

This volume treats 291 species in 21 genera and 5 species of uncertain placement in the tortricoid family known in the past as Phaloniidae. Although Razowski has published extensively on the group previously and has catalogued the Palearctic species separately in 1970 (*Acta Zool. Cracov.*, 15: 341-399), the present work is said to contain the following nomenclatural additions and changes: 21 new species, 1 new subspecies, 14 new synonyms of genera or new status as subgenera (including 11 Razowski names), 59 new synonyms of species, 7 new status as subspecies, and 39 new combinations.

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JAMAICA AND ITS BUTTERFLIES, by F. Martin Brown and Bernard Heineman, illustrated by Marjorie Statham Favreau and others. 1972. xv + 478 p., 11 colored plates. The Curwen Press and E. W. Classey Ltd., London, England. Price: \$44.00 U.S.

This long-awaited work will be a "must" for the amateur of tropical butterflies, for the professional systematist, for those interested in the biogeography of the Americas and for all who delight in a sumptuous natural history, placed in a tropical island setting and illuminated with a wealth of human anecdotes and detailed classificatory and biological information. The book consists of a general introduction, containing historical, environmental and biological background, supplemented by personal reminiscences in Barney Heineman's inimitable style; then there is an extensive account of the biogeography of West Indian butterflies, prepared by Martin Brown, long a student of the area; the body of the book follows, consisting of detailed treatment of the 120 species, with their classification, probable history and biology; the whole is complemented by the set of beautiful and extraordinarily accurate colored plates prepared by Marjorie Statham Favreau and finely reproduced by the Curwen Press. The book as a whole reflects the brilliance and erudition of Martin Brown, the energy and detailed local knowledge of Barney Heineman and the warmly human personalities of both authors.

It would be hard to write a work of this scope without giving some grounds for criticism. To expect an individual with as many competing and compelling interests as Martin Brown, working against a deadline, to write a completely fault-free account of the classification and geography of the Antillean butterflies in the framework of the whole neotropical fauna would be asking a good deal of human nature. A number of errors or questionable interpretations are accordingly evident in the text, though they are far outweighed by the immense value and interest of the material as a whole.

I know less about West Indian butterflies than I did 25 years ago and at the time of writing I lack ready access to a good deal of the literature. Consequently I have not attempted to review the taxonomy and distribution completely, but I feel obliged to pick up a few points.

In the zoogeographic section there are a number of questionable items. The subspecies of *Calisto smintheus* are listed under the Bahaman *C. sibyla*, whose range is given as Cuba. The recent paper by de la Torre y Callejas, who has revised the Cuban populations on the basis of extensive collecting and field work, has been passed over without comment. The statements on the sedentary and forest-loving habits of Satyridae are exaggerated. Several species of *Calisto*, including the Jamaican *C. zangis*, are common in open country and some have been recorded as pests of sugar cane. The continental species of *Hermeuptychia* include forms that are ubiquitous in a wide variety of habitats, and confinement to forests is not a sufficient explanation for their failure to reach the Antilles. Though some of the Hispaniolan species and subspecies of *Calisto* are, as Brown says, closely similar, many of them are very distinct. Most of them are local and as the island has been very

superficially investigated I expect more, rather than less, species to be recognized when the fauna is fully known.

In the Lycaenidae, *Hemiargus ceraunus* is not mentioned in the table on p. 60; on p. 252-255 it is treated as a subspecies of *H. hanno*, but on p. 61 we read, "From Hispaniola and Costa Rica northward *H. hanno* is replaced by *H. ceraunus*, a good species related to *H. hanno*." Nabokov's view that the two species have separate clines in the West Indies and a zone of overlap in Hispaniola is not mentioned. In the Pieridae I consider *Ascia menciaeae* to be probably no more than the Cuban subspecies of *A. josephina*. *Eurema messalina* is shown in the table as occurring in Hispaniola and Puerto Rico, whereas in the text it is correctly cited as occurring in Jamaica, Cuba and the Bahamas. *Eurema laeae*, *E. lathyi*, *E. nicippiformis*, *E. euterpiformis*, *E. pyro* and *E. chamberlaini* are omitted without comment. The view taken by d'Almeida and by myself that *E. dina* and *E. leuce* are distinct species separable on genital characters is not mentioned, nor is the sympatric occurrence of two very distinct populations of this complex in Hispaniola. The Hispaniolan *Phoebis editha* is omitted from the table, though Brown himself first recognized and described the strikingly dimorphic, superficially *sennae*-like male. *P. avellaneda* [sic] certainly occurs in Hispaniola, as does *P. philea thalestris*. I agree with the authors that this last may well be a good species rather than only a subspecies. In the Papilionidae *Battus devilliers* [sic] is listed as occurring in Hispaniola, where it is in fact replaced by the related but very distinct *B. zetides*. *Papilio polyxenes* is listed under the suppressed name *P. ajax*. *P. machaonides* is omitted.

