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BATES, BEETLES, BUTTERFLIES, BIOLOGY AND BOOKS: A BOOK REVIEW

THE PRINCIPAL CONTRIBUTIONS OF HENRY WALTER BATES TO A KNOWLEDGE OF THE BUTTERFLIES AND LONGICORN BEETLES OF THE AMAZON VALLEY. Edited by E. Gorton Linsley, with an introduction by Kier B. Sterling. Arno Press, 3 Park Avenue, New York, N.Y. 10016. December 1978. List price (Hardback) $50.00. ISBN 0-405-10690-4.

This book is introduced by a two-page summary of the life of Henry Walter Bates (1825–1892), written by the editor of the Arno Press Collection "Biologists and their World"; the collection includes 55 volumes as of the printing of this one, mostly on fish, reptiles, birds and mammals, with a few on plants and six others on invertebrates (including works of G. M. Wheeler, C. V. Riley, T. Say, J. Richardson, and J. L. LeConte). This is followed by simple photographic reprints, with one exception without accompanying plates (and in the exception, the colored plates of the original are extremely poorly rendered in black and white), of a total of 12 papers readily available in nineteenth century British journals, as follows:

A. An obituary sketch of Bates written by David Sharp, in The Entomologist, 25: 77–80 (April 1892).

B. Eleven of the most important of Bates' works on butterflies and longicorn beetles:

1. Notes on South American butterflies. Trans. Ent. Soc. London, 5: 1–11 (1859). Treats systematics, evolution, and natural history of *Papilio, Heliconius,* Ithomiinae, *Agrias, Callithea, "Cybdelis" pharsalia* (recognized as a new genus, later to be named *Antigonis* by Felder), *Caerois,* Theclinae, *Mesosemia,* and many other Riodininae including early stages.

2. Contributions to an insect fauna of the Amazon Valley. Part I. Diurnal Lepidoptera. Trans. Ent. Soc. London, 5:223–228 (1859) and 335–361 (1861). Discusses biogeography and the Papilionidae.

3. Contributions to an insect fauna of the Amazon Valley. Lepidoptera—Papilionidae. J. Entom., 1: 218–245 (1861). Gives a 5-family classification of Rhopalocera [Hesperiidae, Papilionidae (including Papilioninae and Pierinae), Lycaenidae, Erycinidae (including Libytheinae), and Nymphalidae (including Nymphalinae which subtends the Nymphalidae, Ageronidae, Eurytelidae and Morphidae of others, Brassolinae, Satyrinae, Danainae, Heliconinae, and Acraeinae)], and discusses all the Papilioninae and Pierinae of the Amazon Basin, with notes on natural history.

4. Contributions to an insect fauna of the Amazon Valley. Lepidoptera: Heliconidae. Trans. Linn. Soc. London, 23: 495–566, 4 plates (1862). A famous paper in which the phenomenon of mimicry is proposed, defined, and extensively discussed, with abundant examples and particular reference to dismorphiine (*"Leptalis"*) mimics of heliconians and ithomiines (as "Danaoid Heliconidae"), and to evolution and natural selection. In the systematic list, Bates describes two genera and 28 species of Ithomiinae, 5 of Riodininae (all in the new genus *Ithomeis*), and 8 of Heliconiini.

5. Contributions to an insect fauna of the Amazon Valley. Lepidoptera—Nymphalinae. J. Entom., 2: 175–213 (1864). Justifies the higher classification proposed in 1861, especially through larval characters, and discusses 73 species from *Colaenis* through *Pandora,* including *Eunica* and Callicorini but not any Charaxinae; describes 15 new species. The reprinting did not include Plate IX, which figures four new *Eunica* and one new *Eresia.*

6. On the blue-belted *Epicaliae* of the forests of the Amazons. Entom. Monthly Mag., 2: 174–177 (1866). Discusses habits and relations of *Nessaea ancea (obrinus* auctorum), *N. hewitsonii,* and *N. batesii,* describing the female of the last.

