

it is the editorial policy of the Series to give full treatment to British species, even though their occurrence in Fennoscandia and Denmark may not be likely. Six species not known from Scandinavia or England are examined, three of which are not known from Northwestern Europe but might possibly reach the eastern edge of Fennoscandia, in the opinion of the authors.

All but the latter three species are illustrated in color. In my opinion this is the only way to properly present adult Sesiidae, not to mention most other Lepidoptera. Many black and white photographs depict various aspects of the behavior of the immature stages and their host plant associations, a useful addition to the biological information. In most studies of this nature only fleeting reference is made to sesiid behavior. The publication points out the value of biological data as it relates to the taxonomy of the group.

This work incorporates the most current ideas on the systematics of Palearctic Sesiidae, particularly ideas found in Naumann's 1971 revision of the Holarctic sesiid genera. Reference is made to Kristensen's original studies on sesiid wing transparency, which has since been published. The authors have added much needed terms for the general hyaline areas on wings of most clearwing moths.

As the authors point out, there will continue to be reinterpretations of higher taxa based on the findings and subjective judgments of other workers, including this reviewer. However, "The Sesiidae of Fennoscandia and Denmark" is a concise, accurate, well-illustrated and modern treatment of a particular faunal area. The *Fauna Entomologica Scandinavica* will be a valuable series of contributions to scientific literature if the quality of succeeding portions can match the quality of this volume.

THOMAS D. EICHLIN, *California Department of Food and Agriculture, Division of Plant Industry, Laboratory Services-Entomology, Sacramento, California 95814.*

CATALOGO DE LOS ROPALOCEROS ARGENTINOS, by Kenneth J. Hayward. 1973. Opera Lilloana XXIII. Fundación Miguel Lillo, Tucumán, Argentina. 318 p. Price: about \$3.00 U.S.

As a fitting climax to Kenneth Hayward's years of study of the butterflies of Argentina, we have this posthumously published catalog of the Rhopalocera known to fly there. Hayward had previously published a catalog of the Hesperiiidae (1941) and of the remaining Rhopalocera (1950) along with numerous supplements. The present synonymic catalog is a great improvement over the previous works, not only because it combines them into one publication, but because it also includes: (1) where known, larval host plants; (2) distributions in which the provinces are listed circularly clockwise beginning in the northeast, instead of alphabetically, as previously listed; (3) in keeping with modern practice, synonymizing all named aberrations and forms; and (4) a general updating in nomenclature as well as range extensions. Quite a number of new species have been added to the Argentine fauna.

The work varies in quality depending on where the author had concentrated special study. As the higher classification of the butterflies is somewhat subjective, I cannot argue much with the author regarding his rather novel division of the Rhopalocera into five superfamilies (Hesperioidea, Papilionoidea, Riodinoidea (sic), Nymphaloidea, and Danoidea). I would question, however, his placing the Libytheinae as a subfamily of the Riodinidae.

As can be imagined, from an author who published voluminously on the hesperiids, including two mammoth tomes on the Argentine species, the Hesperiiidae section is the best. Hayward has closely followed Evans' revision but has felt free to diverge, especially in many cases where Evans placed certain of Hayward's taxa into synonymy. If the hesperiid section is the best, the most deficient areas would be those on the Pieridae and the Lycaenidae. In the Pieridae many subspecies are placed in

synonymy as forms or mentioned in brief footnotes. The treatment of the *Eurema* species is highly questionable. All the Theclinae except for *Calycopis* are placed in the catchall genus "*Thecla*". I doubt whether his treatment of *Calycopis* is accurate, and he apparently arbitrarily retains "*Thecla beon*". He uses *Everes tulliola* for *Zizula cyna*, and *Hermiargus filenus* for *H. hanno* ssp. He also retains the palearctic genus *Scolitantides* for a number of species.

A careful critique of this work would bring out dozens of needed nomenclatural changes. One such interesting case is what Hayward calls *Anaea "cratias"*. This actually is an erroneous correction originally made by William P. Comstock in his generic revision for the much used "*crateis*". The correct specific name as published by Hewitson is *cratais*. Another long-standing error is the use of *Euptychia biocellata* Godman 1905, for *Euptychia imbrialis* (Weeks) 1901, due to an error in dating Weeks' taxa (1911 instead of 1901).

Because a complete synonymy is given on the family, subfamily, generic and subspecific levels, it seems strange to this reviewer to note the lack of synonymy at the specific level when the nominate subspecies is not part of the Argentine fauna.

Another serious error should be noted. As the author mentions in a footnote on page 12, many species based on Evans' "Santiago del Estero" in Bolivia have been included. Hayward somehow ignored the fact that there is a Santiago del Estero (sometimes "Estero") in the eastern part of the Bolivian department of Santa Cruz, near the Brazilian border. He, therefore, relegated these species to the Argentine province of Santiago del Estero.

The work is replete with typographical errors and omissions. The majority of these probably would have been corrected if Hayward had lived to see the work through the printing stage. These errors and omissions detract seriously from the scientific accuracy of the work. It is hopeful that the Instituto Miguel Lillo will publish a correction booklet.

Despite its many weaknesses this catalog is a must for the few active collectors in Argentina. For those who want to know what flies in Argentina it is the most up-to-date and accurate help available. It is amazing what Hayward accomplished, working nearly alone, devoid of easy access to the majority of the type specimens and to much of the literature.

ROBERT C. EISELE, *Pichanal, Salta, Argentina.*

A BIBLIOGRAPHY OF THE CATALOGS, LISTS, FAUNAL AND OTHER PAPERS ON THE BUTTERFLIES OF NORTH AMERICA NORTH OF MEXICO ARRANGED BY STATE AND PROVINCE (LEPIDOPTERA: RHOPALOCERA), by William D. Field et al. Smithsonian Contributions to Zoology, no. 157. 104 p. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Price: \$1.70 U.S.

This ambitious undertaking, said to have involved a great many years, is a veritable gold-mine of source papers, long overdue. It collects under one cover an astonishing wealth of references to ecological and zoogeographical information, often from obscure journals, although the authors confess that to prepare a definitive bibliography would take the rest of their lives. References to behavior, migration, life histories, foodplants, taxonomic notes, aberrations, local and regional lists, and distributional notes are included. A "Supplemental Bibliography" lists papers that embrace a number of states. In the words of its authors, "Bibliography is the handmaiden of all research. It is our hope that this bibliography will stimulate much future work on the fauna of North America."

OAKLEY SHIELDS, *Department of Entomology, University of California, Davis, California 95616.*