

ILLUSTRATIONS OF *HELICONIUS* (NYMPHALIDAE):  
SOME RARE AND IMPORTANT SPECIMENSJOHN R. G. TURNER<sup>1</sup>Photographed by  
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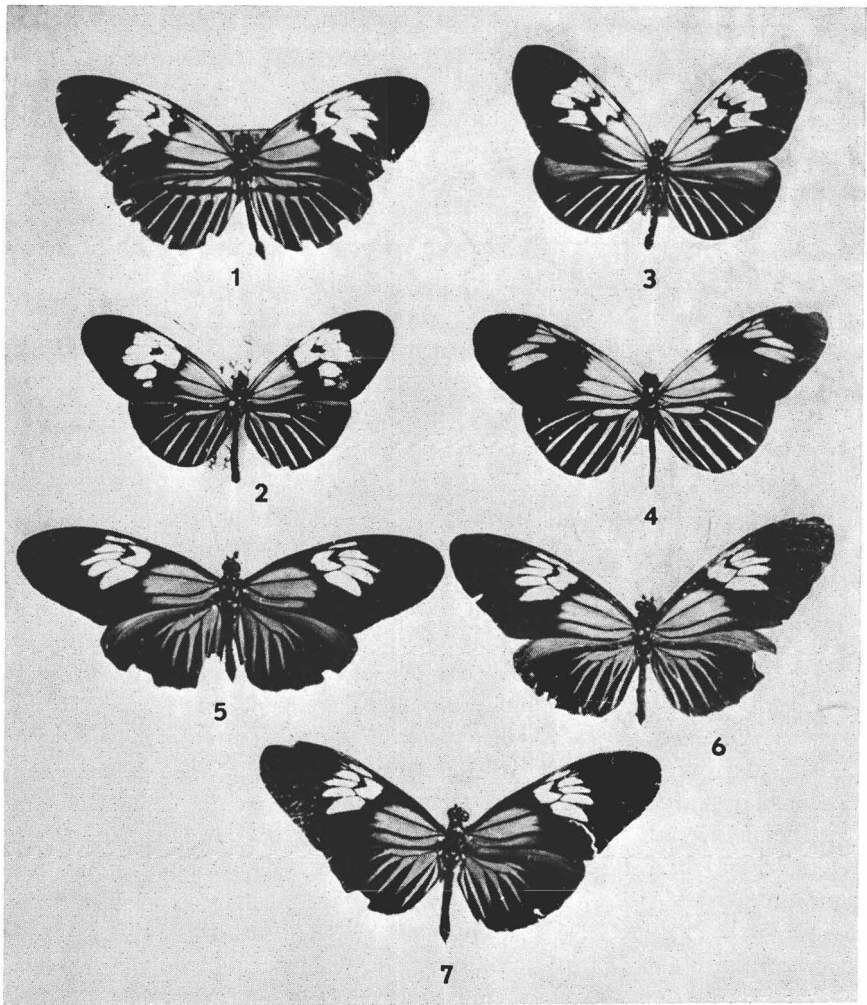
*Heliconius* butterflies are now being intensively used as research animals for varied projects in genetics, ecology, behavior, and physiology. The taxonomy of the genus is extremely difficult, largely because of mutual mimicry within the genus and extreme geographical variation and polymorphism within some species. Its study has been somewhat hampered in the past by the absence of illustrations, which in addition makes it difficult for both the amateur butterfly collector and the professional researcher to identify the material with which he is working. Presented here are some pictures of important specimens, most of them types, and most of them never previously illustrated. These are in order: type specimens designated by Felix Bryk, from the Swedish Amazon Expedition, in the Naturhistoriska Riksmuseet, Stockholm; forms of the rare and little known species *Heliconius demeter*; and type specimens of another comparatively rare and difficult species, *Heliconius elevatus*, from the Naturhistorisches Museum, Wien.

Other works illustrating large numbers of *Heliconius* specimens are the two standard monographs (although by no means every species is illustrated) by Stichel & Riffarth (1905) and by Stichel (1906), and the profuse color illustrations by Seitz (1913); all these works are well out of date in their classification. All the Trinidadian species have been illustrated by Beebe, Crane & Fleming (1960), reprinted by Emsley (1963), and all of these appear in color in the recent book by Barcant (1971). Sixteen of the commoner species are figured by Turner (1968)<sup>2</sup>, who has also figured some of the subspecies of *H. elevatus* and *H. melpomene* (Turner, 1967). A great variety of Brazilian species have recently been illustrated by Brown & Mielke (1972) and Brown (1972). The geographical variation of *Heliconius melpomene* and *H. erato* has been illustrated by Brown & Mielke (1972) and in color by Turner (1971).