This is not the place for detailed discussion of biogeography. I think Brown would be the first to say that many of his speculations as to dates of arrival should be taken with a grain of salt. The role of the probably emergent Honduras Banks in populating the West Indies in the Pleistocene and Tertiary seems to me to be probably underestimated, whereas the relatively recent Yucatan-Cuba immigration route is possibly given undue prominence, though it has certainly been important for the recent fauna. The existence of special Jamaican elements, consisting first of species not found elsewhere in the Antilles, but closely allied to Central American forms (e.g. *Papilio thersites*, *Anaea johnsoni* and *Mestra dorcas*) and second of segregates or duplications of widespread Antillean forms with considerable endemic differentiation (e.g. *Hemiargus dominica*, *Electrostrymon pan* and *Pyciodes proclea*) is not mentioned explicitly or specifically explained. The role of geological rifting and drift in the Antilles also deserves attention and assessment. In the comparison of total faunas, the method adopted underestimates the degree of differentiation from large faunas and overestimates that from small faunas. The fauna of Hispaniola will certainly prove to be much underestimated in Table 2, both because of the omission of a number of known species and because Hispaniola has been far less thoroughly explored entomologically than the other Greater Antilles.

The taxonomic section, with its thorough treatment of the classification and distribution of the species and groups, is of course the part of the book that provides the largest amount of detailed and often new scientific information. The extensive distributional record is a tribute to the industry both of the authors and of the other collectors whose work they so carefully summarize and document. The biogeographic and evolutionary interpretations of the various taxa are of course more speculative, and opinions on them will vary.

A rather superficial scrutiny reveals some doubtful points. I won't debate the division into families and other higher groups, as the relative ranking is really in large part a matter of personal preference. I do think the separation of Heliconiinae from Argynninae at the family level is rather hard to justify. I would rather have seen *Battus* and *Parides* separated in the Papilionidae, for these two genera differ in really striking morphological characters. I myself also consider the New World *Eurytides* significantly different from the Old World *Graphium*; the structural differences are for instance substantially more important than those that separate

Libytheana from *Libythea* or *Aphrissa* from *Phoebis*. On the whole, however, I consider the generic classification moderate and well balanced.

The discussion of the Danaidae is taxonomically sound, but the biogeography suffers here as elsewhere for making dispersal contingent on mass migration. Actually the latter is often confined to males (though not so in the Danaidae), and there is abundant indirect evidence that waif dispersal of non-migratory species is a significant factor in populating islands even when they are much more strongly isolated than the Greater Antilles. In the present context, oversea dispersal of *D. eresimus* is excluded because this species is not known to be migratory, though Bates has recorded an obvious waif from the Florida Keys and the occurrence of the species is in general rather erratic and local. The detailed status of *D. plexippus* in the West Indies is still confused, though the general picture of resident populations contaminated in varying degree by migrants from the north seems clear enough. We badly need a statistical study comparable to that which Brown so competently did on *Heliconius charitonius*. The supposed subspecies of *Lycorea cleobaea* are based, to the best of my belief, on very scanty material; in my opinion they will require review. *Anetia jaegeri* and *A. cubana* are treated as distinct in the text, though united in the geographic table. I agree with the former interpretation. The actual capture of an *Anetia* of this group in Jamaica is to be awaited with the keenest interest.

Mr. Gerardo Lamas M. has kindly provided me with some notes on the Ithomiidae (or Ithomiinae, as he prefers to call them). He points out that hair tufts are found on the hindwings of females as well as males, at least in some species of *Thyridia*. The type-specimen of *Papilio irene* Drury apparently is not at the University Museum, Oxford, where a search by Mr. E. Taylor has failed to reveal it. Although the general image of ithomiids as local and shade-dwelling is correct, many of the species are widely distributed, some live in open places rather than in the shade, and at least one, *Mechanitis lysimnia nessaea* (Hübner), has been recorded as a migrant (May 1924, cited by C. B. Williams, *The Migration of Butterflies*, 1930: 341). Most or all the species are highly resistant to mechanical injury, and thus might survive transport by storms. *Greta* was placed by Fox (1968) in the tribe Thyridiini. Fox did not divide *Greta* into two subgenera. Godman and Salvin in 1879 erected the new genus *Hypoleria* with two sections, A and B. These correspond today to *Hypoleria s.s.* (Section A) and *Greta* (Section B), as was stated by Fox. Fox (1968) lists seven species from Central America. The proper name of the Jamaican ithomiine appears to be *Greta diaphana* (originally *Papilio diaphamus*); *diaphane* is an unnecessary *nomen novum* given by Hübner, who thought that *diaphamus* was preoccupied.

