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LEPIDOPTERA OF THE CENTRAL BRAZIL PLATEAU. I. PRELIMINARY LIST OF RHOPALOCERA: INTRODUCTION, NYMPHALIDAE, LIBYTHEIDAE

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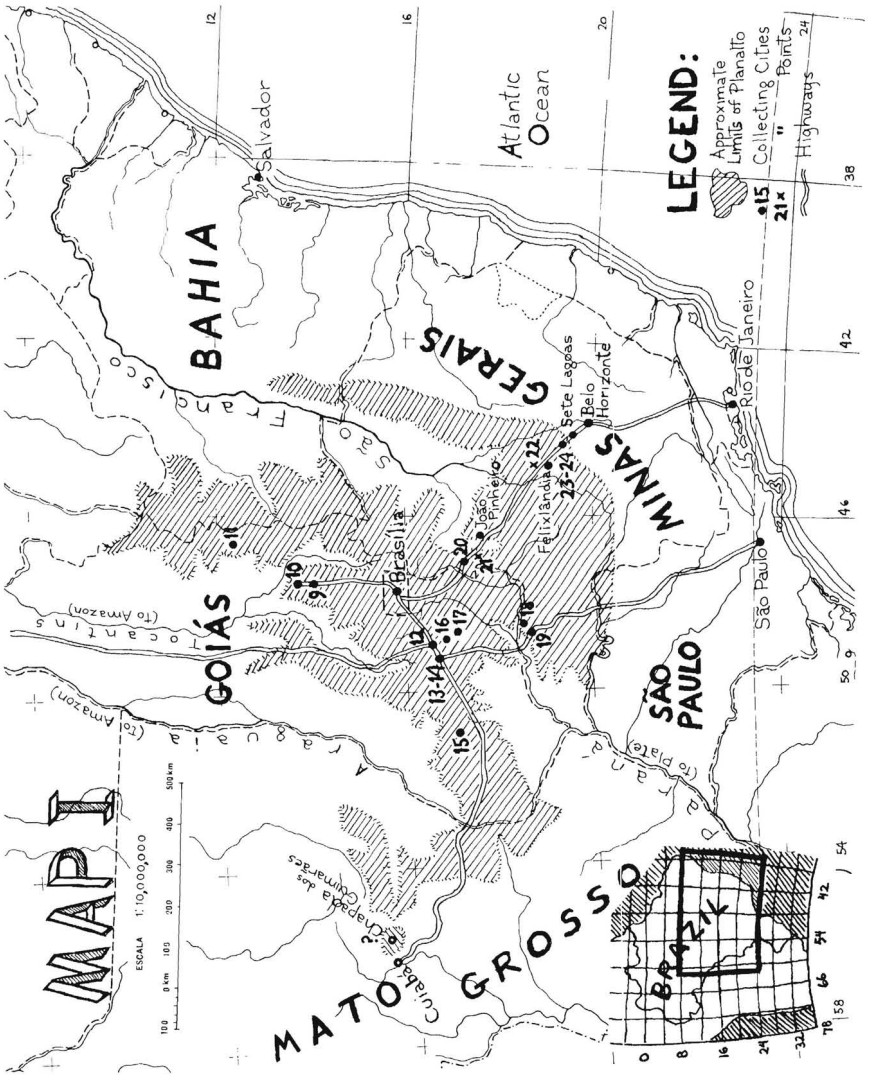
The insect fauna of the central plateau (*planalto central*) of Brazil is so poorly known that most published species distribution maps simply leave the entire area blank. For example, *Heliconius erato phyllis*, the most generally distributed butterfly of the area, does not seem to be known from the planalto in the majority of the major world museums (see Emsley, 1964). Spitz collected a great deal in the area in the 1930's and deposited much of the material in Germany and Austria, but only very brief publications have resulted from this, dealing with certain new species and some general aspects (Spitz, 1930, 1931a, 1931b; Seitz, 1930–1932).

There has been considerable material published concerning species collected by Herbert H. Smith in the 1890's at Chapada, Mato Grosso. We presume that this is Chapada dos Guimarães, about 30 miles east of Cuiabá at about 750 meters elevation. However, much of the material reported from "Chapada" may have been collected at lower elevations in Mato Grosso, for it is more typical of the pantanal or the Amazon drainage of the state than the cerrado portion. There are also several other Chapadas in the state of Mato Grosso, and we have not succeeded in discovering with certainty at which one Mr. Smith made his collections.

Even Chapada dos Guimarães presents some questions in relation to inclusion in the present list. It is separated from the large body of the Mato Grosso-Goiás cerrado by a considerable area of less than 600 meters elevation. A list of Rhopalocera for the settlement of Buriti, elev. 700



EXPLANATION OF MAP I

Portion of south central Brazil, showing approximate extent of the central plateau, or planalto, and indicating collection localities.

meters and on the Chapada dos Guimarães near the town of Chapada (Talbot, 1928) shows 35 species not on the present list. Of these, 11 are mentioned herein as expected to be added to this list; while 12 are Amazonian and have not been noted by us for any other areas of the planalto.