The butterflies are fully described in the figure legends, but a few

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<sup>2</sup> The alleged *egeria* in that paper is in fact *burneyi*.



Figs. 1-7. Type specimens designated from the Swedish Amazon Expedition, and preserved in the Naturhistoriska Riksmuseet, Stockholm: 1. *H. elevatus taracuanus* Bryk, holotype male (Brasil, Est. do Amazonas, Rio Uaupés, Taracua); 2. *H. erato reductimacula* Bryk, holotype male (data same as 1); 3. *H. aoede aoede* from *postalbimacula* Bryk, holotype male (Brasil, Est. do Amazonas, Manaós); 4. *H. erato estrella* form *aurivillii* Bryk, holotype male (Brasil, "Rio Autaz"); 5, 6, 7. *H. egeria homogena* Bryk, male syntypes, the specimen at figure 6 is hereby designated lectoholotype (Brasil, Est. do Amazonas; 5-6, Rio Uaupés, Taracua; 7, Rio Negro, São Gabriel).

points are worth noting. Among the type specimens from the Swedish Museum in the first photograph are three species (Figs. 1, 2, 5, 6, 7) from the upper Rio Negro; all these forms show very similar patterns, with the yellow marks in the outer area of the forewing more or less fused into a large patch, a feature which tends to be rare to the south on the Amazonas, where the yellow patch tends to be broken up into spots or reduced to a broad yellow bar; there is a strong suggestion here of mutual mimicry among these three species, a mimicry which is known to occur in other parts of their ranges.

Illustrated here for the first time are type specimens of *H. elevatus* carrying the designations *taracuanus*, *pseudocupidineus*, *griseoviridis*, *noeldneri*, and *aquilina*. These represent a slight extension of the work on the taxonomy of this genus in a previous paper (Turner, 1967). The status of the forms appears to be as follows:

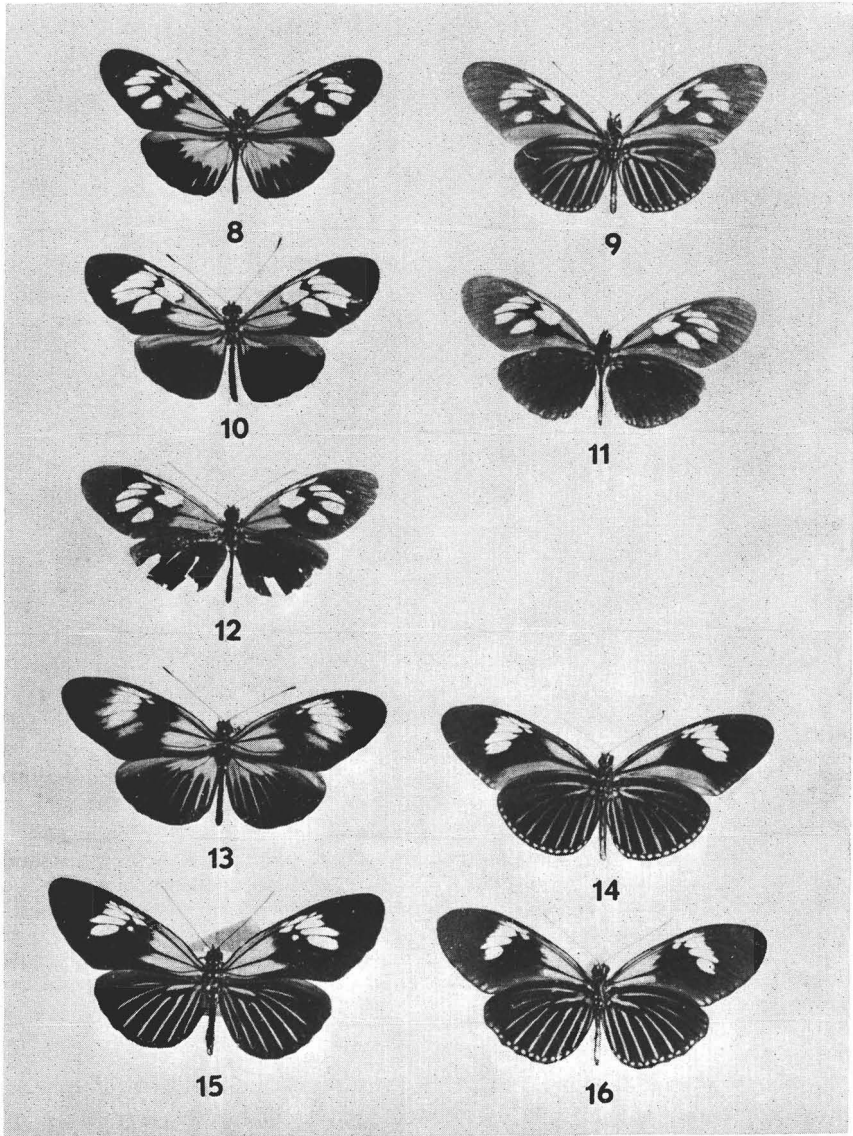
*taracuanus* (Fig. 16): This is probably a good subspecies found in the north Amazon Basin, replaced to the south by nominotypic *elevatus*, and closely resembling the form *perchlora* which is found on the southern border of the Amazon Basin in Bolivia. There is however some variability of patterns in the central Amazon Basin, and the division into these three races may be to some extent arbitrary.