7. Contributions to an insect fauna of the Amazon Valley. Coleoptera: Longicornes. Ann. Mag. Nat. Hist., 8: 40–52, 147–152, 212–219, 471–478 (1861); 9: 117–124, 396–405, 446–458 (1862); 12: 100–109, 275–288, 367–381 (1863); 13: 43–56, 144–164 (1864); 14: 11–24 (1864); 15: 213–225, 382–394 (1865); 16: 101–113, 167–182, 308–314 (1865); 17: 31–42, 191–201, 288–303, 367–373, 425–435 (1866). A summarily important monograph giving descriptive, biogeographical, and biological notes on the Lamiinae of the Amazon Basin, including description of 36 new genera and 312 new species (49 in *Colobothea* alone, and 28 and 23 in the new genera *Nyssodrys* and *Lepturges,* respectively).

8. New genera of *Longicorn Coleoptera* from the River Amazons. Entom. Monthly Mag., 4: 22–28 (1867). Describes 14 genera of Cerambycidae.

9. Contributions to an insect fauna of the Amazon Valley (Coleoptera, Prionides). Trans. Ent. Soc. London, 1869: 37–58 (1869) (Bates was then President of the Entomological Society). Catalogues the 26 Prioninae (which include the gargantuan *Macrodontia cervicornis* and *Titanus giganteus*) of the Amazon Basin, of which 8 are newly described, along with one species from Mendoza and three from Central America.

10. Contributions to an insect fauna of the Amazon Valley (Coleoptera, Cerambycidae). Trans. Ent. Soc. London, 1870: 243–335, 391–444 (1870). Discusses an additional 320 species of Cerambycidae (of which 94, and 13 genera, are newly described), using Lacordaire's new classification for the family. Gives a tabular summary, by subfamily, of the 221 genera and 679 species of longhorn beetles in the Amazon.

11. Notes on the Longicorn Coleoptera of tropical America. Ann. Mag. Nat. Hist. [2], 11: 21–45, 117–132 (1873). Discusses natural history and mimicry of a variety of genera, including description of 14 species of *Ommata,* 9 of *Odontocera,* 2 each of *Achyphoderes, Isthmiade,* and *Charis* (the last is a homonym of a riodinine butterfly genus), and one each of *Tomopterus* and five new genera.

Upon perusal of this valuable collection of papers, there remains no doubt that Bates was among the most perceptive, thorough, careful, and pioneering biologists of his

time. It is now also widely recognized that he was one of the most important elements in the early testing, application, and propagation of Darwin's ideas on natural selection. The papers reprinted in this volume show that Bates' work on the Amazon insect fauna represented a fundamental contribution to the Darwinian school of biological thought, which was soon to be assailed by a multitude of detractors from both within and without the scientific world of the late nineteenth century. The papers also bear testimony to Bates' scholarship and detailed taxonomic and morphological research, as well as the excellence of his field work.

Modern scholars of the history of science, of Neotropical butterflies and longicorn beetles, of the development of mimicry theory, and of biogeography should unquestionably profit from familiarity with these papers of Bates. It is thus most unfortunate that this collection is priced far above the cost of copying these 11 papers on machines available in any good library, which is likely to have all these papers (352 double pages = $17.60; only 100 pages deal with Lepidoptera = $5.00). Thus, the sales of the book are likely to be strongly restricted to a few libraries and specialized workers, who feel a need to have these papers together in a single bound volume for easier reference. The Arno Press could probably sell thousands of a paperback version priced under $15.00, especially should they advertise through Entomological Reprint Specialists and various entomological journals; I hope that they will consider thusly, making available this important collection.

It is also most unfortunate that the book omits original plates, and does not include a few essays by modern students of Bates' contributions to biological science, which could analyze his field work, his evolutionary thought, his views on mimicry and biogeography, and his enormous work on the natural history of the Amazonian fauna. They might also analyze his famous prediction in "The Naturalist on the River Amazons," when, after a complex justification based on evolution, ecology, ontogenesis and morphology, he states that "The study of butterflies—creatures selected as the types of airiness and frivolity—instead of being despised, will some day be valued as one of the most important branches of Biological science." Bates is surely the godfather of the many modern evolutionary biologists who use butterflies as experimental animals to study natural processes in the field and the laboratory, and he is a worthy one. But has Bates' "some day" come any closer?