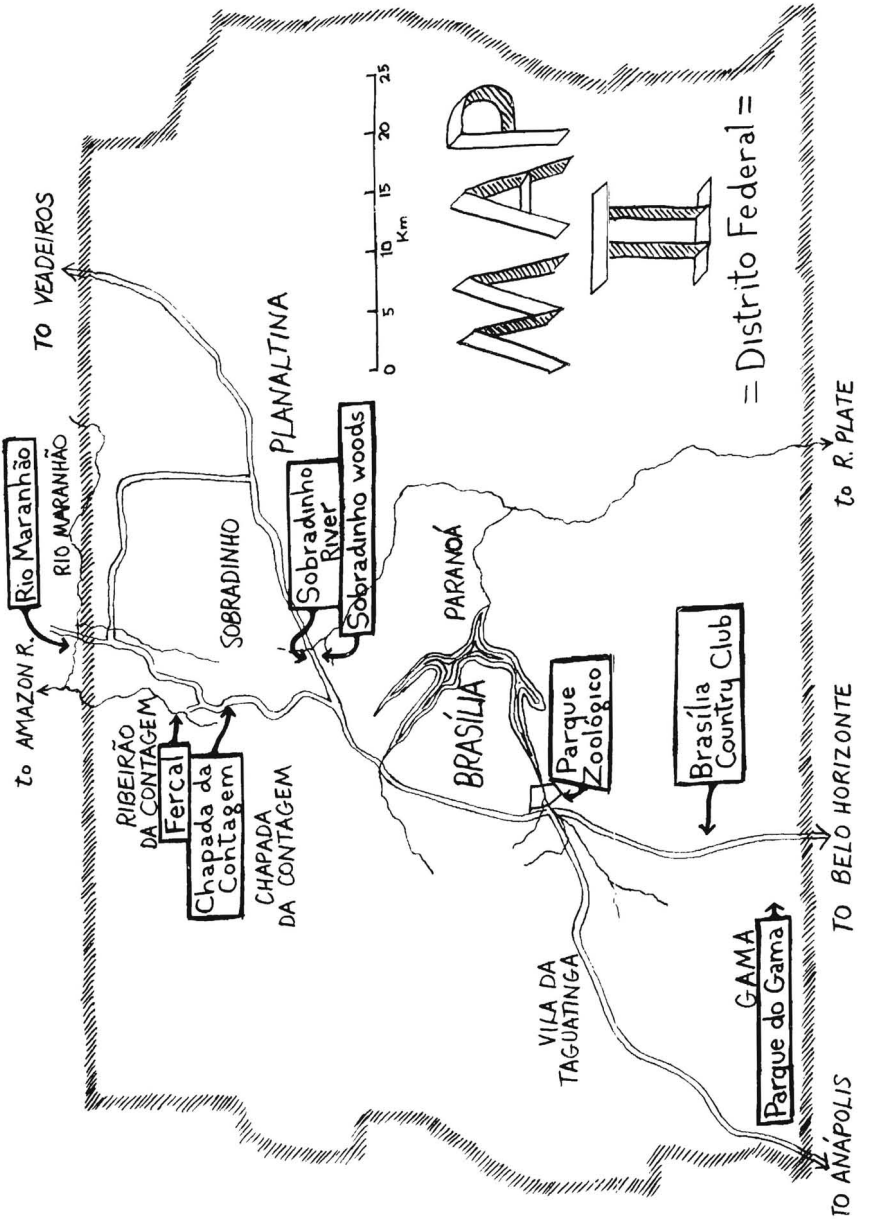
Thus, we regard the Chapada dos Guimarães, which may or not be the "Chapada" of the literature, as a northwestern blend zone of the cerrado fauna with the upper Amazonian/Bolivian fauna, and exclude it from our consideration.

In order to begin to understand the Lepidoptera of this "savanna" area, we made several excursions totalling four weeks in midsummer, early winter, and late winter into the heart of the area, the new Distrito Federal encompassing the capital, Brasília. The region covers much of the states of Goiás (formerly spelled Goyaz, and generally still published thus in the literature) and Minas Gerais and parts of São Paulo, Mato Grosso and Bahia (see Map I). We have also collected data from other collections, including those of Messrs. Paulo Gagarin (Rio), Nirton Tangerini (Rio), and Romualdo Ferreira d'Almeida (Rio). We have catalogued material in the large collections of the Museu Nacional (Rio), the Instituto Oswaldo Cruz (Rio; in care of Dr. Hugo Souza Lopes, who has also collected considerably in the planalto), and the part of the Spitz collection included in the Departamento de Zoologia (São Paulo; in care of Dr. Lauro P. Travassos Filho). We have determined the majority of this material (with the notable exceptions of "*Euptychia*" and certain Theclinae) and present here a preliminary list of Rhopalocera, along with comments on the species, distributional and seasonal data, and broad relationships of the fauna to neighboring faunal regions of Brazil. Future papers will deal with Heterocera, Rhopalocera forms as yet unidentified and records accumulated later, and the fauna of the "blend zone" at the southern limit of the region, as well as further studies as they may present themselves.[1]

The Area

The planalto central is roughly crescent-shaped (see Map I) and is approximately centered on the new capital Brasília. It comprises nearly 650,000 square kilometers and lies at an altitude of 600–1300 meters, between the Amazon basin to the north and west, the River Plate basin to the southwest, the São Francisco River basin to the northeast, and the Serra do Mar mountain ranges to the southeast. The region is characterized by strongly marked wet (October–March) and dry (April–

[1] We invite collectors or curators possessing specimens from known localities within the area to communicate with us, so that we may compile this data for future supplements to this list.



EXPLANATION OF MAP II

Detail sketch map of vicinity of Brasilia, showing collection localities in the Distrito Federal.

September) seasons. Despite generally poor soil ("cerrado," resembling the North American Great Basin), a large number of plant species occurs here, with interspersed wooded swamps and dry deciduous woodlands. The latter contain the majority of the Lepidoptera. Few true mountains are present, although some steep areas are encountered, particularly in major watersheds. Most watercourses flow the year around. The three major river systems bordering the area originate in the vicinity of Brasília to produce striking vegetation contrasts in a relatively small area. Information on the vegetation of the planalto is best obtained in the papers presented to the Sociedade Botânica do Brasil; this information has been summarized recently (Heringer, 1966).

We have set the borders of the planalto at 600 meters elevation from the northeast around through northwest to the southwest, where the planalto is bordered by river systems. At the southeastern edge of the area, the flora and fauna of the planalto blend over a rather narrow zone into the more varied flora and fauna of the Serra do Mar, the southeast coastal mountain area of Brazil, without dramatic changes in elevation. We have drawn our limit on the Belo Horizonte-Brasília highway just southeast of Paraopeba, Minas Gerais, where the forest fauna shows fewer than half a dozen butterfly species characteristic of the Serra do Mar and not found further north over the majority of the planalto. Thirty kilometers south (Sete Lagoas) or east (Serra do Cipó) of Paraopeba, the terrain becomes more mountainous and forested, the cerrado of red soil is replaced by open grassland of richer brown soil, and a day's collection will produce dozens of species not known from localities within our area of concern. We have drawn the boundary more approximately in other areas, using terrain maps as a guide.

