

## BOOK REVIEWS

**The Meaning of Evolution: The Morphological Construction and Ideological Reconstruction of Darwin's Theory**, by Robert J. Richards. Chicago: University of Chicago Press, 1992. pp. xv + 205. \$19.95 Hardback.

This is a history of ideas about the relationship between embryological development and the origin of species. If it were no more than this, it would have little interest to readers of this journal who are not biologists. In a carefully unfolded argument, however, Richards shows that Darwin's own views on this relationship have been misread by some modern biologists, probably because they needed Darwin as an identified adherent of their own views on evolution.

Chapter I, "The Natural History of Ideas," is an overture in which Richards introduces the principal themes of his work. In Chapter 2, "Evolution vs Epigenesis in Embryogenesis," he reviews the earliest ideas, of the 17th and 18th centuries, on embryology. He shows that in the 18th century the word *evolution* served to describe both the development of an adult form from early embryonic stages and the emergence of new species from earlier, ancestral ones. This dual denotation persisted well into the middle of the 19th century. Today, the word *evolution* refers, nearly always, to the emergence of new forms of life from previous ones. Richards correctly reminds us that there was much discussion of the evolution of species in the 18th century and in the first half of the 19th century, long before Darwin published his *Origin of Species*. In Chapter 3, "The Theory of Evolutionary Recapitulation in the Context of Transcultural Morphology," Richards reviews the ideas current in the early 19th century that suggested embryological development to be a recapitulation of more primitive or "lower" forms of life. Chapter 4, "Emergence of Evolutionary Theories of Species Change" provides a short review of pre-Darwinian ideas on evolution.

Chapter 5, "Darwin's Embryological Theory of Progressive Evolution," comprises about one third of the entire book. Citing Darwin's publications and his correspondence, Richards shows that Darwin fully accepted the idea that embryological development is a recapitulation of the evolution of species. On page 172 he quotes a passage from Darwin's *Origin of Species* that should leave no doubt on this point. Most modern biologists and historians of science are unaware that Darwin held such views, and the idea of ontogenesis as recapitulation of phylogenesis is generally credited to Haeckel and considered "un-Darwinian." Certainly Haeckel's name became identified with the catchphrase "ontogeny recapitulates phylogeny," but Haeckel popularized an idea that earlier biologists, such as Lorenz Oken and (the younger) Johann Friedrich Meckel, conceived before him. Darwin discussed and endorsed the concept.

Does what Darwin thought about embryology now matter? Perhaps not, but a misreading of his views does matter, and importantly. Richards shows this in his last chapter, "The Meaning of Evolution and the Ideological Uses of History." The dominant view of evolution among modern biologists is that it proceeds by chance variations without direction. They have all but banned the word *teleology* from discourse in biology. Evolution, they affirm, occurs through random events and is going nowhere. Recapitulation, however, entails constraints and suggests directedness in evolution. This concept was congenial to Haeckel, but Haeckel's extreme views on racial superiority seemed to make it plausible for Gould to assign some blame to him for the rise of National Socialism in Germany under Hitler. In the politics of biology, however, one needs significant allies; and because Darwin is the most important figure in the development of the theory of evolution, the modern neo-Darwinians, Richards argues, wish that he thought as they think. They need him on their side in an ideological debate, and so they have read in the Darwinian scripture what they wished it to affirm. Their need for Darwin's endorsement blinded them to what Darwin really did think, which is that embryological development may be evolutionary recapitulation and evolution may be progressive.

Richards does not hesitate to call such modern historians of evolution as Mayr, Gould, and Bowler "ideologues." He is not, however, mean-spirited about this, and he provides an admirable summary of what he means by an ideologue. This deserves quotation at length:

A historical representation will be ideological . . . if the following conditions obtain: first, the historical account employs an interpretative framework or set of assumptions that are covert and neither justified nor argued for in the account; second, the framework or assumptions express the shared values and position of a particular community rather than the idiosyncratic view of the historian; third, the main function of the framework or assumptions is to justify the shared values and position rather than to realize the principal value of recovering the past; and finally, the historian's interpretations and arguments serve chiefly to justify the framework and thus the values. (p.175)

Richard's documentation of Darwin's views seems to me fully to warrant his conclusion. Reading his book led me to ask myself what other misreadings are now being used to suppress dissident views in science; and this is why I recommend the reading of this book to all members of the Society for Scientific Exploration as well as to all scientists who are not yet members. To what extent are ideologues suppressing us? And we must not fail to ask the corollary question: How many of us are ideologues without acknowledging our failing?

Darwin himself once wrote: "Great is the power of steady misrepresentation; but the history of science shows that this power does not long endure." Or does it? The misrepresentation of Darwin that Richards exposes has endured for a century or longer. If biologists are inclined to become ideologues, we need more historians like Richards to correct our biases.

This book is handsomely produced. It contains a useful bibliography and index. Some of the footnotes are long, but many of them are fully as interesting as the text itself. A large number of photographs add to the value and enjoyment of the book. They include portraits of all the important contributors to the development of pre-Darwinian ideas on embryology and evolution. A photograph of Darwin taken, I think, in 1881 (he died in 1882) is wrongly dated to 1884. The caption beneath a portrait of the elder Johann Friedrich Meckel (1724-1774) seems appropriate not for him but for the younger Meckel of the same name, his grandson, who lived from 1781 to 1833. These, however, are the only errors I found.

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**Revelations: Alien Contact and Human Deception**, by Jacques Vallee, New York: Ballantine Books, 1991, 273 pp., ISBN 0-345-37172-0, \$20.00, (available from The Sourcebook Project, P. O. Box 107, Glen Arm MD 21057).

Vallee, a French-born astronomer and computer scientist, has spent three decades investigating UFO events as well as the social nature of the UFO phenomenon. He was a long-time associate of the late astronomer J. Allen Hynek of Northwestern, serving with him as an investigator for the Condon Committee's examination of UFO sightings during the 1960s (USAF, 1969). The committee concluded that UFO sightings were largely misperceptions of natural events, but both Hynek and Vallee soon became convinced of the reality of the UFO phenomenon, although not necessarily of its extraterrestrial origin. This conviction appears throughout *Revelations* (e.g., pp. 7, 97, 165, 226 and 228). "[UFOs] are," Vallee tells us, "astounding physical anomalies that have the ability to affect the perception of time and space and the consciousness of those who come close to them" (p. 226-27) and are "associated with a form of nonhuman consciousness that manipulates space and time in ways we do not understand" (p. 236). However, as a scientist, he remains quite skeptical about reports of humans being abducted by spaceships, captive humanoids being held at secret locations and similar claims that fascinate and inspire some ufologists. Indeed, Vallee presented a paper at the 1989 SSE meeting cogently ar-