The treatment of *Junonia* ("Precis") reflects continuing uncertainty as to the status of the forms. Thorough biological and statistical study using modern methods will be needed to resolve the problems of this group. Such a study will make a rewarding project for some future student. Ideally it will extend to the members of the Old World *orithyia* complex as well, whose relationships to *evarete* and allies were debated by Eliot and myself. The larval differences observed by Turner between *genoverva*-like and *zonalis*-like stocks in Jamaica are mentioned, but Brown and Heineman wisely await more comprehensive evidence before assessing these differences.

In the Lycaenidae the species *pan* (Drury) is placed in *Strymon* in the text but in *Electrostrymon* in the zoogeographic table.

The authors confess themselves puzzled by Avinoff's record of *Anteos lacordairei* Boisduval. I can shed some light on this from personal recollection. Avinoff considered *lacordairei* and *maerula* to be sibling species analogous to *Kricogonia lyside* and *castalia*, which he also considered distinct. He thought *lacordairei* was a relatively scarce species which differed in the blackish not reddish antennae, shorter wing and more strongly striated underside from the more abundant *maerula*. When I was more familiar with the problem I thought this view had some merit, but

looking back I don't think the evidence was very strong. However the idea should perhaps be checked out by someone who has good material at hand.

On the Papilionidae, *Papilio troilus* has turned up once or twice as a stray in Cuba. As several sight records and speculative occurrences are discussed, I was disappointed to see no reference to Avinoff's "*Papilio arawak*" a name he used hypothetically and in conversation to refer to several sightings of a large white butterfly, not an *Anteos*, which he thought might be an unknown swallowtail. It was one of his lifelong ambitions to find and capture this butterfly and the hope should not be lost to the present generation of Jamaican lepidopterists.

There are a number of spelling lapses in both the general and the taxonomic sections of the book, for example *Sideronia* for *Siderone* (p. 52), *teleboa* for *teleboas* (p. 54, 55), *avellanada* for *avellaneda* (p. 62), *thetys* for *tethys* (p. 85, 86), *Glossypteris* for *Glossopteris* (p. 98), *exotische* for *exotischer* (p. 103, et al.), *bekannte* for *bekannter* (p. 124 et al.), *eleucha* for *eleucea* (p. 137), *dorcus* for *dorcas* (p. 156), *Suite* for *Suites* (p. 197), *Ithoballus* for *Ithobalus* (p. 321) and André for Andrey (p. 325). The capitalization and punctuation of bibliographic references in the text are erratic. A number of relevant references are omitted from the bibliography. These include papers by Wm. P. Comstock, Eliot, Ford, Hemming, Martorell, de la Torre y Callejas and a couple by myself, among others.

These imperfections, though numerous, are in general minor. They will not seriously detract from the standing of this book as the most thorough treatment ever given to any Antillean lepidopterous fauna. Above and beyond this the book is produced in such a way that it is a collector's piece worthy of a place on any bookshelf.

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NOTES AND NEWS

I wish to thank the many persons who provided assistance to me during this first year of my editorship.

The members of the Editorial Committee of the Journal were most helpful as primary reviewers of submitted manuscripts. In addition, the following individuals reviewed one or more manuscripts upon request: D. E. Berube, H. K. Clench, C. V. Covell, C. D. Ferris, D. J. Klingener, A. B. Klots, A. P. Mange, W. B. Nutting, C. L. Remington, D. F. Schweitzer, A. M. Stuart, and O. R. Taylor. All of these persons performed a valuable service to the Society, and thanks are warmly extended to them.

My wife, Katherine, provided the cover drawing (*Catocala flebilis* Grote) for this volume, and aided in many other ways. Nancy Wells served as my editorial assistant throughout the year, and her invaluable help is most gratefully acknowledged. Finally, from among the many, I especially wish to thank D. F. Hardwick and S. S. Nicolay for their particular kindnesses.

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