Look to the ant, thou sluggard

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Journey to the Ants: A Story of Scientific Exploration. By Bert Hölldobler and Edward O. Wilson. *Belknap/Harvard University Press: 1994. Pp. 228. $24.95, £19.95.*

HÖLLDOBLER and Wilson have done for ants what Levis did for denim. Ants were always there, if only to be stepped on. But now it is widely recognized that ants merit the attention of any amateur naturalist, and that the growing numbers of researchers studying social insects are addressing some of the most important current problems in evolutionary and behavioural biology. In *Journey to the Ants*, the authors demonstrate how they helped to bring about this change in ant public relations. The book is a greatly abridged version of their earlier *The Ants*, but pitched at an educated lay audience.

A key to the authors' success in improving ants' public image is surely the use of intriguing illustrations that enlarge ants to a human scale. The book contains some of Hölldobler's finest photographs of these creatures, as well as some beautiful scanning electron micrographs and a variety of drawings and paintings.

Another attraction is that the authors describe ants in an appealing way. The ants in this book always know exactly what they are doing. They do not mess around; their duties and their destinies are clear. "Relentless" and "fanatical", they are "self-sacrificing...minions programmed to act in concert", "gangs of factory workers" whose "loyalty is nearly total" and whose "lives are consecrated" to the queen's production of more ants. Thus regimented, ants accomplish advanced feats of chemical signalling, nest construction and strategic warfare. This dictatorship, however, has no dictator — not even the queen, a "demanding beggar" who, "psychologically reduced" (and physically incapable), cannot direct their behaviour. Instead, they are led into servitude by the inexorable hand of natural selection.

An 'alarmed' weaver ant (*Oecophylla longinoda*) with mandibles gaping and gasters cocked.

People have been watching ants for a long time, and the view of these insects as conscientious labourers is as old as the Old Testament ("Look to the ant, thou sluggard; consider her ways, and be wise", Proverbs 6:6). But this view is one of many. Not everyone is impressed by the efficiency of ants. Mark Twain watched a foraging ant and thought its procedure "as bright a thing to do as it would be for me to carry a sack of flour from Paris to Heidelberg by way of Strasbourg steeple". Some biologists are examining the function of ant ineptitude. They see ants as elements of a distributed computational system; indeed, recent models of this sort suggest that if ant behaviour did not have a substantial random component the colony would be unable to respond to new contingencies. Another, related approach seeks to explain the evolution not of pre-programmed regularity but of flexibility: ants respond differently to a particular chemical in different social contexts; individuals switch from one task to another as the environment requires; access to foraging territory is constantly shifting as neighbouring colonies renegotiate. Perhaps all of these forms of behavioural plasticity help colonies to respond to a changeable world. Hölldobler and Wilson's notion of "clockwork societies" provided the starting point for a variety of perspectives on colony dynamics.

In their preface, the authors point out that they unavoidably emphasize the topics and species on which they have worked. Equally unavoidably, they describe ants in a way consistent with the research programme that they created, a programme devoted to a vision of well-regulated ant societies based on hereditary caste, and to the premise that "behavior can be broken apart into atomic units", with a chemical stimulus corresponding to each unit.

Wilson wrote recently that when asked what to do about ants in the kitchen, he always says: "Watch where you step". This book will make you want to watch not only your steps but the ants themselves. The book does not encourage you to see ants differently from the way its authors do, but it will inspire you to look. Wilson and Hölldobler have each made fundamental contributions to the study of the physiology and evolution of social behaviour, and *Journey to the Ants* is an accessible and interesting guide to their approach. □

Honeypot ants (*Mysmecoystus mimicus*). Both pictures on this page are reproduced from *Journey to the Ants*.

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