Collecting Localities

The following list includes material from 25 localities, in addition to some isolated records from other points. These areas are designated on the accompanying Maps. The localities and abbreviations as used on the list are as follows (localities 1–8 are shown on Map II, nos. 9–24 on Map I).

1. Sobradinho River (*SobrdR*) = Creek crossing BR-020 just southwest of Sobradinho, Distrito Federal; swampy woods along northwest side of highway. Elevation 1025 m; drainage River Plate.

2. Sobradinho Woods (*SobrdW*) = Dry woods and adjoining cerrado along southeast side of highway, above and southwest of Sobradinho River valley (Córrego Capão Grande). Elevation 1050–1150 m; drainage River Plate. By far the richest of all the areas collected by the authors.

Fig. 1. Heavy, moist woods (e.g., Paraopeba, Minas Gerais); lower elevations, 600–900 m. Typical Lepidoptera: Satyrinae, especially *Taygetis*, Ithomiinae, *Heliconius*, bait-attracted Nymphalinae, *Morpho*, *Paridas*, many characteristic Riodininae and skippers.

3. Chapada da Contagem (*Contagem*) = Dry woods on dirt road to rock quarry (Fercal) north of Brasília, Distrito Federal (on Chapada da Contagem, 21 airline kilometers due north of the Rodoviária in Brasília). Elevation 900 m; drainage Amazon River

4. *Fercal* = Ribeirão da Contagem below rock quarry (known as Fercal) at the end of above dirt road, 24 km north of the Rodoviária; heavy steep woods, wide river with sand bars and cliffs. Elevation 840 m; drainage Amazon River.

5. Rio Maranhão (*Maranhão*) = Upper Rio Maranhão, where crossed by dirt road with high bridge, 30 km north of the Palácio da Alvorada, Brasília; open woods, riverside forest (*mata ciliar*), dense, moist forest, sand bars, Amazon-type upland open woods (*caatinga*). Probably just inside Goiás. Elevation 700 m; drainage Amazon River.

6. Jardim Zoológico (*JZool*) = Parque (Jardim) Zoológico de Brasília (forest, swamps, marshes, fields at southwest tip of lake). Elevation 1020 m; drainage River Plate.

7. Brasília Country Club (*BrasCC*) = Woods behind Catetinho and lying almost wholly within the property of the Brasília Country Club,

Fig. 2. Sparse, moist woods (e.g., Parque Zoologica, Brasilia); swampy and common near watercourses. Typical Lepidoptera: Ithomiinae in great numbers, *Heliconius, Dynamine, Hamadryas, Catonephele, Anaea*, some Riodininae, and many skippers.

by BR-040 just south of Brasília; also adjacent cerrado and marshes. Elevation 1200 m; drainage River Plate.

8. Parque do Gama (*PGama*) = Municipal park of the satellite city of Gama, Distrito Federal; heavy steep forest above rushing stream. Elevation 1100 m; drainage River Plate.

9. Chapada dos Veadeiros (*Vead*) = town and vicinity of Veadeiros, Goiás. Elevation 1000 m; drainage Amazon River; exact localities and dates of specimens not known.

10. Cavalcante (*Cav*) = town of Cavalcante, central Goiás. Elevation 900 m; drainage Amazon River; exact localities and dates of specimens not known.

11. Taguatinga (*Tag*) = Town of Taguatinga (Santa Maria de Taguatinga), east-central Goiás. (Not the satellite city of present-day Brasília known as "vila de Taguatinga"). Elevation 700–800 m; drainage Amazon River; exact localities and dates of specimens not known.

12. Anápolis (*Anap*) = City of Anápolis, south-central Goiás, and environs. Elevation 1000 m; drainage River Plate; exact localities not known, but most dates specified.

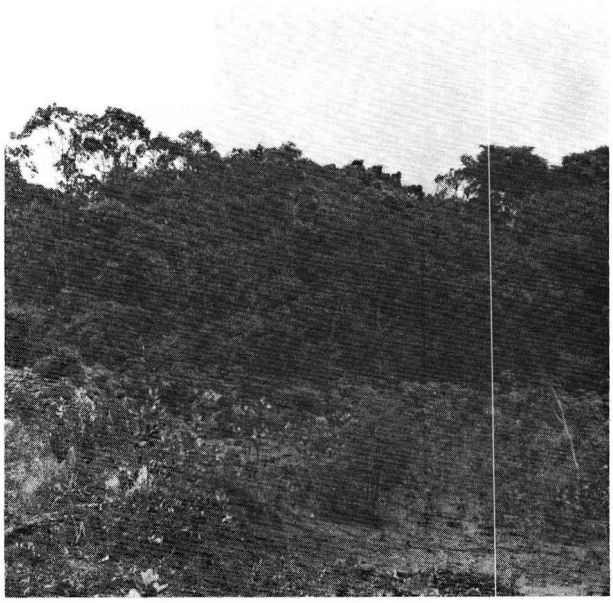


Fig. 3. Front of a dry, deciduous upland woods around a *cabeceira* or "water-head" (e.g., Brasília Country Club); occurring in all parts of the planalto, especially at higher elevations and along fast-flowing streams. Typical Lepidoptera: *Pareuptychia, Taygetis, Heliconius, Morpho, Agrias, Tigridia,* and other bait-attracted Nymphalinae, *Mesosemia* and many other characteristic Riodininae, Dismorphiinae, and many skippers. In general the richest faunal habitat in the planalto.

13. Goiânia (*Goiânia*) = city of Goiânia, south-central Goiás. Elevation 800 m; drainage River Plate. Exact localities known in some cases (Hôrto Florestal, Vila Nova Brasília, Santa Genoveva), dates usually known.

14. Campinas (*Camp*) = suburb of present-day Goiânia once a separate city, called Campinas. Elevation 800 m; drainage River Plate; exact localities not known.

