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Journey to the Ants

—Bert Hölldobler and Edward O. Wilson

Synopsis

Journey to the Ants is a survey of the most populous animal species on Earth—ants. Bert Hölldobler and Edward O. Wilson's personal interest in ants dates from their youth where, they say, "We, having entered our bug period as children, were blessed by never being required to abandon it." The authors' long and successful collaboration as scientists and authors culminated in 1990 with *The Ants*, a complete reference encyclopedia of myrmecology, the scientific study of ants. This scientific work, which won the 1991 Pulitzer Prize in general nonfiction, is aimed primarily at biologists. *Journey to the Ants* is a less technical study and more accessible to the general public. It condenses the best of myrmecology to a more manageable level for the nonscientist.

Journey to the Ants explores the world of ants, examining their colonies, ways of communicating, the social roles of workers and queens, conflict and dominance, and function as a superorganism. The book also traces the evolution of ants since they arose amid the dinosaurs 100 million years ago.

Ants are biologically very diverse. This fact is demonstrated throughout the book by the authors' use of numerous drawings, and full-color photographs and paintings. The authors' extensive research as well as that of other entomologists is evident in this work.

Student Focus

You will learn a lot about the social aspects of ants in this book. In addition to the scientific information about ants, you should pay attention to the authors' anecdotes that describe their fieldwork. As you read, make a list of examples of the naturalists' fieldwork. What were the objectives of the fieldwork? How was the fieldwork planned? How did their fieldwork differ from their laboratory work in planning and preparation?

Correlation to Subject Matter

Entomology, Zoology, Evolution, Genetics, Population Biology, and Ethology

Analyzing the Book

Identifying Facts

1. What biological traits do the most advanced social insects have?

2. What are "sign stimuli"? Give an example of a sign stimulus.

3. Population biology and ethology are two areas of science besides entomology that affect the study of ants. How do these two areas assist myrmecology?

4. What are the stages of metamorphosis in the insect order Hymenoptera? Describe the larvae stage of ants in a colony.

5. In addition to chemical signals, ants communicate by sound. How do ants produce sound? How is sound used by ants?

6. Many kinds of ants conduct war with colonies both of their own species and of alien species. Describe ant combat.

7. What types of battle tactics are used by ants?

8. How do ants assess enemy strength? Once enemy strength is determined, how do ants use the knowledge?

9. What are the social classes of a *Harpegnathos* colony? How does class behavior affect the colony as a whole?

10. How do ants recognize a stranger in their colony? Where does colony odor originate?

11. Describe the relationship of parasites to ants.

12. What is an army ant? Describe mass raiding.

13. What are the grooming habits of most ants? Why are the *Basiceros* the dirtiest ants in the world?

14. What temperature do most ants require for their habitat? What are some ways they control the temperature of their environment?

Interpreting Meanings

15. Most biodiversity studies depend on "focal" groups—mammals, birds, butterflies, and flowering plants. What is the importance of mapping biodiversity? Why are ants a candidate for a biodiversity study?

16. Why is communication important to ants? How has their ability to communicate contributed to their evolutionary success?

17. What did the authors discover when they staged experimental ant wars in the laboratory?

18. Why did American myrmecologist William Morton Wheeler compare an ant colony to a single organism? How is this organism referred to at times?

19. Compare and contrast the two approaches that biologists take in order to study organisms.

20. Describe the "nothing fights" of the Maring tribe of New Guinea. How does honeypot ant behavior resemble this display?

21. What is the Ur-ant? Why is it important to myrmecology?

22. Describe kin selection. How does sex inheritance in ants uniquely affect kin selection?

23. Describe ants' participation in symbiosis.

24. What kind of consciousness do ants have? How does this affect their behavior?

Applying Meanings

25. Explain how ants are studied in the laboratory.

Writing About the Book

On a separate sheet of paper, write the answer for each of the following.

Extending the Story

1. In the epilogue, the authors state, "If all of humanity were to disappear, the remainder of life would spring back and flourish. . . . If all the ants somehow disappeared, the effect would be exactly the opposite, and catastrophic." Assume that catastrophe has struck and that ants have disappeared from the Earth. Write a short narrative in which you describe the Earth's ecosystem without ants. Include which insects or animals you think would take over for ants in the balance of nature.

Thinking About Assumptions

2. When discovered, the Ur-ant provided the missing link in the evolution of ants. Even with this information, the behavior of ancient ants is only an assumption. Describe what scientists think *Sphecomyrma freyi* ants were like. Include the basis for these assumptions.

Responding to a Review

3. One reviewer of *Journey to the Ants* in *Nature* stated, "Hölldobler and Wilson have done for ants what Levis did for denim." Write an essay in which you react to this statement. Do you think ants are a popular topic? Does *Journey to the Ants* make ants an accessible topic? Do you think ants have universal appeal? Be sure to explain your opinions.

Evaluating Characters

4. Hölldobler and Wilson possessed interests and personality traits that led them to become myrmecologists. Compare and contrast their initial experiences with ants, which initiated their studies and research. Include how these experiences affected their interest in ants.

Writing a Journal Entry

5. Imagine that science has progressed to the point that you can shrink to the size of an ant. Then suppose that you are working as a miniaturized researcher in an ant colony. Write an entry that describes a day in the colony. Describe the process of preparation that allows you to go into the colony undetected, your activities, and what you observe while there.

Analyzing Scientific Methods

6. Much of Hölldobler and Wilson's research is done in the field. However, they are also able to conduct laboratory research. Describe how the combination of these study methods contributed to their comprehensive books on ants. Cite specific references to explain your answer.