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BOOK REVIEW

The Ever-Flowing Rush of Scientific Literature

***Evolution: The First Four Billion Years*, Edited by Michael Ruse and Joseph Travis with a foreword by Edward O. Wilson. Cambridge, MA and London, UK: The Belknap Press of Harvard University Press, 2009. Pp. Xii + 979. H/b $39.95**

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"The author reveals some curious facts in this memoir, which from its unpretending and somewhat indefinite title, we fear may be overlooked in the ever-flowing rush of scientific literature." This is the first line of Charles Darwin's 1863 review of Henry Walter Bates' 1862 paper on mimetic butterflies (Darwin 1863). Darwin was clearly worried that the title of the paper "Contributions to an Insect Fauna of the Amazon Valley" would hide the rich vein of information contained in the paper that he saw to be powerful evidence of natural selection acting in nature. Most of Darwin's evidence in *The Origin* came from his observations of domestic species.

Even in 1862, Darwin was worried that there was a danger that Bates' important paper might be buried forever in the scientific literature of the day. Here we are, almost 150 years later; a mere blip in evolutionary time but drowning in information overload. There is little danger, however, that *Evolution: The First Four Billion Years* will be lost, despite "the rush of scientific literature" on all facets of evolution associated with the various sesquicentennial and bicentennial celebrations of 2009.

The editors, Michael Ruse and Joseph Travis, are not bashful in revealing their love of evolution, and it shows in their impressively comprehensive collection of topics in the book. They have generally achieved their stated goal of presenting evolution as a "modern dynamic discipline." The book is large (979 pages) and consequently rather daunting at first, although it is not so bad when one delves into its contents and explores the strata of information contained within.

The book is divided into two parts: a collection of long essays on "the overarching themes in evolution," while the second part contains "a large number of shorter essays on more specific topics." The second part includes essays on major groups of organisms, major players (both past and present) who shaped evolutionary thought, and the critical books that shaped the history of discovery, development, and maturation of the discipline of evolution.

The first 399 pages are filled by a series of sixteen in-depth chapters on contemporary topics of evolutionary biology written by an impressive lineup of acknowledged leaders in their fields. Most of the topics in this first part are covered at an advanced level, and many, but not all of them, will require prior knowledge of the specific discipline. The chapters touch upon most of the different themes of contemporary evolutionary biology. Just think "Evolution" and add it to each of the following topics: History, The Origin of Life, Paleontology, Adaptation, Molecular, Genome, Behavior, Development, Social, Human, Disease, Forms, Philosophy, Society, Religion, and Antievolutionism, and you will get the idea of the comprehensive coverage of the subject.

The second section: pages 400 through 934 are filled with an "Alphabetical Guide": a veritable ABC or "Adaptation, Bates, Chance" of the first four billion years of evolution. For the longest time, I was under the impression that this was supposed to be a comprehensive and encyclopedic coverage of evolutionary biology, but it is rather a series of short essays. Some of them are very short indeed. This section includes biographies of many, but not all, of the major figures in the history of evolutionary biology. A few who are still alive and kicking have been

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included, and I feel there is a danger here of offending those deserving souls who have been omitted.

In fact, while strong in places, the second section of the book tends to be patchy, both in the coverage and level of detail in the topics chosen. For example, if we are talking anniversaries, then I did not find an entry on Charles Dolittle Walcott, whose centenary of the discovery of the Burgess Shale is celebrated this year (Collins 2009). The Burgess Shale is covered in reasonable detail (a four-page essay that includes one photograph of *Hallucigenia sparsa* and one diagram of a reconstruction of the same animal), but I could find no mention of Walcott himself—even in the extensive index.

My feeling is that *Evolution: The First Four Billion Years* might have been published as two volumes: a collection of reviews and rather than a series of shorter essays, a more comprehensive encyclopedia of evolution with many more illustrations, which would ideally be in color to fully communicate the truly dynamic and modern nature of evolutionary biology. The book in its current form, while large, will be a valued addition to any library and will bring the topic alive for patrons of many different abilities and backgrounds.

Let us get back to Darwin and his review of Bates' paper. He continues, "By what means, it may be asked, have so many butterflies of the Amazonian region acquired their deceptive dress? Most naturalists will answer that they were thus clothed from the hour of their creation—an answer which will generally be so far triumphant that it can be met only by long-drawn arguments; but it is made at the expense of putting an effectual bar to all further inquiry. In this particular case, moreover, the creationist will meet with special difficulties; for many of the mimicking forms of *Leptalis* can be shown by a graduated series to be merely varieties of one species: other mimickers are undoubtedly distinct species or even distinct genera."

Evolution: The First Four Billion Years is a testament to the advancements in our understanding of evolution made over the past 150 years. It will provide inspiration for "further inquiry" and presents many more examples where the creationist is met with "difficulties."

References

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