

occasions, and knew a few of their predecessors including F. X. Williams, J. A. Comstock, L. M. Martin, D. L. Bauer, K. C. Hughes, and others acknowledged in this work. I have made observations myself in all 15 counties, even before there were 15 counties!

The book's Preface gives some historical perspective and lays the groundwork for the remainder. The Introduction is outstanding, giving documented background for the region, comments on the mountain ranges, nomenclatural issues, and statistics for each county and mountain range. The nomenclature used is conservative, which most readers will appreciate. The species accounts are very well written, concise but precise when needed. The photographs are good, many showing species seldom before illustrated well (especially skippers). Biological and distribution information is presented very well in a somewhat telegraphic format.

I have only a few constructive comments. The illustration of *Apodemia mormo mormo* on page 204 is not that subspecies, but probably *cythera* or *mejicana*. The discussion of *Poladryas minuta* on page 220 is terribly wrong! The typical insect may be extinct at the type locality in Kendall Co., Texas, but is very much alive and well northward in Texas and in eastern New Mexico; S. Cary, P. Opler, R. Holland, and I have taken good *minuta* in the following counties in the last decade: Colfax, Union, Mora, Harding, San Miguel, Guadalupe, Quay, Curry counties, New Mexico; Randall, Briscoe, Floyd, Lubbock, Crosby, Dickens, Baylor, Garza, Kent, Borden, Howard, Culberson, Jeff Davis, Presidio, and Brewster counties, Texas. It is NOT extinct!

My final point concerns *Phyciodes campestris (camillus)*, which was excluded despite vigorous correspondence between me and the authors over the last 20 years. The book treats several "dubious" species in some detail, but omits this one with 4 believable records over the last 120 years. The first was by Professor Francis Henry Snow, M.D., Ph.D., Sc.D., Professor and Chancellor of the University of Kansas, who collected in the 1880's and published in 1907 (Trans. Kans. Acad. Sci. 22:141-164). His material is surely extant at the KU collection in Lawrence, Kansas, and the authors should have examined it. There is a second specimen, in the National Museum of Natural History in Washington, D.C., determined by Paul Opler in 1989. Keith C. Hughes collected one near Portal, 8 October 1963, which could be a misdetermination, and the specimen was discarded. I caught one myself at Turkey Creek Road, just W of Onion Saddle, Chiricahua Mountains, 30 August 1967, but KCH apparently threw it away. No proof, it would seem, and academic degrees probably do not count heavily in butterfly records, but the above four records include two M.D.'s, three Ph.D.'s, one Sc.D., and one J.D. Play the Academic Festival Overture, please, and go on to the next paragraph.

The book ends with four beautiful color plates, references, and index. It belongs on the shelf of every western lepidopterist, especially those with interest in Arizona, New Mexico, and Mexico. I look forward to an expanded book covering the entire state of Arizona.

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THE MOTHS OF AMERICA NORTH OF MEXICO, FASCICLE 15.3, PYRALOIDEA, PYRALIDAE (PART), PHYCITINAE (PART), by H. H. Neunzig. 1990. The Wedge Entomological Research Foundation, Washington, D.C. 165 pp., 70 text figures, 5 color plates, 2 black and white plates. Soft cover, 8.5 × 11 in. (21.6 × 27.9 cm), ISBN-0-933003-06-6, \$55.

About a half dozen years ago I purchased a secondhand copy of C. Heinrich's 1956 *American Moths of the Subfamily Phycitinae* (Bull. U.S. Nat. Mus. 207, 581 pp.), in which 640 species of phycitines in 194 genera are categorized into four groups on the basis of wing venation. It was probably not a "used" copy, because as an introduction to the Phycitinae the book is confoundingly difficult to use. After several futile attempts to

navigate the keys, with their antiquated system of numbering vein branches, I soon learned to bypass them and follow Heinrich's advice in the introduction (p. vi): "Anyone wishing to identify phycitids must resign himself to the tedium of dissection and slide making." By comparing my slide with the detailed genitalic illustrations in the back of the text, then reading Heinrich's meticulous descriptions and diagnoses, I could put a name on most phycitines with confidence.

At first glance, H. H. Neunzig's second contribution to *The Moths of America North of Mexico*, Fascicle 15.3, seems to be a weird conglomeration of what previously were considered to be some of the most primitive and the most derived phycitine species. However, in the Preface, Neunzig explains that the arrangement, suggested by a table (p. vii) in Heinrich's 1956 monograph, is our first glimpse of an alternative to Heinrich's venation-based categorization. The revised treatment combines all but four of the first 16 and last 23 genera in the 1983 check list of the Phycitinae by E. G. Munroe in R. W. Hodges et al. (*Check List of the Lepidoptera of America North of Mexico*, E. W. Classey Ltd. and Wedge Entomological Foundation, London, 284 pp.) into what Neunzig purports to be a natural group. The entire group is covered in Neunzig's Fascicles 15.2 and 15.3. (There was no hint of revision in the first of these two parts.) All species in this first new group have simple genitalia and, apparently, common larval characteristics unique to the group. Presumably, Fascicle 15.1 will contain generic keys to all the phycitines and a fuller explanation of Neunzig's revised categorization.

A classification based upon genitalia, the touchstone of phycitine identification, is definitely a convenience and seemingly would be an improvement over Heinrich's categorization based upon wing venation. However, in the Preface to Fascicle 15.2, Neunzig noted that there is insufficient information upon which to establish tribes of phycitines. In the absence of that information, it seems imprudent to toss out over 30 years of stability in favor of an alternative classification that may be no more capable of withstanding the challenge of a broad-based cladistic analysis than Heinrich's categories.

