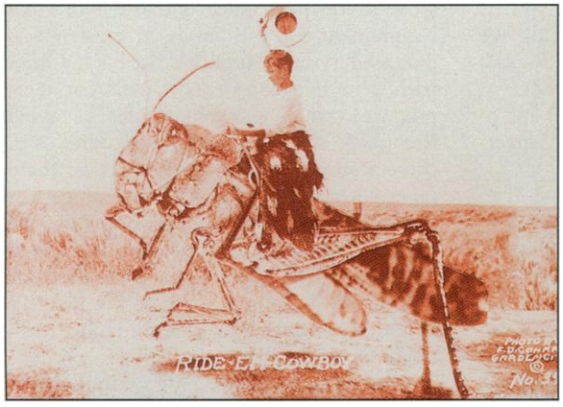
Inevitable Companions

Bugs in the System. Insects and Their Impact on Human Affairs. MAY R. BERENBAUM. Addison-Wesley, Reading, MA, 1994. xvi, 377 pp., illus. $25 or $C31.95.

"The vast majority of people consider it a high priority to minimize the extent of their interaction with the insect world." Yet, May Berenbaum points out, there may be 10 quintillion individual insects on Earth at any one time, and they impinge upon our lives in so many (often unappreciated) ways that the effort to distance ourselves is "alas, an impossible one." I am reminded of Margaret Fuller's comment "I accept the universe" and Carlyle's rejoinder, "Gad! She'd better." There are bugs in the system, lots of them, and we had better accept them and learn how better to share the planet with them.

There is no better guide to the world of insects than Berenbaum, whose writing is as readable as a good novel and who has a quirky sense of humor all her own. Even this reviewer, who has had bugs in his system for more years than he cares to admit, found himself rewarded by choice and curious bits of information. I did not know, for example, that on a street in the nation's capital there is a nightclub called the Insect Club, where the menu includes mealworm won tons and cricket brittle. (But one need not go to Washington for such treats; there may be "as many as 56 insect parts in every peanut butter and jelly sandwich.") I was amused to learn that the first wife of Theodore Vassilyev had 69 children, including 16 sets of twins, 7 sets of triplets, and 4 sets of quadruplets. This is evidently the best humans have ever done to rival the fruit flies, a pair of which may start a cycle that could result in 10^{41} fruit flies by the end of a year.



"Turn of the century novelty postcard depicts a physiologically improbable scene." [From *Bugs in the System*]

Maeng dana, belostomatid water bugs, for sale in a market in Thailand. "In Asia insect-eating is widespread even today. . . . *Maeng dana* . . . in fact has made an appearance in California in import stores." [From *Bugs in the System*; photography by Alan Schroeder]

"Locusts blocking a train on the Athens-Salonika line." [From *Bugs in the System*; Department of Entomology, University of Illinois archives]

I was surprised to learn that the blossoms of cacao trees are pollinated primarily by minute midges, no-see-ems, without whose services we would not have one of the products that make civilization bearable: chocolate. And that Roman emperor Justinian, in A.D. 555, sent two monks to China to smuggle out silkworm eggs. The monks concealed the eggs in the staffs they carried as pilgrims and so provided the source of all the silkworms of Europe. Berenbaum adds that silk manufacturers in time developed punch cards that programmed their looms to weave particular designs. Thus evolved the digital computer, "the basis of the formation of IBM."

But I do not want to create the impression that this book is a collection of disconnected anecdotes. It is based on the author's course "Insects and People" at the University of Illinois. Thus topics follow logically, with much attention to recent research, in which Berenbaum has played important roles. Unlike many of today's scientists, she has not forgotten the history of her field. In fact the book could almost be read as a history of entomology. Many of the illustrations have been pulled from the archives, and herein lies my only caveat. A person not familiar with insect anatomy may be hard put to visualize, by mere words, what the elaborate mouthparts of insects are like, or the sensory organs and exocrine glands that are so important in guiding their actions. I expect that Berenbaum illustrates her lectures with slides, as so many of us do. She might have been more generous with visual aids here.

We hear a lot these days of the little things that make the world work: insects, fungi, bacteria, protists, and so forth. Where would we be without them? As human populations approach or exceed the Earth's carrying capacity, can we afford to ignore the roles they play in our diminished living space?

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Avian Advantage

Sexual Selection and the Barn Swallow. ANDERS PAPE MØLLER. Oxford University Press, New York, 1994. x, 365 pp., illus. $49.95 or £35; paper, $24.95 or £16.95. Oxford Series in Ecology and Evolution.

Its title notwithstanding, this book is not really about barn swallows. Put another way, it is no more about barn swallows than a study of *Drosophila* genetics is about the life of fruit flies. The book is not even confined to sexual selection in its narrow sense of reproductive competition; Møller uses barn swallows to examine virtually every important question in evolutionary biology. As he points out, "The process of sexual selection and the presence of secondary sexual characters affect in one way or another almost every aspect of the life of animals" (p. 319). The book touches on topics ranging from speciation to life history theory, with nods