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The Comparative Ethology and Evolution of the Sand Wasps.
Howard E. Evans. Cambridge: Harvard University Press, 1966.
xviii, 526 pp. \$15.00.

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discusses are essentially fragmentary, and often so much so as to be deceptive to the modern reader who might expect a "new" publication to be authoritative.

In keeping with the Dover policy, Holland's book has been reprinted in facsimile. A. E. Brower, the editor, has explained that he "would of course like to see a thorough revision of this work," but to "update the generic and specific names would necessitate rewriting large portions of the text and legends, extensive reorganization of the work, and also changes in the color plates. A revision of this scope has not been possible for this edition, in which Dr. Holland's text is reprinted unabridged and unaltered, except for the silent correction of a few typographical errors. The new footnotes . . . deal mostly with cases of misidentification, and reflect published and unpublished corrections that have come to my attention."

The user of this new reprint must thus be warned that the text is badly out of date in every respect. Scientific names have changed, as has knowledge of range and other data. Yet the reprint will be of widespread use, if only because of its plates. These have been rescreened to correct the faded appearance familiar to every user of later editions of the original *Moth Book*, and misidentifications have been corrected by Dr. Brower. If its limitations are carefully kept in mind, and if it is used in conjunction with the McDunnough check list and such a modern comprehensive work as Forbes' *Lepidoptera of New York and Neighboring States*, this reprint will be extremely useful to amateurs in our area. Its price is truly remarkable considering the skyrocketing cost of color-plate books, and is only understandable by its large production run.

Although we must unhesitatingly welcome republication of this old favorite, as lepidopterists now have to pay 30 to 35 dollars for a used copy of the original (if they can find one), its appearance clearly demonstrates the need for a new and modern survey which would not only enable collectors to identify their capture through the use of keys and illustrations, but would furnish some introduction to the distribution and biology of American moths. Such a work is now being contemplated by lepidopterists Franclemont, Ferguson and Hodges, but its preparation will take time, and until it appears, amateurs will have to "make do" with a combination of monographs including Holland's *Moth Book*.

R. S. W.

THE COMPARATIVE ETHOLOGY AND EVOLUTION OF THE SAND WASPS.
Howard E. Evans. Cambridge: Harvard University Press, 1966. xviii, 526 pp.
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In one sense, ethology is natural history. In a more restricted sense it is the description and classification of behavior viewed as a necessary prerequisite to analysis. The analyses that follow become more and more physiological as the tangle of facts unravels, so that the ethology of the field inevitably becomes the ethology of the laboratory.

Evans' book is concerned primarily with ethology in the sense of description and classification with a view to understanding the evolution of behavior in the large and complex group of sand wasps. Answers to questions concerning the adaptiveness of the various behavior patterns are also sought. The bulk of the book, chapters 2 to 12 inclusive, some 376 pages, is devoted to a detailed descrip-

tion of members of the various genera. Each chapter is constructed, more or less, on the following outline: range of species, location and author of studies made, habitat and season of activity, general features of adult behavior, reproductive behavior, digging the nest, nest structure, hunting and provisioning, immature stages and development, natural enemies. Many chapters end with a summary. Chapter one is a brief introduction to the nyssonine wasps. Chapter 13 concerns itself with fossil history, distribution and comparative morphology; Chapter 14, with comparative ethology; Chapter 15, with the evolution of behavior of sand wasps.

The book is overwhelmingly detailed and complete and exhibits scholarship at its best. No stone has been left unturned in observing the wasps and unearthing every printed word about them. The exhaustive survey of the literature has been conducted with a critical eye. Nothing is too minute or unimportant to note and no recorded statement passes unchallenged if there is reason to doubt its validity. It is noted on page 105, for example, that "A Kodachrome transparency supplied by Ward's Natural Science Establishment is inaccurate and also presumably posed from dead specimens." Similarly a section of page 148 deals with the question of whether *Bembex texanus* gives one or several digging strokes of the leg when the head goes down and challenges an early statement on the matter. Occasional small lapses as, for example, the incorrect spelling of "desiccated" on page 447, are few and far between.

This book is a mountain of rich ore. On reading the middle chapters this reviewer sometimes felt as though he were in the middle of an encyclopedia but one so fascinating that he was beguiled into reading beyond whatever particular point he had had occasion to check. This detailed treatment tends to make the book most suitable for the specialist or for use as a reference work. For the non-specialist but professional biologist the last three chapters provide the most rewarding reading. Here the vast amount of preceding material is gathered together and the "comparisons" actually made. It is a little disappointing (at least to this reviewer) that the conclusions derived from the study have not been more obviously and closely tied in with some of the generalizations, hypotheses, and conclusions of Ethology. In one sense the ethological approach has been employed to further one's understanding of the sand wasps rather than the study of the sand wasps exploited to enrich one's understanding of behavior. On the other hand the book *is* about sand wasps. It is recommended with enthusiasm to all who are interested in or wish to become interested in these insects.

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AGRICULTURAL CHEMICALS. Book I--Insecticides. W. T. Thomson. Thomson Publications (P.O. Box 989, Davis, California 95616), 1967. 366 p. \$10.00.

This book contains a wealth of information which would be extremely useful to people dealing with various aspects of insecticide usage ranging from laboratory investigations to field applications.

The chemicals are arranged in groups of related compounds, the divisions