

N.Z.), and others were recording and describing the Lepidoptera of the archipelago. Data collected by K. J. Fox (1975, *N.Z. Entomol.* 6:66–69) at traps set up at Cape Egmont on the west coast of the North Island for example, suggest that in most years the jet streams carry migrants to New Zealand in far greater abundance than was believed in earlier years. Although historically this probably has been a continual process, establishment may have been more difficult during relatively long periods of ecological stability prior to the arrival of humans within the last one thousand years. The original flora of New Zealand had such a large proportion of endemic groups that suitable foodplants for most Australian insect species were simply absent. Even when light seed was windblown or carried by birds, the germinating plants would still be prone to competitive exclusion by established floral communities.

At this point, it is worth pausing to see what Ferguson et al. have to say about the ecology of Bermuda, if in fact one can glorify Bermuda with that term. In many ways present-day Bermuda resembles the huge, disturbed, urban fringe areas of North America, where remnants of the native vegetation are inextricably mixed with introductions from other North American life zones and from every part of the world. Programs to conserve or enhance biodiversity of native insects in stressed, degraded, and often polluted environments face the same basic problems whether the habitat is an oceanic island or a continental region.

The majority of the plant species that comprised the Bermudian flora when the islands were discovered still survive today. These include 17 endemic species, which range in size from Bermuda Moss (*Trichostomum bermudanum*) to Bermuda cedar (*Juniperus bermudiana*). The ecological communities, however, are gone beyond reclamation. They have been lost to agricultural clearing, periodic burning, early demand for building timber and firewood, and, in the case of the relict native cedar groves, the depredations of an introduced scale insect which brought the tree to the brink of extinction. Ferguson et al. note that the surviving endemic plants face intense competition for resources from introduced weed species of a wide taxonomic range. Similarly, the insect fauna is now dominated by pest species of various kinds that develop large populations periodically, particularly on island crops and introduced horticultural species which now abound in gardens, hotel grounds, and golf courses. The authors also believe that a geometrid moth *Semiothisa ochrifascia*, which fed only on Bermuda Cedar, is now extinct, since the last confirmed capture was in 1928.

In many respects the ecological problems of Bermuda resemble, only too well, those of many other oceanic islands in the tropics and subtropics—such as Fiji, Tonga, Samoa, Easter Island, St. Kitts, the Caymans, Guam, Hawaii—the list is depressingly long. In 1973, F. A. Fosberg (pp. 209–215, in *Nature Conservation in the Pacific*, A. B. Costin and R. H. Groves (eds.) Austral. Nat. Univ. Press, Canberra) published a special plea for a world program to try to save the unique floras and faunas of oceanic islands. There has been some progress since then, in Madagascar, Aldabra and Jamaica, for example, but the total effort is still pitifully limited. Bermuda is particularly vulnerable because of its small size, accessible topography, attractive climate, and proximity to major population centers of eastern North America.

DAVID E. GASKIN, *Department of Zoology, College of Biological Science, University of Guelph, Guelph, Ontario N1G 2W1, Canada.*

Journal of the Lepidopterists' Society
47(2), 1993, 167–169

REARING WILD SILKMOTHS, by Ronald N. Baxter (with a foreword by Brian O. C. Gardiner). 1992. Chudleigh Publishing, 45 Chudleigh Crescent, Seven Kings, Ilford, Essex IG3 9AT, England. x + 72 pp., 2 black & white pls., 8 text figs., 28 color photos by the author. Soft cover, 14.75 × 21 cm, ISBN-0-9519219-0-8, £7.95, plus £2.20 for airmail. (U.S.A. buyers can send \$20.00 in cash to receive one copy by airmail.)

Because members of the Saturniidae are the most popular Lepidoptera for rearing and because many amateurs list this family as their specialty, I assume this book will have a good market. It may fill a need for those wishing to rear saturniids who are unaware of, or unable to obtain, out-of-print books like Paul Villiard's *Moths and How to Rear Them* (1969, Funk & Wagnalls and 1975, Dover Reprint) or B. O. C. Gardiner's *A Silkworm Rearer's Handbook* (1982, Amateur Entomol. Soc.). Baxter's new book appears to be targeted almost exclusively for a British audience, but as many American and European writers similarly limit their scope to within their own borders, people in other countries are by now quite accustomed to this approach.

The color photographs on the front and back covers and the twenty inside showing live moths are superb and comprise the most attractive feature of the book. In addition there are eight color photographs of mature larvae, that although not glossy, are clear and crisp. For several species these are the only published photographs I have seen of live adults and larvae. Baxter is an accomplished photographer, both in technical quality and composition. I particularly liked to see moths of species that overwinter as eggs shown on autumn foliage. Baxter's illustrations are comparable to those of Hsiao Yue Wang of the Taiwan Museum, who in my opinion is the foremost photographer of moths in the world today. The photographs in Baxter's book alone make it worth the price.

The organization of the book is good, and the writing style makes the text easy to understand. Brief chapters dealing with care of eggs, larvae, pupae, cocoons, and adults; mating of moths; and how to obtain breeding stock are instructive, and will be especially useful to beginners. Of special value are the detailed treatments of the rearing needs of 42 silkworm species, of which 35 belong to the subfamily Saturniinae. Typographical errors and misspellings are rare in the book.

