

Book Reviews

Focus on Animal Investigations

Behavior

COMPARATIVE PSYCHOLOGY: AN EVOLUTIONARY ANALYSIS OF ANIMAL BEHAVIOR

by M. Ray Denny, ed. 1980. John Wiley and Sons, Inc. (One Wiley Drive, Somerset, NJ 08873). 496 p. \$20.95 hardback.

Ever since Robert Hinde's masterful integration of ethology, physiology, and psychology almost twenty years ago, great strides have been made in further uniting these historically autonomous disciplines. M. Ray Denny's *Comparative Psychology: An Evolutionary Analysis of Animal Behavior* is an attempt to present topics in comparative psychology within an evolutionary framework. This edited book is composed of twenty chapters contributed by as many workers and subdivided into three parts.

Part one ("An Evolutionary and Ecological Perspective") follows the editor's well-organized introduction. John King sets the stage for this section with a chapter on adaptation. His contribution introduces the reader to the important concepts of inclusive fitness and optimality theory as they relate to animal behavior. The classical concepts of ethology are nicely combined with the keystone sociobiological literature of the 1970s; and at this point, it appears as though an evolutionary paradigm for the book has been established. What follows, however, is somewhat disappointing in this regard.

Chapters on animal distribution, dispersal, migration, and domestication provide interesting and informative reading. Levine's chapter of human behavioral ecology represents a novel approach (systems analysis) to the study of human behavior, primarily focusing on our recreational activities. Although

providing easy and enjoyable reading, this section is not unified by the evolutionary thread promised by the title.

Part two ("A Comparative Analysis") deals with comparative psychology in a traditional fashion. Leibracht and Askew present a particularly clear and comprehensive view of habituation, and I found Mountjoy's historical treatment of animal behavior most enjoyable. Ratner's chapter on comparative methodology, slightly revised from earlier texts, is a valuable contribution but might have been misplaced in the second section and is perhaps more appropriate earlier in the book.

Part three ("Some Major Classes of Behavior") is categorically complete. Chapters on reproductive, parental, grooming, defensive, and feeding behaviors each provide the reader with a fairly complete list of behavior types and examples across phylogenetic lines, but are not without their inaccuracies (e.g., crocodylians and turtles possess hemipenes). Such descriptions, however, fall short of fulfilling the original intent of the book. An evolutionary analysis is not achieved when chapters on parenting lack a discussion of the models of parental investment and the treatment of feeding behavior devotes but a single paragraph to optimality theory.

Each chapter in this book, in and of itself, was clear and easy to follow, but taken together lacked continuity. I miss the section on behavioral genetics included in Denny and Ratner's earlier texts and strongly feel this material should be included in a textbook intended for undergraduates and graduates alike. And finally, but most of all, the evolutionary perspective the title purports is not apparent and the synthesis of organic evolution and comparative psychology is not what it could be.

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Social and Ethical Issues

THE EVOLUTION OF CULTURE IN ANIMALS

by John Tyler Bonner. 1980. Princeton University Press (Princeton, NJ 08540). 200 p. Price not given.

The objects of human knowledge are like towering mountains around whose bases the active probing minds of humankind constantly circle, revealing this craggy facet or that verdant vista as they pass.

In recent years, a base-camp has been building firmly on evolutionary theory; and those minds have begun to explore the monolith of human behavior from this new perspective.

In his beautiful, little book, Bonner has effectively summarized another major section of that exploration.

Bonner states "culture is the information transmitted from generation to generation by non-genetic (i.e. behavioral) processes." Culture is to the collective brain what the adult body is to the genome. And the capacity for this behavioral transfer is a biological capacity, the direct product of the usual evolutionary processes. Culture—non-genetic information transfer—is an "invention" by the genes to improve the likelihood of successful transfer of those same genes.

Cultural activity begins in the simple, chemotactic movements of primitive organisms like bacteria. They "read" the environment for nutrients, pause, and read again. If there is an increase (note the need for "memory"), they "wriggle up" the chemical gradient toward the source of nutrient. (In a similar fashion, they are repelled by toxic agents). And if there are competing chemicals present, they "decide" among the alternatives according to definite rules.