the force of their disagreements, or for their declarations of abiding friendship even though, or perhaps because of which, they were in each other's faces contesting issues they deem key to understanding Darwin's genius. I learned a great deal reading the complicated and intellectually demanding *Debating Darwin*, over and over, more times than I can count during the eight months the book has been in my hands. I recommend it to every serious evolutionary biologist and to those armchair evolutionists who re-

main fascinated with Darwin's century, and to teachers of history and philosophy. I imagine that *Debating Darwin* would be an outstanding book for graduate seminars and for advanced undergraduates.

PATRICIA ADAIR GOWATY, *Ecology & Evolutionary Biology, University of California, Los Angeles, California*

PURPOSE & DESIRE: WHAT MAKES SOMETHING "ALIVE" AND WHY MODERN DARWINISM HAS FAILED TO EXPLAIN IT.

By J. Scott Turner. HarperOne. New York: Harper Collins Publishers. \$27.99. xvi + 332 p.; ill.; index. ISBN: 978-0-06-265156-3. 2017.

For those who still believe that the fundamentals of modern biology were firmly established by Darwin's monumental theory of evolution a century and a half ago, and fine-tuned by neo-Darwinism some seven decades later, J. Scott Turner's provocatively titled book *Purpose & Desire* is a further reminder that biological's very nature remains mired in controversy and uncertainty. In entering this conceptual minefield, this volume focuses on life's most beguiling characteristic, its purposeful nature—termed agency—and in defiance of traditional biological thinking, argues that this characteristic is actually central to understanding life and the evolutionary process. The author then proceeds to build on this theme to argue three main points, all controversial in varying degrees. First, that the central thesis of neo-Darwinism, namely, that evolution is the result of what Turner labels a "soulless lottery" (p. 292) of the gene pool, rests on the shakiest of grounds and is long due for revision. Second, that life's most significant characteristic is homeostasis, a physiological phenomenon first described by the 19th-century physiologist Claude Bernard. In fact, Turner builds on Bernard's pioneering ideas by elevating this generally accepted phenomenon to the status of Biology's Second Law (after Biology's First Law, natural selection). And, finally, that homeostasis does not derive from natural selection, but from a "cognitive sense of self" (p. 292), taking what might be considered a fundamentally vitalist position. All provocative stuff destined (intentionally) to make traditional neo-Darwinists recoil aghast.

What makes the book so worthwhile and thought-provoking is, however, that Turner is a deeply knowledgeable biologist, well versed in the intimate details of evolutionary theory and the convoluted path the evolutionary debate has taken over the past 150 years. He pulls no punches in expressing his conviction that something is rotten in the state of contemporary evolutionary theory, and what has long passed as biology's guiding light is no longer tenable.

With regard to life's purportedly purposeful/teleological character, the case he presents has some his-