15. Fazenda Rio Claro (*RClaro*) = Fazenda Rio Claro on the Rio Claro, west Goiás. Elevation 850 m; drainage River Plate.

16. Leopoldo Bulhões (*Leop*) = town of Leopoldo Bulhões, south Goiás. Elevation 1000 m; drainage River Plate; exact collecting localities for specimens not known.

17. Vianópolis (*Vian*) = town on Vianópolis, south Goiás. Elevation 1000 m; drainage River Plate; exact localities unknown.

18. Araguary (*Arag*) = town of Araguary, in the triangle area of Minas Gerais. Elevation 650 m; drainage River Plate; exact collecting localities not known.

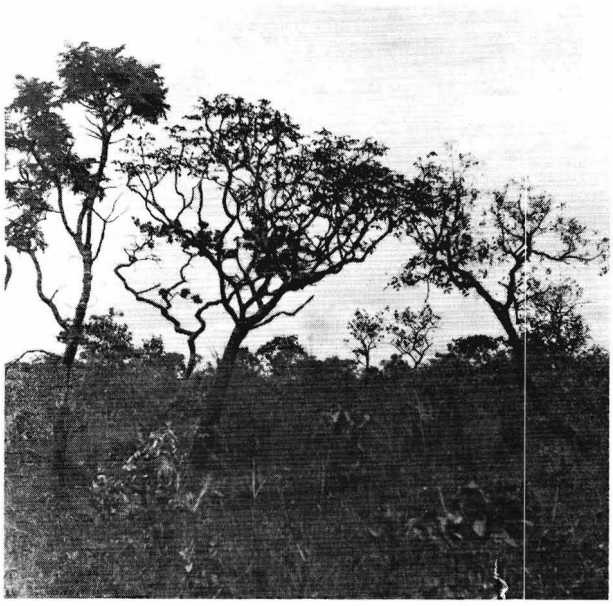


Fig. 4. Typical cerrado (e.g., Brasilia Country Club); covers the vast majority of the planalto. A depauperate but characteristic Lepidoptera fauna: endemic Satyrinae, *Phyciodes pedorna, Hamadryas, Evonyme bechina, Libythina cuvieri, Callicore sorana,* many endemic Theclini, a few endemic Riodininae, *Papilio thoas, Phoebis,* and many skippers.

19. Uberlândia (*Uberl*) = city of Uberlândia, in the Minas Gerais triangle just south of Araguary. Elevation 800 m; drainage River Plate; exact collecting localities unknown.

20. Paracatú (*Parac*) = town of Paracatú, N. Minas Gerais. Exact locality not known, but probably close to following.

21. Kilometer 485 (*K485*) = woods along stream west of BR-040 (Belo Horizonte-Brasília) Km. 482–488, município Paracatú, Minas Gerais. Elevation 600 m; drainage São Francisco River.

22. Kilometer 222 (*K222*) = Swampy woods and cerrado along BR-040, Km. 222, município Felixlândia, Minas Gerais. Elevation (estimated) 700 m; drainage São Francisco River.

23. Paraopeba Estação Florestal de Experimentação (*PPEflex*) = original Hôrto Florestal, Ministry of Agriculture, Paraopeba, Minas Gerais. (Km. 116 of BR-040, Belo Horizonte-Brasília). Typical cerrado with a little riparian forest. Elevation 740 m; drainage São Francisco River.

24. Paraopeba Woods (*PPW*) = Heavy moist forest 3 Km. east of BR-040 in Paraopeba. Elevation 750 m; drainage São Francisco River.

25. "Goyaz" (*Go*) = state of Goiás in general, locality unknown. Mostly collected in 1926 and possibly near Goiânia.

In addition to locality as above, each species includes date(s) and abundance. Abundance is represented either by actual numbers caught of each sex, or seen and positively identified at close range (coded *s*), or by common (*c*, 10–50 seen in an average day's collecting) or abundant (*a*, over 50 seen in an average day).

NOMENCLATURE

The nomenclature of even the best known groups of South American Lepidoptera is still in flux. Therefore, we have used the most recent and authoritative work of which we are aware for each species or group. A large percentage of the identifications were made by R. F. d'Almeida of Rio de Janeiro; many others have been made by the authors, sometimes from the original literature. We have tried to designate sources by appropriate bibliography, and have also added personal interpretations in cases of controversy. We strive only for clarity and do not pretend to make a synonymic list.

LOCATION OF SPECIMENS

Unless otherwise indicated on the list (by appropriate initials as below) all recent material from localities within the Distrito Federal (1 to 8), Km. 485 and 222 (localities 21, 22) and Paraopeba (23, 24) is in the authors' collections (if only one or two specimens are available, initials KB or OM indicate location; Hesperiids, unless otherwise initialed, are with O.M.); material from the Jardim Zoológico (6) before 1965 and all specimens from Goiânia (13) and Rio Claro (15) with Mr. Tangerini (NT); all material from Veadeiros (9), Cavalcante (10), Taguatinga (11), Anápolis (12) and "Goyaz" (25) in the Museu Nacional, Rio (MN); all specimens from Uberlândia (19) and Paracatú (20) in the Instituto Oswaldo Cruz, Rio (OC); and all material from Campinas (14), Leopoldo Bulhões (16), Vianópolis (17) and Araguary (18) in the Departamento de Zoologia, São Paulo (DZ). Material from various localities in the collection of Mr. Paulo Gagarin is designated by (PG).

FAUNAL RELATIONSHIPS

The following list clarifies the intermediate position of the planalto with relation to the much better known faunae of the Amazon Basin to the north, and the Serra do Mar of southeast Brazil. Many of the species occurring on the planalto are widespread, occurring in both of the above areas and generally in most of Latin America. Subspecies usually tend

toward the more southern form, although a fair number are intermediate between the latter and the Amazonian form, helping to demonstrate the complete cline which may exist between named and quite different forms from northern and southern Brazil. In other cases, a real separation exists within the planalto, the northern form barely reaching the northern edge of the planalto, the southern form not passing the blend zone on the southern margin. A few endemic forms are present, but essentially all of these also occur in the "blend zone" to the south of the region and even well into the Serra do Mar, or else considerably northwestward into the Amazon drainage and pantanal of Mato Grosso.