It is even more dismaying to find that the utility of genitalic dissections for identifications is seriously undermined by Neunzig's concept of species. Geographic differences in wing pattern or coloration among populations that cannot be separated on the basis of genitalia are regarded as indicative of species, often without any substantive biological information. Can there really be so many new species of *Ephesiodes* and *Euzophera*, for example, when a long series of our local populations taken over the duration of the flight season reveals a tremendous range of variation? Should *Vitula serratilineella* of the west be considered a species rather than a subspecies of *V. edmandsii* of the east, from which it differs only by hindwing coloration? Again, I would have preferred opting in favor of stability until compelling reasons for change are discovered.

On the positive side, Neunzig's decisions give us two fewer genera than were previously recognized. With their great variety of secondary sexual characteristics, the Phycitinae at slightly over three species per genus approach the apparent ideal of generic and specific parity held by some butterfly taxonomists. It is hoped that continued synonymization will enable generic identification by genitalia alone, including those of females, rather than by a combination of genitalic and some secondary sexual characteristics of the male. I still do not understand why differences in male antennal structure are considered to be indicative of genera whereas equally profound differences in maxillary palpi are not.

Included in Fascicle 15.3 is *Pseudocabima arizonensis*, which was omitted from the 1983 check list, whereas another species, *Ectomyelois decolor*, is excluded without explanation. Also missing from the sequences of species at the beginning and end of the check list are *Myelois grossipunctella* and *Barberia affinitella*. Presumably the latter and the four species in *Anerastia* and *Coenochroa*, which follow in the check list, have been relegated to the Peoriinae. The misspelling of *Eurythmia fumella* in the check list is corrected to *E. fumella*, and the gender of several species names in *Ephesiodes* is emended from feminine to masculine. Added to the U.S. fauna are three tropical species, recently recorded from Florida, and a few new genera and several new species, most of which cannot be discounted as possible regional forms.

Other additions and improvements over Heinrich's work are some larval keys, which despite incompleteness are a desirable inclusion as many of the species are pests of stored

products and nobody knows these larvae better than Neunzig. There are excellent SEM photographs of a few of the important antennal characters, and some may find the photographs of the adults helpful in identifying species. There are some new biological data, but because many of the larvae are general scavengers, the specific identifications of some host plants are not meaningful.

In general, the species descriptions and the genitalic illustrations are no improvement and often inferior to those in Heinrich's revision. Particularly annoying are the squiggly lines in the aedeagus, presumably the vesica, which obscure the sometimes diagnostic cornuti. The overall quality would have been better had Neunzig abandoned the *MONA* structure and used the format of his 1988 revision of the genus *Salebriaria* (N.C. Agric. Res. Serv. Tech. Bull. 287) with its well-presented descriptions and diagnoses of adults, larvae, and larval biologies; its excellent line drawings of genitalia, larvae, and pupae; and its black and white photographs of the adults—all for a mere \$6.00 a copy.

Fascicle 15.3 is neither the worst nor the best of the *MONA* series, which, with its apparent lack of editorial guidelines over the last 20 years, seems to cater to the whims of the contributors, cannot seem to decide what constitutes a fascicle or a part of a fascicle, and continues to be plagued by inconsistency. About the only constants are the flimsy beige soft cover, the verbosity and superfluous white space in the text, and the "anything-worth-doing-is-worth-overdoing" series of little color photographs of mostly grey and white moths. Black and white close-ups would be more helpful in identifying species and might reverse the rapidly escalating *MONA* prices, now approaching the dollar-a-species-level. (Have mercy! There are more than 10,000 species of North American Lepidoptera!)

This is definitely a volume for the specialist and the "completist," but at \$55 for 81 species the cost-conscious lepidopterist would be better served to seek out a copy of Heinrich's 1956 revision with its broader coverage and superior descriptions and genitalic illustrations bound in a hard cover. The editorial board of *MONA* might look to that same volume with its concisely written descriptions, diagnoses, distributions, and larval hosts as a model for drawing up guidelines for future contributors.

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FOODPLANTS OF WORLD SATURNIIDAE, by Stephen E. Stone. Forward by Claude Lemaire. 1991. The Lepidopterists' Society, Memoir Number 4. xv + 186 pp. 1 color plate. Soft cover, 16 × 23 cm, ISBN 0-930282-05-1, \$7.20 (members of the Society), \$12.00 (non-members), plus \$2 (postage and handling).

Foodplants of World Saturniidae is an important source book that far exceeds the quality and usefulness of older publications. Attractively produced, its cover is illustrated with a painting by John Cody of a mature larva of the Hickory Horned Devil (*Citheronia regalis*). The forward by Claude Lemaire points out that knowledge of larval morphology, behavior, and foodplant preferences is often gained only by rearing the immature stages. He correctly implies that moth rearers often do not keep detailed records of successes and failures, so that their observations are not as useful to others as they could be. The single color plate illustrates five seldom seen larvae, but more importantly, illustrates the range of larval diversity found in this large family.

The two-part organization of the book is easy to use, and helpful for searching out prospective larval foodplants for the 503 species (139 genera) of Saturniidae covered. Part I is alphabetized by moth genera and species. Under each species, the foodplant records are provided with a reference identifying the source of that information. The