*Zamorano.* The few specimens I have from Zamorano were caught by students of the Pan American Agricultural School. This school is located in a valley 36 kilometers east of Tegucigalpa. It has several cloud forest peaks around it. The Sphingidae were attracted to the lights of the buildings.

The specimens collected are listed below:

| Species | Location No. | Species | Location No. |
|---|---|---|---|
| *Amphimoea walkeri* Boisd. | 1 | *Phlegethontius rustica* Fabr. | 1, 4 |
| *Celerio lineata* Fabr. | 1 | *Phlegethontius sexta* Johan. | 4 |
| *Cocytius duponchel* Doey | 1 | *Pholus auchemolus* Cramer | 4 |
| *Epistor ocepete* Linné | 4 | *Pholus capronnieri* Boisd. | 5 |
| *Erinnyis alope* Drury | 1 | *Pholus labruscae* Linné | 1 |
| *Erinnyis crameri* Schaus | 1 | *Pholus ogliguus* R. & J. | 1 |
| *Erinnyis ello* Linné | 1, 3 | *Pholus vitis* Linné | 1, 3, 4 |
| *Erinnyis lassauxi* Boisd. | 1 | *Protambulyx strigilis* Linné | 2, 4 |
| *Erinnyis oenotrus* Stoll. | 1, 3 | *Pseudosphinx tetrio* Linné | 4 |
| *Grammodia caicus* Cramer | 3 | *Sphinx merops* Boisd. | 2 |
| *Hemeroplanes parce* Fabr. | 4 | *Xylophanes libya* Druce | 4 |
| *Herse cingulata* Fabr. | 1 | *Xylophanes chiron* | |
| *Pachylia ficus* Linné | 1, 2, 4 | *nechus* Cramer | 1 |
| *Pachylia resumens* Walker | 2, 4 | *Xylophanes neoptolemus* Stoll | 1 |
| *Phlegethontius florestan* Stoll. | 1 | *Xylophanes pluto* Fabr. | 4 |
| *Phlegethontius incisa* Walker | 4 | *Xylophanes porcus* | |
| *Phlegethontius muscosa* R. & J. | 4 | *continentalis* R. & J. | 4 |
| *Phlegethontius occulta* R. & J. | 2 | *Xylophanes tersa* Linné | 2, 3, 5 |

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## BOOK REVIEWS

THE INSECT REALM, by Charles L. Hogue and Fred S. Truxal. 1970, 99 pp. + i–viii. Los Angeles County Museum of Natural History. Price $2.00 U.S.

This attractive little book was nominally produced to serve as a guide to the *Hall of Insects* at the Los Angeles County Museum. Such an abundance of information is presented in concise form, however, that the book could well serve as a text or reference in high school biology classes. Succesive chapters are devoted to the position of insects in the animal kingdom, to morphology and phylogeny, to growth and development and to the insect environment. Other sections deal with beneficial and injurious insects and the making of an insect collection. The chapter on classification gives brief and illustrated diagnoses of the principal insect orders. The book should be owned by all neophyte entomologists.

D. F. HARDWICK, *Editor.*

A FIELD GUIDE TO THE BUTTERFLIES OF BRITAIN AND EUROPE, by L. G. Higgins and N. D. Riley, with color illustrations by Brian Hargreaves. Collins, London. 380 pp, 371 maps, 60 colored plates. September, 1970. 42s.

It has been 85 years since there was published in English as complete a study of the butterflies of western Europe and the British Isles as is presented in this splendid volume. I am sure that it will be the standard guide to those butterflies

for the rest of this century and well into the next. The book follows the pattern first established many years ago by Tory Peterson in his bird guides for North America. The layout is the same as you find in Klots's Field Guide for the butterflies east of the Great Plains.

The two authors of the new guide are among the most able Lepidopterists in the world. Higgins's careful studies of Old World Melitaeinae brought order to a most confusing array of butterflies. His personal collection of European butterflies is the best among all privately held collections. In fact, of the over 720 butterflies illustrated in this volume 700 are from Higgins's collection. Dr. Higgins personally collected by far the major part of his cabinet. Thus he knows intimately the habits and behavior of the species within the fauna about which he has written. Riley has been associated with the butterfly collections of the British Museum (N. H.) since 1911! He served as Keeper of the Department of Entomology from 1932 to 1955. He edited the *Entomologist* for 36 years. No other book about butterflies has behind it the amount of wisdom that guarantees this one.

The families are arranged in a manner that was in vogue some decades ago and still is considered the proper ordering by most amateur European collectors. While it differs from that used in the *Zoological Record* and from dos Passos's inversion of that order, it is no less useful. It is the same as that used by Holland in his *Butterfly Book*.

The authors were faced with a fantastic task winnowing the hundreds of subspecific names that have been proposed for European butterflies. They settled upon retaining only those that represent well-defined taxa and eliminated the minor local varieties. Nowhere is this better shown than in their treatment of the genus *Parnassius*. They devote two and a half pages to the genus and reduce this far over-named group of butterflies to seven subspecies of *apollo*, two of *phoebus* and two of *mnemosyne*.