Many people today ask why Bates, after his sojourn on the Amazon and his famous writings on mimicry, natural selection, ecology, geography, and anthropology, settled down and spent the rest of his research career developing "mere taxonomy" of butterflies and beetles. People asked this question of Bates in his own time, also. As a modern-day Amazon sojourner for the same period (eleven years) who, like Bates, has received enough new material to work on for the rest of my life, I can fully agree with Bates' own reply as to why he offered the world no further "wide generalizations or ingenious suggestions" after his paper on mimicry (1862). Commenting on the immensity of the descriptive work to be accomplished and the comparatively small progress made on it by entomologists, he said in one of his Presidential addresses to the Entomological Society, "Thus, our best working entomologists are led to abandon general views, both from lack of time to work them out, and the consciousness that general views on the relations of forms and faunas are liable to become soon obsolete by the rapid growth of knowledge." As his biographer David Sharp comments, ". . . there can be little doubt that Bates restricted his own work of late years to descriptive entomology, because he felt that it is at the present the form of entomological work that has the most permanent utility."

We now live in a time when no one naturalist could claim to know as much about Amazon insects as did Henry Walter Bates a hundred years ago, and very few would care to. On the other hand, unfounded and unsupported generalizations are cheap and abundant in the literature on Neotropical butterflies, often based on mere snippets of data already commented by Bates in the 1860's. Those who would labor to collect enough descriptive data to test such generalizations (as did Bates), and who like Bates, are prone to discover new and important generalizations, are derided and can find no funds for their painstaking natural history and systematic work. Hopefully, the travels and

career of Bates may help to inspire young entomologists to abandon easy generalizations and "quick and dirty" field experiments in the peripheral Neotropics, and once again penetrate the complex reality of the Amazon Basin. Here, they can still observe and absorb a multitude of new facts and phenomena which, though they may not be publishable next year and may never be acceptable to scientific magazines of wide circulation, will continue to promote the still very necessary "rapid growth of knowledge" about tropical entomofaunas.

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BOOK REVIEW

BUTTERFLIES OF OREGON, by Ernst J. Dornfeld. 1980. Timber Press. Order from International Scholarly Book Services, Inc., Dept. B, 2130 Pacific Avenue, Forest Grove, Oregon 97116. Format: 8½ × 11". 276 pp., 4 color plates, 48 halftone plates, 35 text halftones, 45 line drawings, 192 distribution maps. Cloth. Price $24.95 + 1.00 shipping. (The copy received for review was a paperback but no separate price was quoted.)

This book, which has been many years in preparation, is an extensive study of Oregon butterflies. It opens with an historical background of collectors and collecting in the state with an accompanying list of species described from Oregon localities. Then follow discussions of Oregon's physiography (illustrated) and associated butterfly distributions, butterfly biology, endangered and extinct butterflies, evolution, classification and nomenclature. The final sections of the introductory material treat collecting methods, rearing and photographing butterflies. These introductory sections occupy 36 pages and are well illustrated. The physiography section with its associated photographs should be invaluable to non-resident collectors planning a visit to Oregon.

The preliminary sections are followed by 81 pages that comprise the "Systematic Account." The families are ordered: Papilionidae, Pieridae, Danaidae, Satyridae, Nymphalidae, Riodinidae, Lycaenidae, Hesperiidae. One hundred and fifty-five species are discussed. Each species discussion is arranged in two columns of text with references to plate, figure and map numbers. Distinguishing characters of each species are clearly stated along with pertinent life history information. In many instances, literature references are included. Each family is introduced by a well-annotated prefatory statement.

The appendices include in order: color plates, halftone plates, maps, checklist, glossary of terms, index of butterfly names. The halftone plate legends reference each figure to the appropriate text page. The distribution maps are by county (counties not identified by name) with dots for each locality.

Generally speaking, the book is very well done and very thorough. For the most part, the taxonomic usage reflects current trends. The author has not accepted fully some recent revisionary work at the generic level. In these instances, he has used generic/subgeneric headings. Some examples are: *Pieris* (*Artogeia*), *Euphydryas* (*Occidryas*), *Lycaena* (*Epidemia*). This is a matter of personal preference and in no way detracts from the book. No new taxa are introduced, but some new combinations are