I disagree with a few comments made by the author, such as his generalization that tender young leaves are harmful to larvae (they rarely are; it all depends on the species of moth and plant). Wetting eggs is virtually always beneficial, particularly for diapausing ova, as long as ventilation prevents molding, yet Baxter advocates letting only indirect moisture reach eggs in their hatching containers. Baxter laments that "*Antheraea eucalypti* can be reared only on eucalypts, not easily available in Britain, yet New Zealand entomologists have found the larvae in recent years on other resiniferous trees such as sweetgum, sumac, and even birch. The moth figured in color as *Rothschildia jorulla* is actually *R. cincta*. The specimen figured in color as *Automeris coresus* appears to be *A. rubescens*. And intergeneric matings do, in fact, sometimes result in fertile ova.

Despite what Baxter writes, Shantung silk is no longer the correct name for that produced by *Antheraea pernyi* (although apparently this name caught on at some point in the past), nor is the center of its production in Shantung Province (now called Shandong). For several decades now the name Shantung silk has been applied to a category of mulberry silk (from *Bombyx mori*), which I see in profusion in fabric shops in Denver. The tussah silk industry in China has been centered in Liaoning Province for at least two centuries (and provided 70% of China's output of tussah in 1980, for example), but this oak silk is now grown throughout most of China. So much for the "association" between the province and name Shantung and Chinese tussah silk.

As a taxonomist I can only express frustration to see some long-standing errors in nomenclature perpetuated. The author should have consulted current taxonomically sound literature or requested editorial input from someone who could correct the following errors. The splendid giant moth from the Himalayas called *edwardsii* (Baxter uses the frequent misspelling *edwardsi*) belongs in *Archaeoattacus* (since 1910!), not *Attacus*. *Leucanella memusae* is still placed (erroneously) in *Automeris*, and, if Baxter has it identified correctly, does not occur in Argentina. The International Code on Zoological Nomenclature (1985) states categorically that junior objective synonyms are unavailable names and cannot be used: *Dictyoploca* and *Caligula* both have *simla* as type-species, and the latter generic name has priority; *Philosamia* and *Samia* both have *cynthia* as type-species, and again *Samia* is the older name. Even so, dozens of authors in Europe, Japan, China, India, and North America continue to use names like *Philosamia*, so Baxter has abundant company. The incorrect subfamily name Citheroniinae continues to be used

for the group correctly called Ceratocampinae. Then we find the usual dogma of putting the Australian *eucalypti* into *Antheraea* instead of *Opodiphthera*, and citing all of the species of *Samia* as subspecies of *cynthia*. The wheels of taxonomy grind painfully slowly!

I recommend this attractive little book for its helpful advice in rearing the big moths, and for its excellent color photographs of them, even though the price seems a bit high to me.

RICHARD S. PEIGLER, *Department of Zoology, Denver Museum of Natural History, 2001 Colorado Boulevard, Denver, Colorado 80205.*

Journal of the Lepidopterists' Society
47(2), 1993, 169-170

BUTTERFLIES OF BORNEO, Volume II, No. 1: LYCAENIDAE, by Yasuo Seki, Yusuke Takana-mi, Kiyoshi Maruyama, and Kazuhisa Otsuka. Volume II, No. 2: HESPERIIDAE, by Kiyoshi Maruyama, and Addendum of Vol. 1, by Kazuhisa Otsuka. 1991. Tobishina Corporation, 2, Sandan-cho, Chioda-ku, Tokyo 102, Japan. No. 1: x + 139 pp. in Japanese, x + 113 pp. in English, 70 color plates, plus text figures. No. 2: xiii + 89 pp. in Japanese, xi + 33 pp. in English, 48 color plates, plus text figures. No ISBN number. Hardcover, 19 × 27 cm. Price 17,500 yen (approx. \$137.00 U.S.). Order from TTS Books, 100-239 Oni-gasawa Uchigoumiya-Machi, Iwaki-shi Fukushima Pre., 973 Japan.

In 1988, Kazuhisa Otsuka authored Volume I of *Butterflies of Borneo* (see review by T. C. Emmel, 1990, *Journal of the Lepidopterists' Society*, 44(2):105-106), which covered 327 species in seven families (Papilionidae, Pieridae, Danaidae, Satyridae, Libytheidae, Nymphalidae, and Riodinidae). Remarkably, the authors have now carried their pledge (almost to the day) to publish "a second volume in two years" that would cover the 600 species of Lycaenidae and Hesperidae found in Borneo. And a wonderful work it is, much improved over even the highest standards of Volume I.

Because these last two families have special taxonomic problems, Otsuka invited three younger colleagues to help him prepare Volume II. Following the publication of Volume I in 1988, all the authors made four expeditions to Borneo for special coverage of unexplored areas, and they also travelled to the Natural History Museum, London, and other European museums to collect data on Borneo specimens. The extra effort shows to great advantage in this coauthored project.

The color plates in both parts of Volume II are superb, with life-sized reproductions of both lycaenids and hesperiids (including both the upperside and underside of the male and female of each species). The organization and comprehensiveness of the individual species accounts have been much improved in this second volume. For each genus, there is given a key to species and a description of its geographical distribution, number of species, and behavioral habits. Then, in each species account, a code letter and number (which cross-reference the species name to the plate) introduce the species and subspecies name, author, and date of description. A relevant synonymy is given, followed by forewing length measurements of the male and female. Geographical distribution of the species in Borneo is given in detail and distribution outside of Borneo is also covered. Ranges of other subspecies are listed, and food plants recorded both in Borneo and elsewhere are given. A citation for the locality information for each figured specimen concludes the account. No references are given in the Hesperidae section, but one can refer to Charles A. Bridges' bibliography of literature on butterflies of the world to locate the author and date citations. In the Lycaenidae volume (Part I), a good bibliography of selected references is given with full citations.

There are many surprises in this book, and these help to make it a highly important reference for all students of southeast Asian island butterfly groups. For example, who would have guessed that there are at least 91 species of the spectacular hairstreak genus