



Nourishment and Evolution in Insect Societies.

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men, male genitalia (plus photograph), female genitalia (plus photograph); a comparative diagnosis; distribution; biology (plus a photograph of the larva and/or larval case, as available); remarks (historical review of component species, new combinations and synonymies, characters supporting monophyly of the genus); and a catalog of constituent species (including label data of holotypes or designation of lectotypes as appropriate, location of the type specimen, and indication of the number of new taxa recognized in collections). Many new combinations and new synonymies are made as a direct consequence of his specimen-based research.

This volume is an excellent example of highly useful, comparative information presented in an attractive and easy-to-use format. I noted no misspellings, and all illustrations are clear and pertinent. It replaces no other work because none exists that characterizes and enables recognition of this element of the fauna. I wish that comparable works were available for other faunas and geographic regions.

This volume represents the results of years of specimen-based research on a large taxon. The information contained in it will remain useful for many decades. Unfortunately, current fads or trends in biological science—such as pressure to publish one or more papers on an annual basis, and the low probability of hiring another systematist to continue this research—do not encourage undertakings of this scope and magnitude. The author, who is working in retirement, has accumulated a wealth of systematic and biological information, and one hopes that he will be able to complete this series on the oecophorine genera.

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NOURISHMENT AND EVOLUTION IN INSECT SOCIETIES. *Studies in Insect Biology*.

Edited by James H. Hunt and Christine A. Nalepa; Series Editor: Michael D. Breed. Westview Press, Boulder (Colorado); Oxford & IBH Publishing, New Delhi. \$79.95. xii + 449 p.; ill.; author index, index to genera and species, and subject index. ISBN: 0-8133-8439-7. 1994.

Marston Bates once argued that food and sex make the world go round, and that it is foolhardy to think about one without the other. Food and kinship make insect societies go round, yet food has undergone a long period of neglect. A focus on proximate mechanisms early in this century lead to the idea that nutritional bonds (“trophallaxis” and other trophic interactions) were the glue holding insect societies together. Emphasis then shifted to genetic bonds. Kinship has become the most frequently mentioned factor in evolutionary discussions of insect societies, and selection has been

a foremost concern, while mechanistic factors contributing to social evolution have fallen into neglect.

As the editors claim in an introductory chapter, a focus on diet and nourishment offers a fresh perspective on the evolution of insect sociality. This timely book largely succeeds in merging proximate and ultimate explanations of insect sociality, and helps reveal connections among physiological and developmental factors, and evolution.

Eleven chapters show how nourishment may relate to social evolution or the ecology of particular social insect taxa (termites: Nalepa, Darlington, Bignell, Lenz; wasps: Hunt; ants: Wheeler, Tobin, Wetterer; bees: Kukuk, Moritz, Sommeijer & de Bruijn). An interesting treatment of a tangential theme reviews paternal investment in subsocial arthropods (Tallamy). Wheeler’s chapter is a highlight. She provides a concise review of recent advances relating diet to insect reproductive physiology, and then discusses how existing mechanisms might be evolutionarily modified to generate the complex developmental pathways that influence behavior and caste in social insects in general, and ants in particular. Other chapters resurrect important but largely forgotten connections among diet and diverse aspects of social insect biology. For example, Hunt notes that insect sociality has evolved most frequently in aculeate Hymenoptera (bees, wasps, and ants), a group characterized by a “thread waist” between the thoracic and abdominal body regions. He argues that this feature restricts them to liquid diets and sets the stage for the evolution of anatomical features (e.g., an extendable foregut) that enable insects to regulate fluid intake and regurgitate it—abilities now important for social life in many groups.

This book admirably integrates nutritional ecology and social insect biology. It falls a little short on its secondary goal of integrating the latter with studies of life-history evolution, but that task probably requires additional studies. Perhaps some will be inspired by this interesting book.

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BIOSYSTEMATIC STUDIES OF CEYLONESE WASPS, XX: A REVISION OF *TACHYSPEX* KOHL, 1883, WITH NOTES ON OTHER ORIENTAL SPECIES (HYMENOPTERA: SPHECIDAE: LARRINAE). *Smithsonian Contributions to Zoology, Number 552*.

By Karl V. Krombein and Wojciech J. Pulawski. Smithsonian Institution Press, Washington, DC. Gratis upon request (paper). iv + 106 p.; ill.; no index. No ISBN. 1994.