The following are the species and subspecies which may be regarded as most characteristic of the planalto, those which do not range widely outside the area: *Cercyonis luederwaldti, Hypoleria emyra, H. goiana, H. proxima consimilis, Pseudoscada quadrifasciata, Phyciodes pedrona pedrona, Catacore kolyma connectens, Diaethria eluina, Evonyme bechina, E. volumna intricata, Hamadryas chloe rhea, Agrias claudia godmani, Hamearis colchis, H. middletoni, H. theodora, Euselasia mys cytis, Mesosemia levis, Eurybia nicaea paulla, Cremna actoris cuyabaensis, Panara thisbe* subsp., *Notheme eumeus hemicosmeta, Chamaelymnas pansa, Rhetus arthurianus, Apodemia paucipuncta, Iaspis violescens, "Thecla" seitzi, "Thecla" melzeri, "Thecla" taunayi, Eurema phiale flavomaculata, Hesperocharis (Cunizza) hirlanda phanasia, Battus (Parides) anchises orbignyanus, B. (P.) burchellanus, B. (P.) diodorus, Microceris variicolor, Udranomia spitzi, Cogia grandis, Anisochoria vianna, Cycloglypha polax, Panoquina chapada,* and *P. bola.* This relatively small list (40 species, 6% of the total) emphasizes the lack of isolation of the planalto by any major mountain range or body of water.

A similarly small number of species and subspecies have reached the heights of the planalto from the Amazon Basin, and are not known to the south of the area in the Serra do Mar. These are mostly Riodinids. A list of the Planalto forms most characteristic of the Amazon Basin and northward is: *Caeruleuptychia brixia brixiola, Argyreuptychia terrestris, Amphidecta calliomma, Narope cyllabarus, Catoblepia berecynthia berecynthia, Aeria elara, Sais rosalia rosalinde, Heliconius sarae thamar, Adelpha serpa paraena, Libythina cuvieri, Evonyme macris phasis, Doxocopa agathina, Prepona eugenes laertides, Perophthalma tullius tullius, Mesosemia sirenia nitida, Mesosemia maeotis, M. melpia, Cremna thasus, Ancyluris colubra colubra, Chorinea amazon, Metacharis cuparina, Charmona caryatis, C. gynaea zama, Amarynthis meneria, Mesene hya monostigma, Symmachia leopardina hilaria, Phaenochitonia cingulis, Emesis cerea, E. lucinda lucinda, Polystichtis lucianus pseudocrispus, Thysanota galena, Juditha lamis lamis, Nymula pelope, Nymphidium*

azanoides, N. leucosia, N. lysimon epiplatea, Theope pieridoides, T. eudocia acosma, Graphium protesilaus protesilaus, Urbanus doryssus doryssus, U. albimargo takuta, Telemiades laogonus nicola, Pythonides herennius herennius, Vittius lafresnayei pica, Morys valerius valerius, and *Justinia phaetusa phaetusa.* The total of 46 represents 7.5% of the list.

An even more select group of species and subspecies found on the planalto show their primary affinity directly eastward to the little-explored forests of the northern Serra do Mar in Bahia. These include *Ypthimoides electra, Hypothyris laphria, Temenis laothoe bahiana, Hypna clytemnestra forbesi, Chamaelymnas tircis, Barbicornis marginata,* and *Papilio himeros baia* (7 species, 1% of the total).

Many of the remaining species (153, 24% of the total) are closely linked with the fauna of the Serra do Mar of southeast Brazil. They are marked on the accompanying list with an asterisk (*). Those species not mentioned above and unmarked on the list are widespread (382 species, 61% of the total).

A summary of distributional affinities by family and subfamily groupings is as follows:

Satyrinae are mostly widespread, with a few showing links, to all sides.

Brassolinae and Morphinae are linked mostly to the south (a few being widespread), except for *Narope cyllabarus* and *Catoblepia berecynthia.*

Danainae are all widespread; Ithomiinae show a good percentage of endemic forms, with other influences from all directions.

Heliconiinae are mostly linked with the south or widespread, with the striking exception of *Heliconius sarae thamar* which is typical of the Amazon Basin.

Nymphalinae/Charaxinae are primarily linked with the south, as are Acraeinae, with some widespread and a few Amazonian forms, as well as a good number of intermediates.

Riodininae show strong and equal influences from the north and the south, with some endemic forms; most members of this group may be widespread but undetected due to their local occurrence and time-restricted flight habits.

Theclinae/Plebejinae are practically all widespread, but may show many endemic forms when all are identified.

Pieridae show two endemic forms, with the others mostly widespread and a few linked to the south.

Papilionidae show many endemic forms in *Battus* (*Parides*) and otherwise include a scattering of material from all sides, but with primary links southward (note especially *Graphium lysithous, Papilio scamander,*

Battus (Parides) nephalion, and *B. (P.) proneus*, all typical of medium to high elevations in the Serra do Mar).

Hesperiidae show a few endemic forms, but practically all are widespread; indeed, most members of this family appear to enjoy wide ranges in tropical America.

ACKNOWLEDGEMENTS

This work was made possible through the cooperation of a number of persons, including not only the collectors and curators mentioned above (N. Tangerini, P. Gagarin, R. F. d'Almeida, H. S. Lopez, and L. P. Travassos Filho) but also Alfredo Rêgo Barros, of the Museu Nacional, Rio, curator of Lepidoptera; Dr. Inael Máximo da Silva, Director of the EFLEX in Paraopeba, whose hospitality and assistance greatly facilitated the collecting of material in that area; Dr. Paulo Filpo, director, and Dr. João Gino Mândia, administrator of the Parque Zoológico in Brasília, who provided accommodations on two occasions; Dr. Ezechias Heringer of the Botany Department of the Universidade Nacional de Brasília, for entry into areas 7 and 8 as well as transportation in the Brasília area; and many others who assisted in other ways. To all of these we extend our heartfelt thanks. O.M. also thanks the Conselho Nacional de Pesquisas, Brazil, for financial assistance (as a fellowship) permitting the study of Brazilian Lepidoptera.