*pseudocupidineus* (Figs. 17, 18): This is a good subspecies confined apparently to the valley of the Rio Huallaga in Peru; it differs from nominotypic *elevatus* in having the yellow band on the forewing extremely narrow (in nominotypic *elevatus* it is of a width intermediate between *pseudocupidineus* and *taracuanus*).

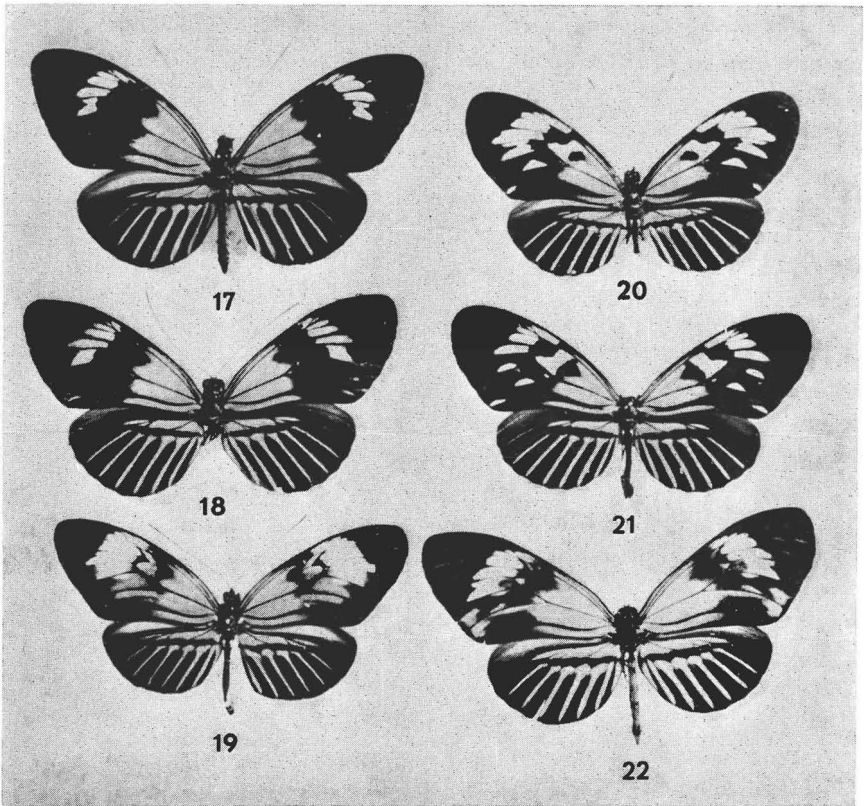
*griseoviridis* and *noeldneri* (Figs. 19, 22): These are probably to be regarded as mere aberrations, although there is no hint about their causation.

*aquilina* (Figs. 20, 21): Populations of *H. elevatus* in the Guianas, lower Amazon and Mato Grosso have the yellow marks on the forewing broken up into dots. The more northerly of these populations have yellow apical spots on the forewing in addition (see illustrations by Turner, 1967); the populations in the south of the range lack these apical spots, as can be seen from the illustration. If one ignores the presence or absence of spots, as being unworthy of producing a subspecific separation, then *aquilina* is a junior synonym of *bari* (Oberthür), the form found in the Guianas; if one wishes to split these populations into two subspecies then *aquilina* is a synonym of *schmassmanni* Joicey & Talbot, which also comes from the Mato Grosso. These names were published during the same year, and date priority has not yet been established.

