

REVIEWS

THE LEPIDOPTERA OF IRAQ, Revised Edition. By E. P. Wiltshire. 1957. 162 pp., 17 pls. (2 col.), 6 text-figs. Publisher: Nicholas Kaye, Ltd., London [available from E. W. Classey, 4 Church St., Isleworth, Mddx., England; price £2.5.0.].

For many years Mr. WILTSHIRE has collected and studied the Lepidoptera of Iraq intensively. In 1944 the Government of Iraq published his first edition of this work as an agricultural bulletin, and since that time the number of species definitely identified from Iraq doubled, more than 900 being known. A substantial number of these are species new to science, collected by Mr. WILTSHIRE and named primarily by H. G. AMSEL, C. BOURSIN, and WILTSHIRE himself. 136 species are butterflies, 302 Noctuidæ, 103 Geometridæ, 209 Pyralididæ, and the remaining 288 scattered among the smaller families. Obviously this is a disproportionate number of butterflies, as is usual for an area not yet thoroughly collected. No Micropterygidæ, Eriocraniidæ, or Hepialidæ have yet been found in Iraq, and WILTSHIRE relates this to the aridity of the Middle East. The number of Cossidæ is large (15), in comparison to such groups as Arctiidæ (16), Hesperiidæ (19), and Tortricidæ (19). Of course very many more of the last family doubtless will be found, but the Cossidæ will remain in larger proportion than in most other regions of comparable size.

In an interesting Introduction it is shown that about one-half of the species are found only in mountains, about one-quarter only in the plains (*i.e.*, below 1500'), and the remainder in both.

The text is principally a list of species, with brief comments on biotopes, phenology, foodplants where known, and the general distribution of each species. Ten new species and subspecies are described. The excellent plates include two in color and three in half-tone showing spread specimens of the ten new entities and a few other species. Finally there are twelve plates of line-drawings, mainly of genitalia, reproduced from AMSEL's plates which had been published in 1949 in the *Bulletin de la Société Fouad I d'Entomologie*.

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THE BUTTERFLIES OF MISSISSIPPI. By Bryant Mather & Katharine Mather. *Tulane studies in Zoology*, vol. 6: pp. 63-109, 6 figures. [Price \$1.00; available from: Meade Nat. History Library, Department of Zoology, Tulane University, New Orleans, 18, La., U.S.A.]

This paper is one of the finest annotated state lists of Lepidoptera that has ever been published and deserves to be used as a model for future lists for other state and provinces. The authors, scouring Mississippi for about ten seasons, produced a majority of the specimens themselves. They have

gleaned additional records from every source they could discover. As a result, they present records of 122 species of butterflies from 189 localities in all of the 82 counties of the state. Only 13 of these species were not collected by the authors. The MATHERS have thus eliminated the largest void in the published knowledge of Nearctic butterfly geography, for the area between Georgia and Texas. Many new records for Alabama and Tennessee, mainly produced by CHERMOCK and ROEVER, are a valuable supplement to the Mississippi core. An appendix to the list of 122 verified species is an informative commentary on 41 additional species which can reasonably be expected in Mississippi. The total is therefore very large and reflects the wide faunal range, from the Upper Austral northeastern corner of the state (with such northern residents as *Melitæa gorgone*, *Incisalia augustinus*, *I. niphon*, *Colias philodice*, *Hesperia metea*, *Amblyscirtes vialis*, and *A. hegon*) to the semi-tropical Gulf Coast (with *Danaus gilippus*, *Heliconius charitonius*, *Pyrgus syrichtus*, *Hesperia attalus*, *Atrytone arpa*, and *Oligoria maculata*, etc.) and with special habitats such as the salt marshes (with *Panoquina panoquin* and probably *Brephidium pseudofea*).

In a future revision of this list it would be of great value to have two or three half-tone plates showing one or more crisp photographs of several species whose Mississippi form would be of unusual interest, such as *Strymon ontario*, *Mitoura gryneus*, *Incisalia henrici*, *Poanes yehl*, *Agraulis vanillæ*, *Melitæa gorgone*, *Limenitis archippus*, *Wallengrenia otho*, *Atrytonopsis* spp., and *Atrytone dion*.

Readers of the *Lepidopterists' News* will have seen the thorough population analyses by Mr. MATHER of some of the most interesting Mississippi species: *Papilio glaucus*, *Eurema daira*, and *Danaus plexippus*. Similar data on forewing length and seasonal variation are tabulated in the list for *Papilio cressphontes*, *Colias eurytheme*, *Phæbis sennæ*, *Eurema nicippe*, and *Poanes yehl*; it would have been most interesting if the authors had been able to provide such details for some other species such as *Anthocaris genutia*, and on the seasonal frequency of forms of *Polygonia interrogationis* and *Phyciodes tharos*.

The treatment of migrants has been carefully documented, particularly with *Vanessa cardui*. As is essential for this irregular species, the precise year of each record is given. When this is done in several other regional lists, a picture can be developed of the periodicity and extent of the migrations. For *Danaus plexippus* I feel there is still a large uncertainty about its summer residency: the discovery of larvæ in April, May, and even June does not prove that it is a permanent summer resident. Observations for July and early August will be necessary, and the precise locality is required for each date cited, especially for larvæ.

Foodplant records and life history notes are almost entirely lacking.

One reason the MATHER paper is so significant is that numerous active specialists were freely consulted for the most difficult questions. The MATHERS have usually given the view of each authority, and in several instances a fas-

inating symposium of divergent views emerges, as for *Incisalia henrici*, *Colias eurytheme*, and *Limenitis archippus*. However, in a few other instances one wishes that equally full investigations had been made. Surely any grounds for retaining *Limenitis astyanax* as a race of *arthemis* are extremely weak, and ignore the biological evidence. The nomenclature is as current as possible. Fortunately, the confusions of the EVANS *Catalogue* did not get into the MATHER list.

The format is attractive and the paper carefully edited. The use of quotation marks rather than italics, to distinguish forms from subspecies is most welcome. This device, long followed in the *News*, reminds the reader of the fundamental difference in kind between forms and aberrations on one hand and subspecies and species on the other.

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A CENTURY OF PROGRESS IN THE NATURAL SCIENCES.
California Academy of Sciences. x + 807 pp., illus. San Francisco, 1955.
[Available from the Academy, Golden Gate Park, San Francisco 18, Calif., U. S. A.]

This volume, published in celebration of the centennial of the California Academy of Sciences, contains a series of essays on developments of the past century in various branches of science. Not all fields are covered, but most groups of insects are treated in individual essays by specialists; here the emphasis is on the development of modern classification. The excellent brief review on "Lepidoptera" by WM. T. M. FORBES is of course of particular interest; but to the lepidopterist the volume may be even more valuable for its summaries of groups with which he is less familiar. The essays on other groups of insects and on the classification of all groups of plants provide information which can hardly be found elsewhere in such convenient form. Reviews of progress in biography, paleontology, and conservation are also valuable, though these subjects have been treated more fully in other books. The scope of the essays is worldwide, but the book should be particularly interesting to Californians because of EWAN'S introductory chapter on early naturalists in the state.

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