LIST OF SPECIES

NYMPHALIDAE

MORPHINAE

1. *Morpho anaxibia anaxibia* (Esp., 1798).*
   SobrdW 1♂s 22-II-66, 3♂s 24-II-66; Fercal 1♂s 25-II-66; Maranhão 2♂s 12-VI-66. Occurrence of fresh males in June was unexpected, but this species occasionally appears in October and November in Rio de Janiero.
2. *Morpho menelaus mineiro* Fruhst., 1913.*
   Vead 3♂; K485 1♂ 26-II-66 (KB); Go 1♂; Km 515 Belo Horizonte-Brasília (Município Paracatú) 1♀ 20-II-66 (OM). Quite rare; the subspecies of southern Minas Gerais. Form lacking white at apex of fw: SobrdW 1♂ (OM) + 3♂s 24-II-66; JZool 1♂ 2-II-62; Anap 1♂ 19-IV-37. May be a separable species (see below), but adequate series not available. Geographical distribution overlapped by typical *mineiro*.
3. *Morpho achillaena paulista* Fruhst., 1912.*
   SobrdW c 22, 24-II-66; Contagem c 23-II-66; Fercal c 23-II-66, 1♀s 25-II-66; Maranhão 1♂ 18-VIII-65, 1♂ 23-II-66; JZool 1♂ 1-II-62, 1♂ 21-II-66; PGama 1♂ 9-VI-66; Vead 2♂; Tag 2♂; Anap 1♂ 20-X-36, 1♂ 5-VI-37, 1♂ 14-VI-37, 1♂ 13-X-37, 1♂ 19-X-37; K485 c 22-VIII-65, c 26-II-66; K222 c 20-II-66; PPW c 19, 27-II-66, c 6, 7-VI-66. Common, variable in proportions of bright and deep blue; genitalia indistinguishable from those of *achillaena*.

We do not foresee the occurrence of other *Morpho* in the planalto, but the list may expand if the recent subdivisions of *achillaena* and *menelaus*

(LeMOULT & REAL, 1962) stand after breeding experiments presently in progress.

SATYRINAE

Where possible, generic names follow Forster (1964). Determinations are by Roberto Spitz (for material in DZ) and the authors, and where uncertain are marked with (?). The first twelve species are characteristic of very deep woods, generally alighting on the ground but sometimes on horizontal leaves, coming readily to bait:

4. *Antirrhea archea* (Hbn., 1822).*
SobrdW 1 ♂ 22-II-66 (OM).
5. *Taygetis mermeria tenebrosus* (Blanch., 1847).
PPW 1 ♂ 6-VI-66 (KB), 1 ♂ 7-VI-66 (KB).
6. *Taygetis armillata* Butl., 1868.
Tag 1 ♂; PPEflex 1 ♂ 19-II-66 (KB).
7. *Taygetis larua* Feld., 1867.
SobrdW 1s 24-II-66, 1s 10-VI-66; PPW 2 ♂ + 4s 19-II-66, c 27-II-66.
8. *Taygetis virgilia* (Cr., 1779).
PGama 1 ♂ 9-VI-66; PPW 1 ♂ + 2s 17-II-66.
9. *Taygetis erubescens* Butl., 1868.
Vian 1 ♂ XI-31; K485 c 22-VIII-65, 1 ♀ 26-II-66.
10. *Taygetis celia* (Cr., 1782).
SobrdW 1 ♂ 13-VIII-65, 1 ♂ 22-II-66, 1 ♂ 24-II-66; Contagem 1 ♂ 23-II-66; Fercal 1 ♂ 25-II-66; Anap 1 ♂ XI-36; Goiânia 1 ♂ 29-I-62; Camp 1 ♂ 24-XII-35, 1 ♂ I-38; K485 1s 26-II-66. The most common and widespread of the *Taygetis* of the planalto.
11. *Taygetis keneza* Butl., 1869.
Maranhão 1 ♂ 12-VI-66 (KB). Distinct from *celia*; much smaller, more scalloped wings, underside pattern noticably different.
12. *Taygetis thamyra* (Cr., 1779) [= *andromeda* (Cr., 1779), see Ebert (1965)].
PGama 1 ♂ 9-VI-66; K222 1 ♂ 8-VIII-65, 2 ♂ 20-II-66.
13. *Taygetis echo* (Cr., 1779).
PGama 1s 9-VI-66.
14. *Taygetis kerea* Butl., 1869.
JZool 1 ♀ 30-I-62; Goiânia 1 ♂ 1-III-63; Camp 1 ♂ I-38; PPEflex 1s 27-II-66; PPW 2 ♂ 1 ♀ 27-II-66.
15. *Posttaygetis penelea* (Cr., 1779).
Maranhão 1s 15-VIII-65, 1 ♂ 17-VIII-65, 1 ♂ 12-VI-66; K485 1s 26-II-66; PPW c 19, 27-II-66, c 6, 7-VI-66.
16. *Amphidecta calliomma* (Feld., 1862).
PPW 1s 6, 7-VI-66. Difficult to capture owing to impenetrable thorny undergrowth. Deep woods; alights on thin, vertical branches, head-up.
17. *"Cercyonis" luederwaldti* Spitz, 1931.
SobrdW c 11, 12, 13-VIII-65, 1 ♀ 22-II-66, c 24-II-66, c 10-VI-66; PGama 1 ♂ 9-VI-66; Vead 1 ♂; Vian 6 ♂ 2 ♀ III-30, 2 ♂ XII-31; Ponte Funda, Goiás (near Vian) 2 ♂ 1 ♀ 1-III-63. Open grasslands, cerrado, local but common.
18. *Euptychia westwoodi* Butl., 1866.
Maranhão 3 ♂ 12-VI-66 (KB). Open woods.
19. *Pareuptychia ocirrhoe ocirrhoe* (F., 1777)* (= *hesione*).
SobrdR c 22-II-66; SobrdW c 11, 12, 13-VIII-65, a 22-II-66, c 24-II-66, c 10-VI-66; Contagem c 17, 18-VIII-65, c 23-II-66; Fercal c 23, 25-II-66; Maranhão c 14, 15, 17-VIII-65, 3s 12-VI-66; JZool 1 ♂ 1 ♀ 21-II-66; BrasCC

c 11-VI-66; PGama c 9-VI-66; Vead 1 ♂; Anap 1 ♂ 26-III-36; Camp 1 ♂ III-30; Vian 3 ♂ 5 ♀ III-30; K222 2s 20-II-66. Generally common in open woods.

