

VI). The "flint moth," *Rothschildia*, signified Itzpapalotl, a mother diety and god of human sacrifice, war, and travelers, as well as the personification of the earth and moon (Chapter VII).

In these and accompanying chapters the author discusses and figures lepidopterans in the history (including place names-Chapter IV), art, mythology, folklore, and poetry (Chapter V), of the Teotihuacanan, Aztecan, Mixtecan, and other ancient Mexican cultures. A particularly beautiful poem contrived on the occasion of the death of the prince Tlachuepan, 1493-1498, is quoted:

Life after Death

Golden butterfly now sipping:
The flower that has opened is my heart,
O my friends, it is a fragrant flower,
I now spread abroad upon the rain.

(p. 37, translated from Nahuatl to Spanish by Garikay; thence to English by the reviewer.)

The book also contains diverse representations of butterflies in human culture in general (Chapter IX, Appendix) as well as summaries of the pertinent literature (Chapter I) and the relation of other organisms to butterflies among ancient Mexicans (Chapter II). The author pays special attention (in Chapter X) to the interpretation of references to lepidopterans in 16th Century chronicler Sahagún's book 11 of *Historia General de las Cosas de Nueva España* and accompanying *Codex Florentino*.

The Appendix contains an essay on butterflies in the folklore of other peoples and a taxonomic index of species treated in the book.

The book is nicely laid out and beautifully illustrated, mostly by the author's own hand. Although not in English, the figures and captions will be understandable to the educated lepidopterist armed with a Spanish dictionary. A rudimentary knowledge of Mexican archaeology and history will aid greatly both Spanish-speaking and non-Spanish-speaking readers in assimilating the text.

Errors are rare; I note only the following: Robelo 1940 on p. 21 should be 1904; Cortés 1976 cited on p. 18 is not listed in the bibliography.

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THE BUTTERFLIES OF HISPANIOLA, by Albert Schwartz. 1989. University of Florida Press, Gainesville. xiv + 580 pp., 2 general maps and distribution maps throughout text, 1 color and 15 black & white plates. Hard cover, 23.5 × 16 cm, ISBN 0-8130-0902-2, \$35.00.

The history and quality of books on the butterflies of the "West Indies" has been patchy. The recent work on the fauna of Cuba (Alayo, D. & L. R. Hernandez 1987, *Atlas de las mariposas diurnas de Cuba* [Lepidoptera: Rhopalocera], Editorial Científico-Técnica, La Habana, 148 pp.) is difficult to obtain; R. Pinchon and P. Enrico's treatment of the Lesser Antilles (1969, *Faune des Antilles Françaises, Les Papillons*, Forte-de-France, 258 pp.) came and went with scarcely a notice outside the francophone world and only F. M. Brown and B. Heineman's excellent work on Jamaica (1972, *Jamaica and its butterflies*, E. W. Classey, London, 478 pp.) is still readily available. Even N. D. Riley's field guide (1975, *A field guide to the butterflies of the West Indies*, Collins, London, 224 pp.), valuable though it is, is out of print. A general and up-to-date work on the butterflies of Hispaniola (Haiti and the Dominican Republic) has been conspicuously absent, and it is this void that Dr. Schwartz's book is designed to fill.

Dr. Schwartz's book is a remarkable contribution. He knows Hispaniola uniquely well from numerous extended visits to both its countries over some ten years and, very importantly, covering most months and with wide sampling of the very diverse habitat types that the island affords. In recent years, research publications by Dr. Schwartz and a dedicated group of colleagues, and by independent workers, have greatly added to our knowledge of this fauna, with its noteworthy incidence of endemism, and this book is designed as a synthesis of available information. Of the 196 species considered in the book, 30 have been described in the years following Riley's field guide. This list includes 19 species of the evolutionary jewel in Hispaniola's crown, the genus *Calisto*, and a most interesting group of hesperiids and lycaenids described by Johnson, Matusik and others from, and in some instances apparently endemic to, a remote and until recently largely pristine area in SW Dominican Republic. The list is rounded off by Dr. Schwartz's capture of the long-awaited Hispaniolan representative of the endemic Greater Antillean genus *Atlantea*, and by the recognition of *Memphis johnsoni* and *Adelpha lapitha* as residents of the island. But the value of the book lies not only in documenting species richness, but in clarifying patterns of distribution, essential for any rational conservation effort which, although probably a lost cause in Haiti, is still feasible in principle in some areas of the Dominican Republic. It is particularly heartening to learn that several taxa, formerly thought to be extremely rare, are, in the right place and at the right time, quite common or even abundant. These include, for example, *Pyrgus crisia*, *Oarisma stillmani*, *Hesperia nabokovi*, *Eurema dina mayobanex*, *Myscelia aracynthia*, *Doxocopa thoe*, *Heracles aristor*, *Battus zetides* and numerous others. The hesperiids *Epargyreus spanna* and *Rhinthon bushi*, known to Riley only from the holotypes collected many years ago, have been given a new lease on life. On the other side of the coin, no trace has been found of either *Phaereus unia* or *Polythrix octomaculata decussata*, the latter with questionable claim to Hispaniolan status in the first place.

