from their more famous opponents. There is intercalary journalistic prose and an ongoing impression of awe and excitement.

The choice of material is admittedly idiosyncratic. The intention seems to be to collect those aspects of biology that are philosophically and metaphysically exciting, which is fine. But there are questions. Is what is called by some "a good discussion" always a good thing? Some ideas must be accepted, whatever our politics or background, because they are empirically valid; others must be opposed because they are empirically invalid. But ideas are never born with papers of legitimacy. How are we to respond to the ambiguously valid? In the last case, do we merely fall back on intuition or on our sense of excitement, or do we wait for validation before taking them too seriously? Or do the ideas of some individuals automatially demand our attention? Specifically, if a scientist does excellent specialized research for long enough, does this provide a kind of validity to his of her intuition in other areas?

The focus of the comments in this anthology is on scientific systems builders (scientific stars), rather than bookkeepers (scientific spear carriers). This novel partitioning is attributed to E. O. Wilson in an excerpt from *Three Scientists and Their Gods* by Robert Wright (Random House, 1988). It is not fair to hold anyone responsible for a quotation by anyone else, but Wright, and certainly Barlow, seem to accept this as an important distinction, isomorphic with the distinction between stars and chorus in opera. In fact, they seem to think not of the helpful choruses of opera but rather of the silly irritating choruses found in the plays of Aristophanes, whose role is to badger the poor stars. The number of stars is not great in Barlow's opinion: "Julian Huxley was among a *half dozen* biologists who [developed] *the modern synthesis* [in evolutionary theory]" (p. 67; author's italics.) Stars are permitted idiosyncrasies that are not appropriate for the chorus. The systems builders seem to have contact with a spiritual afflatus that transcends more plebeian tests of scientific validity.

Interest in the personalities of scientific stars is on the rise. A recent book consisted of a series of interviews with cosmologists and another focused on the personalities of the scientists involved in disputes over classification. A book on science as rhetoric has also appeared. To adulate the producers of exciting ambiguity is a most alarming intellectual trend. For most of my life, I have considered the scientific stage to be governed by the rules of repertory theater, in which the individual scientist stresses the script that must be presented rather than his or her own idiosyncrasies.

As theater has moved from repertory to a star system, so science may now be emerging into the age of stardom. This book can be taken as an intellectual fan magazine, and, if accompanied by at least a dessert spoon of salt, is stimulating reading for both scientists and intelligent laypersons.

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TEXTS FAIL TO EVOLVE

Evolution. Monroe W. Strickberger. Jones and Bartlett, Boston, 1990. 579 pp., illus. $45.00 (ISBN 0-86720-117-7 cloth).

I admire the general organization of this book, although, as I will explain, the content fails on many levels. I admire the avowed intention of Monroe Strickberger to look at evolution from a historical point of view. Despite the fact that this outlook fits my biases as a systematist, it represents a shift in focus compared with the structure of conventional textbooks on evolution, which tend to have their emphasis at the so-called level of mechanisms. The latter is generally a code word for population genetics (change in gene frequency), and although this aspect is undeniably important, too often higher-order mechanisms such as speciation and extinction-rate controls, which have much to do with how the organic world is organized and which often

(but not always) have little relationship to processes at the level of genes and populations, fall victim to the reductionist world-view. Thus this new text includes no fewer than seven chapters specifically devoted to tracing life's history, more than any other general textbook on evolution with which I am familiar. The author, moreover, is to be commended for acknowledging the fact that organisms other than primates and humans have diversified on the face of the earth.

The book itself has four main sections. The first, "The Historical Framework," includes three chapters tracing pre-Darwinian thinking, describing Darwin and his ideas, and reporting the reception of those ideas, and also a chapter on evolution and religion. The latter is somewhat remarkable for evolution textbooks in that it addresses controversial, some may well say confrontational, subjects right up front, such as the origin of religious belief and the differences among creation myths.