The full taxonomic references are given elsewhere (Turner, 1967) and



Figs. 8–16. Specimens of *H. demeter* from the British Museum (Natural History), London (uppersides on left, undersides on right): **8, 9.** *H. d. bouqueti* Nöldner, males (Guyane française, St. Jean de Maroni); **10.** *H. d. beebei* Turner, holotype male (central Guyana—see type description); **11, 12.** *H. d. beebei*, paratype females (central Guyana—see type description); **13, 14.** *H. d. demeter* Staudinger, males (Peru, Iquitos); **15, 16.** *H. d. demeter*, females (Colombia, upper Rio Putumayo, Florida).



Figs. 17–22. Type specimens of *H. elevatus* designated by Neustetter in the Naturhistorisches Museum, Wien, Austria: 17. *H. e. pseudocupidineus* Neustetter, lectoholotype male (Peru, Yurimaguas); 18. *H. e. pseudocupidineus*, lectoparatype female (Peru, Yurimaguas); 19. *H. e. elevatus* form *griseoviridis* Neustetter, holotype male (Peru, Yurimaguas); 20. *H. e. aquilina* Neustetter, lectoholotype male (Brasil, Rio Machados, Mato Grosso); 21. *H. e. aquilina*, lectoparatype female (Brasil, Rio Machados, Mato Grosso); 22. *H. e. elevatus* form *noeldneri* Neustetter, holotype male (Peru, Yurimaguas).

need not be repeated here; a distribution map of the main forms can be found in Turner (1971).

The second photograph illustrates *Heliconius demeter*, which is a very rare species, except possibly in the upper Amazon Basin. Three of the four subspecies are illustrated here: *H. d. bouqueti* from the lower Amazon and Guianas, *H. d. beebei* from the region of the Guiana Shield (these three are the type specimens) and the nominotypic subspecies *H. d. demeter* from the upper Amazon. The fourth subspecies *H. d. eratosignis* is not illustrated, as at the time of taking the photograph only

the two type specimens were known. The forewing resembles that of *bouqueti* and *beebei*, but the rays on the hindwing are separated and not fused into a red patch, even in the male. In the other subspecies (except *beebei*) there is more or less extensive fusion of the rays in the male, although not in the female. The female of *bouqueti* is not illustrated as no specimen could be found to photograph; it has previously been illustrated by Neustetter (1931), under the name *H. eratoformis*. In collections it is about twenty times as rare as the male; the only specimens known to me apart from the type (originally in the Larsen collection and not traced), are one in the collection of Drs. E. H. Jonkers of the Netherlands Government Economic Mission to Suriname, in Paramaribo, and one in the British Museum (Natural History). An account of the complicated synonymy is given elsewhere (Turner, 1966).

We are very grateful to the following for the loan of the specimens photographed: The Naturhistoriska Riksmuseet, Stockholm; the British Museum (Natural History), London; and the Naturhistorisches Museum, Wien. Where necessary, designations of lectotypes are made in the figure legends. The colors are black, red and yellow.

#### SUMMARY

Twenty-two specimens of *Heliconius*, most of them belonging to forms previously not figured, from museums in Austria, England, and Sweden, are illustrated with photographs. Sixteen of these are type specimens of forms in the species *elevatus*, *demeter*, *erato*, *aoede*, and *egeria*. One lectoholotype is designated, and a short account is given of the importance of these specimens. The photographs show a mimicry ring found on the upper Rio Negro, and for the first time, the major subspecies of *Heliconius demeter*.

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POPULATIONS OF *PAPILIO ANDRAEMON BONHOTEI* SHARPE  
AND *PAPILIO ARISTODEMUS PONCEANUS* SCHAUS  
(PAPILIONIDAE) IN BISCAYNE NATIONAL  
MONUMENT, FLORIDA

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A survey of the Lepidoptera found on the islands of Biscayne National Monument, Florida, in April and May 1972, revealed sizeable breeding populations of two rare papilionid butterflies. These are the Bahaman Swallowtail (*Papilio andraemon bonhotei* Sharpe) and Schaus' Swallowtail (*Papilio aristodemus ponceanus* Schaus). The former species has been recorded only a few times in Florida (Holland, 1902; Clarke, 1940; Kimball, 1965) and until now has been considered only a stray or accidental visitor to United States shores following hurricanes. The scarceness of the latter species in southern Florida has also been previously documented by many authorities including Bates (1934), Grimshawe (1940), Henderson (1945a, 1945b, 1946), Klots (1951) and Rutkowski (1971). The majority of records for Schaus' swallowtail are from Key Largo and Lower Matecumbe Key (Kimball, 1965) which suggests that these islands house the remaining remnant population of this species found in the