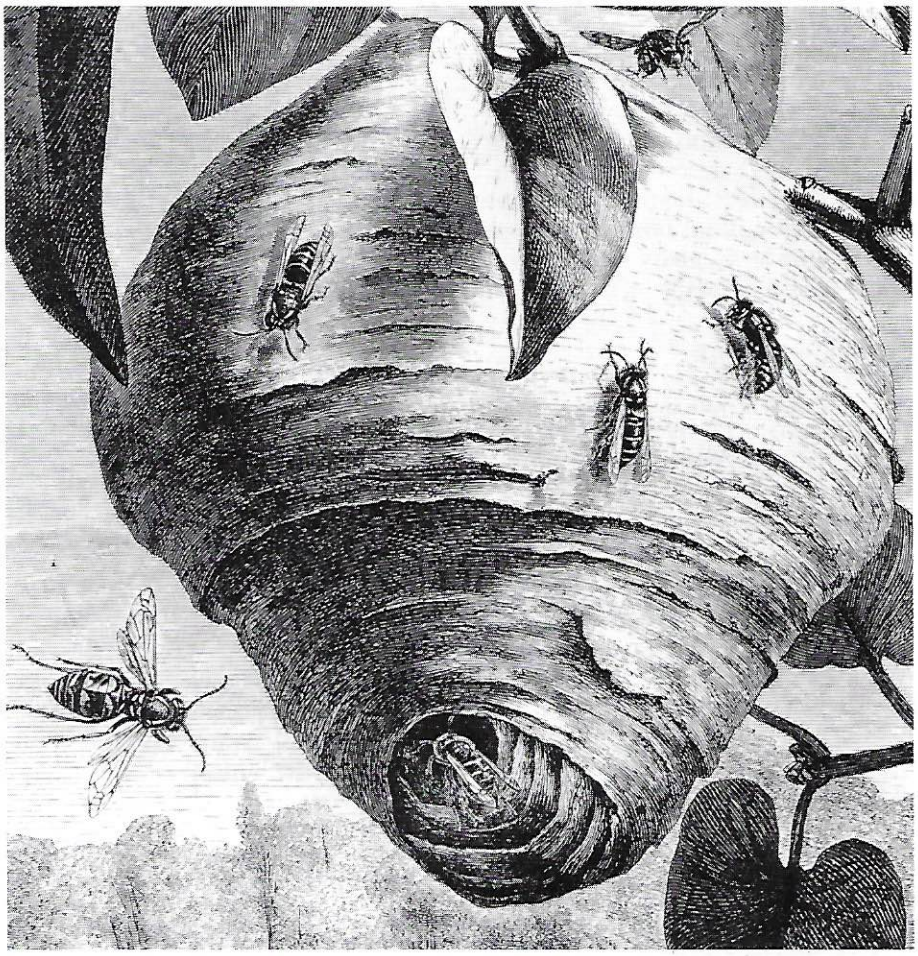
Epiphanies, stars, and bookkeepers

From Gaia to Selfish Genes: Selected Writings on the Life Sciences. Connie Barlow, ed. MIT Press, Cambridge, MA, 1991. 240 pp., illus. $17.50 (ISBN 0-262-02323-7 cloth).



Social insects and selfish genes. Figure courtesy MIT Press.

This complex anthology, organized as case studies, is made up of excerpts from previously published papers, books, newspaper accounts, and magazine articles, along with italicized comments by editor Connie Barlow, who transmits her own fascination with the various subjects and personalities. It is a book that was created, rather than written. The general subject matter and motivation are clear enough: to introduce exciting and highly controversial science to general readers. The anthology structure makes it difficult to assign responsibility for specific assertions. No one with any degree of sophistication can agree with all of it, and anyone of spirit will be angered by some part of it. It is nevertheless fascinating.

The first case considered is Lovelock's "Gaia," which began as a neologism for biogeochemistry but is being endowed with two non-empirical properties. First, Lovelock and his converts assume that the feedback processes of biogeochemistry are capable of withstanding most perturbations and that the responses to perturbations are always in a direction beneficial to life. If one swallows that, then the next assertion comes easily, namely that Gaia, this biogeochemically based reification of the what G. E. Hutchinson's students call the biosphere, is basically benign and may serve as the foundation for a new Earth-centered religion. There are no misprints in the previous sentence. It has been known at least since W. I. Vernadsky, more than 60 years ago, that most of the properties of the biosphere are results of the activities of organisms, but Lovelock claims this as a new revelation, on which Gaia is based. He is quoted as saying, "Gaia may turn out to be the first religion to have a testable scientific theory embedded in it" (p. 35). Certainly if blasphemy was still of interest it would be important to more adequately discuss all the problems raised by this one case. That would fill a book as long as the one being reviewed, and similar comments apply to several other examples cited. I can only run down a partial list.

Bill Moyers and Joseph Campbell have a lofty discussion pointing out (*inter alia*) "We need myths that will identify . . . with the planet" (p. 39). This idea appears as a refrain in several other places. Lynn Margulis appears in two aspects: as a priestess or disciple of Gaia and in her much more elegant role as the elucidator of so much that was new and beautiful in her explication of the role of symbiosis in the origin of eukaryote cells. L. von Bertalanffy's role as the originator of general systems theory, and biologists R. Axelrod on game theory, E. O. Wilson and R. Alexander on sociobiology in the 1970s, and R. Dawkins on selfish genes each are represented, with some quotations

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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