

This is hardly surprising if we consider the delicacy and fragility of the body of these insects, the only (and very rare) parts left as recognizable fossil remains [p. 11].” Habits: “If we examine the flight of a butterfly or moth and the crawling movements of a caterpillar, we might be tempted to think that most of the activities of these insects are ruled by chance [p. 31].” Predators and parasites: “In the life cycle of a butterfly or moth, no stage of development is immune to the attacks of parasites and predators. Among the former, above all, are viruses and bacteria, as yet little known, which are the principal causes of death in caterpillars [p. 51].” The reader gets sucked into these stories, as if this were a paperback whodunit.

I’m biased, of course, but can gleefully report here an overarching focus on moths rather than butterflies throughout the 323 color figures. For example, among the larval shots are 10 butterflies and 24 moths, and 7 of the latter are casebearers, leafrollers, and other perhaps less glamorous microlepidopterans. Perhaps . . . but you can’t appreciate the role of a casebearer in the grand scheme of things if you don’t know what one is. The offbeat lepidopterans are prominently displayed, too. There is a wonderful picture of an apterous adult female geometrid (Plate 101), the fuzzy and cuddly teddy bear of the book; a contorted adult lappet moth (Plate 70) to convince even the most skeptical that crypsis happens; and an incurvariid (Plate 37) with antennae quintuple the body length to underscore that wings aren’t necessarily always where it’s at. All in all there are 323 species accounts, of which 34 illustrate the larval stage and 289 the adult stage. Most photographs are of live organisms and the color reproduction is excellent.

The species accounts are organized by major geographic region of the world, and therein in alphabetical order by genus. The blurbs accompanying the photos are reasonably well organized, quite informative, and adorned with colored icons indicating the type of lepidopteran (diurnal, nocturnal, micro), the general habitat, and localization within the geographic region in question. There are a few mistakes in identification (the *Catocala* that isn’t on Plate 153; the spicebush swallowtail that ate pipevine on Plate 189), but by and large I don’t think such mistakes mean anything in this sort of volume. The identification error rates are higher for regions other than the Palearctic, from whence the authors hail, which isn’t surprising.

For such an otherwise well produced book, there are still a few perplexing inconsistencies. Thus, for some reason *Grammia virgo* (Plate 144) warrants an additional subtitle—“(formerly *Apantesis virgo* L.)”—the taxonomic significance of which is never explained. And Raja Brooke’s Birdwing (*Trogonoptera brookiana*, Plate 288) and the Dogface (*Zerene caesonia*, Plate 208) don’t seem to warrant subtending common names. But the largest problem by far is the sprinkling of photos of dead adult Lepidoptera alongside those of the living: for example, a scintillating translucent *Cithaeris* savoring a plant stem in the dark forest, next to a rigid *Danaus* flopped onto some twigs (Plates 219–220); or a streamlined *Xylophanes* sphingid, forced to cohabit with the aforementioned and quite dormant Dogface (Plates 207–208). The effect is just awful, and the liability to the book’s educational appeal is anything but trivial. It is an entirely unnecessary and avoidable scar on an otherwise fine volume.

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LARVAE OF OWLET MOTHS (NOCTUIDAE): BIOLOGY, MORPHOLOGY, AND CLASSIFICATION, by O. I. Merzhhevskaya (original release 1967) (translated from Russian by P. M. Rao; Scientific Editor, George L. Godfrey). 1989. Distributed by E. J. Brill Publishing Company, P.O. Box 9000, NL-2300 PA Leiden, The Netherlands; U.S.A. & Canada, E. J. Brill (U.S.A.) Inc., 24 Hudson Street, Kinderhook, New York 12106. xx + 419 pp., 97 text figs., 6 tables. Hard cover, 15 × 24 cm, ISBN 90 04 08804 0; \$57.50 U.S.

You have to admire anyone who decides to dive headlong into the bottomless pit that is the systematics of the Noctuidae. But, to purposely delve into the documentation and identification of the immature forms borders on insanity. I am assured by George Godfrey in his Forward to the English-language Edition that the author, Olga Ivanovna Merzhhevskaya, was a well respected teacher and researcher and definitely in full charge of her considerable faculties. In fact, this study on the biology and morphology of larvae of 144 species of Noctuidae from Belorussia is a testament to her patience, perseverance, and detailed observations.

The author was able to compile information on each larval instar of a given species so that she could describe the changes in morphology and patterning during growth and development. This adds much to the knowledge of immature noctuids.

Also of note are the brief descriptions of the eggs, plus data on where and how they were deposited. How useful it would have been if scanning electron micrographs were provided for visual comparisons. Based on the attention to detail that characterizes her work, S.E.M. technology must not have been available to her.

Godfrey indicated—and I concur—that a weakness is inherent in the identification keys because of their reliance on color patterns. Although the author used a fixative made of ethyl alcohol, salicylic acid, common salt, and water to maintain color in preserved specimens longer (up to six months for the more labile pigments; over five years for melanic patterns), the keys require last instar larvae that have been recently preserved. Still, I have yet to try this fixative but definitely intend to do so.

This book was originally published six years prior to Godfrey's thorough study of the larvae of the noctuid subfamily Hadeninae (1972). Had Godfrey's study been available to Merzhhevskaya, she may not have decided to disregard the characters of the hypopharyngeal complex, which she considered not useful for taxonomic purposes.

Overall, the study has far more positives than negatives. Additionally, the English translation of the work is excellent. There is nothing left to be deciphered or reinterpreted that I could find. This publication is certainly a worthwhile contribution to the slowly growing body of knowledge on juvenile stages of Lepidoptera. It should be on the shelf of all serious students of the biosystematics of Lepidoptera and of those interested in the taxonomy of larval insects. The host plant information, life histories, and biological data are useful to an even broader audience.

Only a few who have ventured into this realm are still so engaged. These bold scientists are to be both admired and pitied. But don't let me dissuade any aspiring student. On the contrary, jump in and get wet; there's a lot of water; it's sort of calm, and it's plenty deep.

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DISCOVER BUTTERFLIES! AN ACTIVITY BOOK FOR FAMILIES, STUDENTS, AND TEACHERS, edited by LuAnn Craghton, Project Coordinator. 1991. Callaway Gardens, Ida Cason Callaway Foundation, Pine Mountain, Georgia 31822. iv + 61 pp., color covers, black & white illustrations, tables, and diagrams. Softcover, 22.0 × 28.0 cm, no ISBN; \$7.95.

Since its opening in 1988, the living butterfly displays and museum exhibits at the Day Butterfly Center in the Callaway Gardens of western Georgia have educated hundreds of thousands of visitors about the wonderful fascination of butterflies. Now the Education Department of the Ida Cason Callaway Foundation, under the direction of Lepidopterists' Society member LuAnn Craghton as Project Coordinator, has produced this exciting activity book on the world of butterflies. The book is accompanied by a "Butterflies" videotape (available separately at \$19.99, or as a package of activity book and video for