in diameter," most are less than 1 mm, and eggs of only a few neotropical satyrids and Australasian *Ornithoptera* reach 2–5 mm in diameter), this pocket-sized field guide provides a concise, color-illustrated guide to most of the butterflies that the visitor or beginning student will encounter in Florida.

Florida's Butterflies and Other Insects, by Peter D. Stiling, opts to present a crosssection of Florida's butterfly and skipper fauna with color photographs of "wild" specimens (the great majority are posed dead or pinched specimens). Forty butterflies are illustrated; each has an accompanying paragraph of text on that species. More information on Florida food plants is usually included here than in Gerberg and Arnett's book, and reference to the original literature is often made following behavioral and ecological notations. In addition to the butterflies, 22 photographs and species accounts of Florida moths (8 Saturniidae, 10 Sphingidae, 2 Arctiidae, and 2 Noctuidae) are included. Finally for the lepidopterist, an interesting section of 17 photographs and species accounts covers butterfly and moth caterpillars. The remainder of the book's main text (pp. 50-84) covers other insect groups. The author provides a valuable page on butterfly gardening, and three pages listing nectar sources and larval food plants used in Florida. A brief section on commercial butterfly gardens and state insect collections completes the text. An excellent index to insects and plants, along with an extensive literature cited section, are included. This book, published in $8\frac{1}{2} \times 11^{"}$ size, with a full-color hardbound cover depicting a live Eumaeus atala, is not intended for field identification but is an attractive book for the home library.

In summary, the intricacies of Florida butterfly biology, distribution, and ecology are not covered by either of these two new books. For a thorough treatment of Florida's butterflies and skippers, we must await the publication of other, more-detailed books currently being prepared by H. David Baggett, Marc C. Minno, John B. Heppner, and others. However, the Gerberg and Arnett field guide will serve as a good introduction to Florida's fauna, and the Stiling book will interest the general beginner in other Florida insects as well as in some of the state's fascinating tropical Lepidoptera.

THOMAS C. EMMEL, Division of Lepidoptera Research, Department of Zoology, University of Florida, Gainesville, Florida 32611.

Journal of the Lepidopterists' Society 43(4), 1989, 338-339

LEPIDOPTERAN ANATOMY, by John L. Eaton. 1988. Wiley-Interscience Series in Insect Morphology, John Wiley & Sons, New York. 257 pp., 194 text figs. Hard cover, 17 × 24 cm, ISBN 0-471-05862-9, \$49.95.

Here, finally, is a book dedicated solely to the somewhat disjointed subject of lepidopteran anatomy. The author has amassed a general collection of anatomical information on the tobacco hornworm moth, *Manduca sexta*; information previously difficult to locate amidst the scatterings of textbook chapters and original scientific articles, some of which are difficult to obtain or are not available in English. Considering the growing number of scientists using lepidopterans as experimental models, in addition to the multitude of professional and amateur lepidopterists, there is potentially a large audience that would appreciate a single source on lepidopteran anatomy.

The book is divided into eleven chapters. Each of the first four provides a general description of one of the developmental stages. The chapters on the egg and pupa are scant, consisting of fewer than three pages each, including drawings, while the two chapters on the larva and adult are much more detailed, treating the complex subjects of the exoskeleton and musculature. Each of chapters five through ten focuses on a particular system: the nervous system and endocrine glands; the circulatory system; the

respiratory system; the alimentary canal, salivary glands, and excretory system; the internal organs of reproduction; and the exocrine glands. Of these five, the chapter on the nervous system and endocrine glands and the chapter on the adult exoskeleton and muscles receive most attention, possibly because J. L. Eaton has published some worthy articles on these topics himself. The last chapter of the book very briefly describes the organs of sound production and hearing. As this is my own area of specialty, I must admit that I find the author's treatment of this subject to be somewhat cursory and outdated. Whether this reflects the accuracy of other sections of the book, which I am unable to review with such a critical eye, I cannot say.

The book concludes with two appendices and an index. Appendix 1 briefly describes Eaton's methods. I feel that this section would be more useful to the general reader if the author had included formulae for the solutions used in dissections and an explanation of the derivations of the nomenclature employed in the drawings. Appendix 2 defines, in alphabetical order, the mnemonic abbreviations used in the book. The index contains surprisingly few entries for a book on anatomy and includes only a fraction of the structures treated in the text.

The book is exclusively devoted to descriptive anatomy. There are plenty of drawings (although some were surprisingly simplistic) to guide the reader through each system. I used the book as a dissection guide to the adult musculature and nervous system and felt satisfied, as the book did not force me to consult other references to locate and identify any particular structure. The book does not, however, go much beyond strict anatomical description, and thus will disappoint those who are seeking a book that provides information on the functional properties of a particular structure (as some morphology books will do).

Personally, my main disappointment in this book stems from the expectations I had after reading the title, *Lepidopteran Anatomy*. Since the Order Lepidoptera is extremely rich in behavioral and morphological diversity, I expected a book that approached the topic from a comparative standpoint. The author, in a sense, acknowledges this aspect of his book in the preface, saying that he used *Manduca sexta* as a model for all Lepidoptera and that "users of this book should be readily able to apply it to the anatomy of other lepidopterans." I agree with this only partially. For instance, there is considerable variation in larval form, color, and ornamentation; in egg morphology; and in adult antennae and feeding parts, which unfortunately receive no (or very little) mention. Perhaps the title "*Anatomy of Manduca sexta*" would have been more appropriate. However, readers interested in comparative morphology are not left entirely empty handed. At the end of each chapter is a list of 'selected references' that covers at least some of the key references to the anatomy of other lepidopteran species.

Despite these few shortcomings, the book is, in general, a good one, and, to my knowledge, the only one of its kind. I recommend it as a useful addition to university libraries and to the personal collections of lepidopterists or other scientists who have an interest in morphology.

JAYNE E. YACK, Department of Zoology, Erindale College, University of Toronto, Mississauga, Ontario L5L 1C6, Canada.