20. *Pareuptychia summandosa* (Gosse, 1880).
SobrdW 1 ♂ 10-VI-66; JZool 2 ♂ 8-VI-66; BrasCC c 11-VI-66; PGama 1 ♂ 9-VI-66; Goiânia 1 ♀ 29-I-62; Camp 1 ♂ I-38; Ponte Funda, Goiás (near Vian) 1 ♀ 1-III-63. Open woods, not common.
21. *Pareuptychia* sp.
BrasCC c 11-VI-66. Open woods, evidently very local; distinguished by completely tan underside, without white.
22. *Hermeuptychia hermes hermes* (F., 1775).
SobrdW 1 ♂ 11-VIII-65, c 22, 24-II-66, c 10-VI-66; Contagem c 23-II-66; Fercal c 23, 25-II-66; Maranhão c 12-VI-66; JZool a 21-II-66, a 8-VI-66; BrasCC c 11-VI-66; PGama c 9-VI-66; Vian 5 ♂ III-30; K485 c 26-II-66; K222 c 20-II-66; PPEflex c 19, 27-II-66, c 6, 7-VI-66; PPW c 19, 27-II-66, c 6, 7-VI-66. Common in many habitats.
23. *Hermeuptychia calixta* (Butl., 1877).
Vian 1 ♂ III-30, 1 ♀ XII-31.
24. *Pharneuptychia pharella* (Butl., 1866).*
Contagem 1 ♂ 18-VIII-65; Vian 3 ♂ 1 ♀ III-30; K485 1 ♀ 26-II-66; PPEflex 1 ♀ 7-VI-66. Local, grassy areas.
25. *Caeruleuptychia brixia brixiola* (Butl., 1866).
Camp c III-30. A large collection in DZ.
26. *Euptychoides affinis* (Butl., 1866) (?).
Camp 1 ♂ III-30.
27. *Yphthimoides yphthima pacta* (Weym., 1911).
Camp 1 ♂ III-30; Leop 2 ♂ X-37, 6 ♂ XII-37; Arag 1 ♂ XII-31.
28. *Yphthimoides electra* (Butl., 1866).
Camp 1 ♀ 12-XII-35 (OC).
29. *Yphthimoides celmis* (Godt., 1823).*
SobrdW 1 ♂ 12-VIII-65, 1 ♂ 13-VIII-65. Cerrado.
30. *Yphthimoides disaffecta* (Butl. & Druce, 1874) (?).
Arag 1 ♀ XI-30.
31. *Yphthimoides(?) sylvina* (Feld., 1867).
K222 1 ♀ 20-II-66 (OM). Woods.
32. *Yphthimoides erigone probata* (Weym., 1911) (?).
Vian 1 ♂ III-30.
33. *Yphthimoides(?) numeria* (Feld., 1867).
SobrdW 1 ♂ 11-VIII-65; JZool c 8-VI-66; BrasCC 1 ♂ 11-VI-66. Open grassland, marshes.
34. *Yphthimoides(?) innocentia* (Feld., 1867).
SobrdW 1 ♂ 22-II-66, 1 ♂ 10-VI-66; BrasCC c 11-VI-66; Leop 1 ♂ XI-37; Vian 2 ♂ III-30. Open grassland, cerrado.
35. *Yphthimoides mythra* (Weym., 1911).
SobrdR 3 ♂ 11-VIII-65, 2 ♂ 12-VIII-65; Camp 4 ♂ III-30. Open grassland.
36. *Yphthimoides(?) abretia* (Capr., 1874).*
Ponte Funda, Goiás (near Vian) 1 ♀ 1-III-63 (NT).
37. *Yphthimoides nebulosa* (Butl., 1866) (?).
Vian 1 ♂ III-30.
38. *Yphthimoides(?) ochracea* (Butl., 1867).
SobrdW 1 ♂ 11-VIII-65, 1 ♂ 12-VIII-65, 1 ♀ 13-VIII-65; Maranhão 1 ♂ 14-VIII-65. Open grassland, cerrado.
39. *Paryphthimoides eous* (Butl., 1866).
SobrdW c 22, 24-II-66, c 10-VI-66; Contagem c 23-II-66; Fercal c 25-II-66; JZool c 21-II-66, c 8-VI-66; Goiânia 1 ♂ 30-I-62; Camp 4 ♂ III-30; K222 c 20-II-66; PPEflex c 19-II-66, c 6, 7-VI-66; PPW a 19-II-66, c 27-II-66, c 6, 7-II-66. Second growth, open woods, cerrado.