The book is enlivened by a wealth of first-hand details of flight behavior, nectaring predilections, and habitat structure, but some features of the work restrict its appeal. Although the key (in English and Spanish) appears to be well constructed, it only partially makes up for the absence of figures and of formal text descriptions of each taxon. Illustrations in color of at least some of the newly added species would have been a notable feature. While bibliographic citations are clearly presented, full use of the book requires access to a library with good journal coverage. It seems a pity that a reader less than very familiar with the Hispaniolan fauna will need a second reference to put together a mental image of many of the butterflies in their field settings.

This is an idiosyncratic and very "personal" book: equipped with admirably extensive field notes, the author has elected to present these substantially in their entirety, leaving distillation to the reader. Although perfectly valid, this is a somewhat unusual approach. One cannot fault Dr. Schwartz's insistence on full collecting data, though I confess to being irritated by elevations given to the nearest meter. Maybe it is the limitation of my qualitative mind at work, but to read that *Hemiargus hanno* has been taken in Haiti at the higher elevation of 1891 m *versus* the 1617 m for *H. ceraunus* simply does not engage the memory as effectively as 1900 *versus* 1600 meters, and little information would have been lost by such an approximation. After a while, I found myself wondering whether all records were made with altimeter held at chest height, or whether some had been obtained from a prone position, while the author was enjoying a well earned bottle of *Presidente*!

The listing of detailed locality records after each taxon is of obvious value for new and little known species, and where substantially new information on distribution is provided, but these lists occupy the equivalent of 70 pages of the book, and a solid page of records of *Eurema lisa* or *Phoebis sennae*, in small type, is formidable. Altitude ranges are, however, presented in more assimilable form in Table 1, which also summarizes temperature data and species noted from preliminary work on the satellite islands ranged around Hispaniola. It is not easy to select black and white photographs that convey the "feeling" of a locality, but those included here (28 on 14 pages) are certainly adequate in this respect. The tabulation of habitat types for those species with a demonstrable preference is an excellent ecological aid, and the discussion following the taxonomic and

general text considers the incidence of endemism on present-day Hispaniola in the context of the original North and South palaeo-islands, with particular reference to the genus *Calisto*. An original description of *Tmolus victoria* (K. Johnson and D. Matusik) is appended, for the holotype collected in the Dominican Republic in 1984; this includes a half-tone plate that reminds one what a help even black and white figures would have been.

The author stresses the need for continuing work on the island, and particularly on its satellites. This reviewer was greatly encouraged to find that four brief visits to the Dominican Republic yielded two "new" Province records and even a species (*Appias punctifera*) (Smith, D. S., E. R. Classey & S. J. Ramos 1989, J. Lepid. Soc. 43:332-336) that had, as it were, slipped through Dr. Schwartz's net! This is unquestionably an important work, and clearly a labor of love, invaluable to the biologist concerned with the evolution of Antillean butterflies, if limited in its value to the more casual visitor. While wishing that both might have been catered for, one cannot but applaud the author's comment that publication of the mass of information included in this book is indeed timely.

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BUTTERFLIES OF BORNEO, Volume 1, by Kazuhisa Otsuka. 1988. Tobishima Corporation, 2, Sanban-cho, Chiyoda-ku, Tokyo 102, Japan. xx + 61 pp. in Japanese, xix + 62 pp. in English, 80 color plates, plus text figures. Hard cover, 19 × 27 cm. No ISBN number. Price unknown.

A remarkably active group of Japanese lepidopterists continues to publish new books documenting the butterfly faunas of many South East Asian countries. Now, Kazuhisa Otsuka, a member of the Lepidopterological Society of Japan and a teacher in Mushino City, Tokyo, has undertaken the task of publishing the first book on the butterflies of Borneo, and has done a capable job.

During more than ten years of extensive field work, Otsuka compiled photographs and identification notes for his own use. The stimulus to prepare this present field guide came from an official who reviewed his album at Sabah National Parks headquarters and requested that Otsuka publish his notes and photographs. As Otsuka points out, the current rate of destruction of the natural forest of Borneo is horrific, and the beauty and interest of Borneo's butterflies may play an important role in alerting the world to this serious danger. Thus the author has published this book with the help of the Tobishima Corporation in the hope that many young entomologists in Japan and Malaysia will be stimulated to study the butterflies of Borneo and other island portions of South East Asia, thereby contributing to the preservation of the remaining natural areas.

The book covers 327 species in seven families: Papilionidae, Pieridae, Danaidae, Satyridae (including the subfamily Amathusiinae), Libytheidae, Nymphalidae, and Riodinidae. The author plans to follow this first volume with a second volume in December 1990 that will cover the remaining 600 species of Lycaenidae and HesperIIDae.

The main purpose of the book is identification, which, as the author indicates, is the most difficult task facing lepidopterists in these areas of the world. Although the author records some life history descriptions (eggs, larvae, pupae, and foodplants), they are far from complete.

This book also briefly describes a number of the many habitat types found in Borneo. The author discusses the role of historical biogeography, climate, glacial periods and speciation, and mountain masses as well as national parks in influencing present-day