The second section of the book, "The Physical and Chemical Framework," contains five chapters covering the origins of the universe, the earth, and life. The large third section, "The Organic Framework," has ten chapters, one on genetic variation, one on systematics and classification, one on molecular phylogeny, and the seven previously mentioned that recount the history of the major groups of organisms. Finally, the last section, "The Mechanisms," includes five chapters covering population genetics (two chapters), population structure, population interactions, adaptation, speciation, and finally the cultural aspects of human evolution. Why the chapter on genetic variation was not included here is perplexing.

Evolutionary biology is such a rich and complex discipline that it is perhaps too much to ask that a single author cover all of it, let alone with a depth of scholarship that would satisfy specialists in the different subdisciplines. Each author will make choices of emphasis.

Strickberger, as opposed to Douglas Futuyma in his 1986 book, *Evolutionary Biology*, emphasizes the origin of physical systems such as the universe and the earth, the origin of life, and the history of life; at the same time he de-emphasizes mechanistic components such as genetics, development, and ecology. The latter subjects, of course, will probably appeal more to contemporary evolutionary biologists, but I suspect the former may be better fodder for undergraduates. It may be a more rewarding strategy to educate the general undergraduate student in the multifarious beauty of the history of diversity and the overwhelming implications of this complex history over deep-time for their own lives than to skirt this topic in favor of the details of mechanism.

Mechanisms, of course, must be taught, and they are taught in dozens of courses in ecology, population genetics, behavior, and molecular evolution. If biology fails, however, to connect the diversity we see today with its long, convoluted, and unique history through space and time, then we lose the opportunity to impress on students perhaps the primary intellectual reason for our desire to preserve it: all organisms share an intricate historical bond reflected in similarities of structure, function, and ecology, which we break apart at our peril.

If this book's heart is in the right place as far as emphasis, its content is so out-of-date in parts that one could not in good conscience ask students to learn much of the material. The seven chapters on the history of life, for example, seem taken straight out of comparative anatomy and paleontology books of the 1950s and 1960s. Our understanding of the history of life has increased immensely over the past decade or so, not only because of the application of powerful comparative (cladistic) methods for understanding patterns of morphological similarities but also because of many molecular studies. Yet virtually none of this data is incorporated here. One could point to dozens of papers and books with results more relevant than those included here.

I also find it unacceptable for a book on evolution to devote only approximately five pages directly to the subject of speciation. There is no more fundamental pattern/process within evolution than the origin of taxa; it is what evolution is all about. Although other textbooks on evolution also devote too little space to speciation and its associated issues, this book must set a record for the fewest pages. Moreover, despite its emphasis on history, the book does not convey the fundamental contribution that modern systematic and biogeographic analysis has made to the study of speciation—the origin of biotas and patterns of diversity—and to the historical analysis of evolutionary change in structure, function, ecology, and behavior. In addition, there is much too little discussion of molecular evolution, the contributions of developmental biology to understanding the origin of evolutionary novelties, and the role that ecology and behavior play in population change and coevolution.

I am disappointed that I cannot give this book lofty praise because it is pointed in a direction toward an emphasis on the history of diversity that signals a healthy change compared with many recent textbooks on evolution. Yet its content is inadequate at this stage of our knowledge, and the book also fails to document and convey many of the current trends in evolutionary research that are likely to dominate the field for some years to come.

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RECASTING ACADEMIC ROLES

Scholarship Reconsidered: Priorities of the Professoriate. Ernest L. Boyer. Princeton University Press, Princeton, NJ, 1990. 147 pp., illus. $8.00 (ISBN 0-931050-43-X paper).

If departments of biology in research, doctorate-granting, and comprehensive universities are interested in opening a dialog among undergraduate majors, graduate students and the faculty regarding the role and responsibilities of the university for teaching and learning, this important book can make a valuable contribution. Ernest Boyer is, through a new and fresh