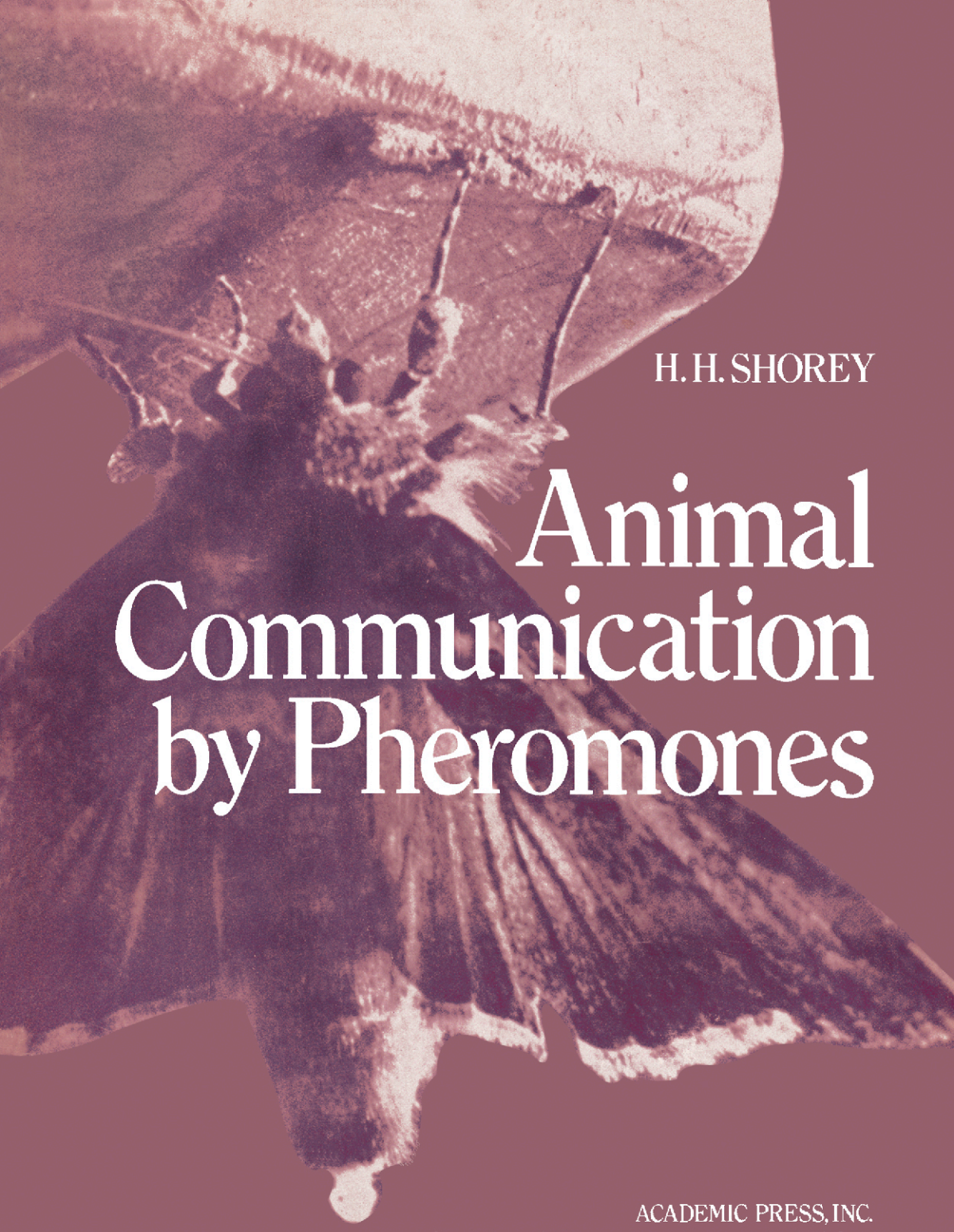

H. H. SHOREY

Animal Communication by Pheromones

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Preface

Pheromones are chemicals, either odors or taste substances, that are released by organisms into the environment, where they serve as messages to others of the same species. Although humans exude a great variety of chemicals, they make little conscious use of this potential means for communication with one another. On the other hand, pheromones are widely used within much of the rest of the animal kingdom in a great variety of species, ranging from primitive protozoans to higher primates, as a primary means for transmitting information. Depending on the particular species involved and the situation in which it finds itself at the time, pheromones may be used for attracting a mating partner or for stimulating that partner to copulate, for directing others to suitable food or resting sites, for causing others to stay away when staying away is appropriate, or for a variety of other behavioral functions.

The scientific literature dealing with pheromones has expanded enormously during recent years as have the number of reviews which have proliferated in symposium volumes and in collections of chapters prepared by individual contributors. Although most of the review articles have dealt with insect pheromones, the importance of mammalian pheromones has received increased recognition in recent years, and a number of reviews concerning this group have also been published. However, with the exception of a book by Martin Jacobson entitled "Insect Sex Pheromones" (published by Academic Press in 1972), no single-authored monograph concerning pheromones has appeared.

I have felt for some time that the information concerning pheromone communication within the entire animal kingdom should be reviewed, digested, and presented in a cohesive manner. This book represents my attempt to perform this task. It is mainly directed toward an assessment of how the behavior of animals is controlled and influenced by pheromone communication. Attention to individual taxa, such as worms, in-

sects, or fish, is minimized. Instead, an attempt has been made to generalize the diverse behaviors exhibited by animals when they are engaged in pheromone communication and to group together discussions of both primitive and advanced animals when they are using pheromone communication in a similar manner for such behavioral functions as sex, aggression, feeding, and recognition of other individuals. I have also attempted to draw attention to some of the interesting and specific pheromone behaviors that have evolved in particular animal species in relation to their particular ways of life.

Placing relatively simple invertebrates and complex vertebrates in the same generalized scheme involves the risk of making all these greatly diverse types of animals seem too much alike. However, despite this possibility, I felt this type of scheme of presentation valuable in achieving a mainly behavioral view of pheromone communication in the animal kingdom.

I wish to acknowledge a number of my colleagues who assisted me during the preparation of this book. J. S. Gaston prepared Figures 6, 8, 9, 10, 17, 18, and 26, and L. B. Bjostad prepared the schematic drawings of chemical molecules. P. A. Murray assisted in library research and in cataloging the literature. A. E. Colwell, J. F. Bollinger, and L. K. Gaston offered valuable advice concerning the substance of the manuscript. H. R. Bowman did all of the typing and the laborious collating of material. Finally, my children, Tom, Russell, Diane, and Hal, provided patience and encouragement during the years before and during preparation of this work; this book is dedicated to them.

H. H. Shorey