Careful reading of this book shows that there are striking differences between the butterfly faunae of western Europe and North America north of Mexico. Part of this may be related to the more uniform climate of the Old World area when compared with that of the New World area. If the volume considered its eastern boundary the Ural Mountains instead of excluding the U.S.S.R., except for the Baltic states, more environmental diversity would have been included. The exclusion is reasonable since few if any western Europeans will be at liberty to collect freely in U.S.S.R. A summary of faunal differences is presented below:

| Group | Western Europe | | | U S and Canada | |
|---|---|---|---|---|---|
| Papilionidae | 11 | 2.9% | | 28 | 4.1% |
| Pieridae | 41 | 10.8% | | 59 | 8.8% |
| Danaidae | 2 | 0.5% | | 5 | 0.7% |
| Libytheidae | 1 | 0.3% | | 2 | 0.3% |
| Nymphalidae | 68 | 17.9% | | 147 | 21.5% |
| Satyridae | 113 | 29.8% | | 47 | 6.9% |
| Nemeobiidae | 1 | 0.3% | Riodinidae | 19 | 2.8% |
| Lycaenidae | 101 | 26.6% | | 133 | 19.5% |
| Hesperioidea | 41 | 10.8% | | 242 | 35.4% |
| | 379 | 99.9% | | 682 | 100.0% |

Notice that there are many more satyrids in Europe than there are skippers. The reverse is true in the North American area. Satyrids and skippers compete for grasses as food in the larval stages. This difference is made more striking when we compare Hesperiinae, the grass-feeders, in the two areas. We have 128 species, the Europeans only 12. We cannot blame restriction of grasslands or prevalence of farmed lands for the small number of Hesperiinae in Europe. The satyrids prove that

there is ample food for a large and varied population of grass-feeders. I suspect that it is just a case of competition that has existed for many millenia and probably relates to refugia during the ice advances during the Pleistocene Epoch.

The European subregion is cut off from the tropical faunal regions by deserts and extraordinarily high mountains. This might be used as an explanation for the somewhat smaller European nymphalid array than is found in America north of Mexico. Here there is continuous land connection between the tropics and the temperate areas. The north-south pattern of American mountain ranges also may influence this difference. At first glance the Lycaenidae seem to deny such reasoning. When this family is looked at from the subfamily rank quite a different picture developes:

| Subfamily | Western Europe | | U. S. and Canada | |
|---|---|---|---|---|
| Theclinae | 16 | 15.8% | 80 | 60.2% |
| Gerydinae | 0 | | 1 | 0.7% |
| Lycaeninae | 11 | 10.9% | 16 | 12.0% |
| Plebejinae | 74 | 73.3% | 36 | 27.1% |
| | 101 | 100.0% | 133 | 100.0% |

The dominance of Theclinae in the United States and Canada and the dominance of Plebejinae in western Europe make the species arrays of the two regions quite different. Continuity with the tropics, the stronghold of Theclinae, probably explains the large number of hairstreaks in our fauna. The very large number of blues in the European fauna may be real or it may be a figment of taxonomic philosophy in the two listings—Higgins & Riley vs. dos Passos. In turn, each of these is strongly influenced by recent regional taxonomic research. Stempffer and others in Europe are far ahead of anyone in North America in understanding of the Plebejinae. I have a strong suspicion that when parity of intelligence is reached for this subfamily the number of North America species will be increased. We have tended to turn to subspecies designation whereas the Europeans have demonstrated specific distinctions among taxa that are superficially much alike. Perhaps more than a little of our error has been blind acceptance of work published. We need much more to inquire critically before accepting the work of others.

Notice of occurrence in North America is included among the brief notes on range for the holarctic species found in western Europe. Such notice is made for 38 species. In four cases the relationship is not usually recognized in North America: *Pontia chlorodice beckeri* W. H. Edwards, *Pontia callidice occidentalis* Reakirt, *Euchloe ausonia ausonides* Boisduval and *Everes argiades comyntas* Godart. The last of these needs verification. Three species in the European fauna which we acknowledge in ours are not noted as such in Higgins & Riley. These are *Lycaeides argyrognomen* Bergsträsser, *Vacciniina optilete* Knoch and *Agriades glandon* de Prunner. I wrote to Higgins about these cases and he replied that in the case of the first two he had been unable to dissect North American specimens and therefore omitted reference to them. The omission of *glandon* was accidental. Higgins had collected material in Hall Valley, Colorado, when he visited me some years ago. At that time he remarked upon how close to *glandon* is *rustica*.

Although written primarily for the amateur collector in Europe this book will be found of value to collectors in North America. I recommend it highly to anyone who is interested in taxonomic studies, zoogeography and the biology of butterflies.

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## CORRECTION

Vol. 24, no. 4, page 254, line 27: Under *Zamagiria australella* (Hulst) read "The type is in the American Mus. Nat. Hist." for "The type is in the U.S. Nat. Mus."