40. *Paryphthimoides phronius* (Godt., 1823).
Maranhão 2♂ 18-VIII-65 (KB). Open grassland, marshes.
41. *Haywardina quantius* (Godt., 1803).*
Parac 1♂ 10-VIII-20. Second growth, woods.
42. *Haywardina stelligera* (Butl., 1874).*
Parac 1♀ 20-XII-18, 1♂ 4-III-21. Second growth, woods.
43. *Magneuptychia libye* (L., 1767) (?).
Leop 1♂ III-30; PPW c 27-II-66, 1♂ 7-VI-66. Deep woods. Possibly not this species, but close to it; individuals large, faintly bluish above.
44. *Megisto(?) ocelloides* (Schaus, 1902).
JZool c 8-VI-66; BrasCC 2♂ 11-VI-66; Camp 3♂ III-30, 1♂ I-38. Marshes.
45. *Argyreuptychia(?) terrestris* (Butl., 1866).
SobrdW 1♂ 22-II-66; Vian 7♂ III-30, 1♂ XII-31; K222 1♂ 20-II-66; PPW 1♂ 27-II-66, 1♂ 7-VI-66. Woods.
46. *Praefaunala armilla* (Butl., 1866).
SobrdR 2♂ 22-II-66; SobrdW c 22, 24-II-66; Vead 1♂; Anap 2♂ XII-35; Camp 2♂ III-30, 2♂ 10-XII-35; Vian 1♂ III-30, 5♂ XII-31; Fazenda Saia Velha, south border of D.F., 1♂ 1-III-63. Open grassland, cerrado.
47. *Praefaunala strigillata* (Weym., 1911).
SobrdR c 11, 12, 13-VIII-65; SobrdW c 11, 12, 13-VIII-65, c 10-VI-66; Maranhão 1♂ 15-VIII-65, 1♂ 12-VI-66; BrasCC c 11-VI-66; PPEflex 2♂ 6-VI-66. Replaces *armilla* in winter in the same localities, almost certainly a winter form of the latter; different in markings.
48. *"Euptychia" muscosa* Butl., 1870.*
SobrdW 1♂ 12-VIII-65, c 22-II-66, c 10-VI-66; JZool 1♂ 1-II-62; BrasCC c 11-VI-66; Parac 1♂ 27-III-20. Woods. New genus not yet specified.

With continued progress in determination (we have at least a dozen additional species without names) and collection, the list of Satyrids should arrive at nearly 70, with most of the additions in the *"Euptychia"* group and a considerable number from new *Taygetis*.

BRASSOLINAE

Our arrangement follows the catalogue by Stichel (1932).

All species are dusk-flyers, attracted to bait in the early morning, and occasionally flushed in deep woods during the day.

49. *Brassolis sophorae laurentii* Stich., 1925.*
Vead 1♂; Anap 2♂ 1♀ X-36, 1♀ XI-36, 2♂ XII-36, 1♀ IV-37; Goiânia 1♀ 1962. Seasonally and destructively abundant, feeding on palms.
50. *Narope cyllastros* Dbldy. & Hew., 1849.*
"Rio Maranhão" 1♀ (MN).
51. *Narope cyllabarus* Westw., 1851.
"Rio Maranhão" 1♂ (MN).
52. *Dynastor darius darius* (F., 1775).*
Anap 1♀ 1-36; Uberl 1♂.
53. *Dasyophthalma creusa* Stich., 1904.*
Anap 1♂ 2-I-39.
54. *Opsiphanes cassiae lucullus* Fruhst., 1907.*
Camp 1♂ 25-XII-36; PPEflex 1♂ 26-II-66.
55. *Opsiphanes quiteria meridionalis* Stgr., 1887.*
Vead 1♂.
56. *Opsiphanes invirae remoliatus* Fruhst., 1907.*
SobrdW 1♂ 24-II-66; Vead 1♂; Anap 1♂ X-36.

57. *Catoblepia amphirrhoe* (Hbn., 1825).*
Tag 1 ♂.
58. *Catoblepia berecynthia berecynthia* (Cr., 1777).
JZool 2 ♂ 21-II-66; Vead 1 ♂.
59. *Eryphanis polyxena* (Meerb., 1775).
Anap 1 ♀.
60. *Caligo illioneus illioneus* (Cr., 1776).
SobrdR 1s 11-VIII-65, 2s 12-VIII-65; JZool 1 ♂ 21-II-66; BrasCC 2s 11-VI-66; Anap 1 ♂ X-36; PPEflex 1 ♂ 27-II-66.

This list of twelve may reach fifteen through the addition of rarer species (such as *Caligo eurilochus*, possibly seen in BrasCC 11-VI-66, *Opsiphanes batea*, or *Dynastor napoleon*).

DANAINAE

61. *Danaus (Danaus) erippus* (Cr., 1775).
SobrdW 1 ♀ 13-VIII-65; Maranhão 1 ♀ 18-VIII-65; K485 1 ♂ 22-VIII-65; PPEflex c 19-II-66, c 6, 7-VI-66; PPW c 27-II-66, c 6, 7-VI-66. Marshes, open country; primarily in areas where *Asclepius curassavica* thrives.
62. *Danaus (Anosia) plexaure* (Godt., 1819).
Tag 1 ♀. Distinguishable only on close examination from the following common species: *D. plexaure* is rare and local, but probably widespread.
63. *Danaus (Anosia) gilippus gilippus* (Cr., 1775).
SobrdW c 11, 12, 13-VIII-65, c 24-II-66, 2s 10-VI-66; Fercal 1 ♂ 23-II-66, 2 s 25-II-66; Maranhão c 14, 15, 18-VIII-65, 1 ♀ 12-VI-66; JZool 1s 21-II-66, c 8-VI-66; BrasCC c 11-VI-66; Vead 1 ♀; Tag 1 ♂; Goiânia 1 ♀ 30-I-62; K485 1 ♂ 26-II-66; K222 1 ♀ 8-VIII-65; PPEflex 1 ♀ 19-II-66, c 6, 7-VI-66; PPW c 27-II-66, c 6, 7-VI-66. Common, open areas.
64. *Lycorea ceres ceres* (Cr., 1776).
SobrdW 2s 22-II-66, c 24-II-66; Fercal 2s 23-II-66, 2s 25-II-66; Maranhão c 14, 15-VIII-65; JZool 1 ♂ 1-II-62, 3 ♂ 21-II-66; Vead 2 ♂; PPEflex 2 ♂ 1 ♀ 19-II-66, 1 ♂ 27-II-66; PPW c 27-II-66. Inhabits forest, and is very difficult to distinguish in flight from *Tithorea harmonia pseudethra* and *Heliconius ethillus narceus*.

It is possible that one more species, such as *Ituna ilione*, which enters the blend zone, may be added to the Danaid list.

ITHOMIINAE

All identifications are by Romualdo Ferreira d'Almeida. All Ithomines are typically inhabitants of deep, dark forest, most common in moist areas, and fly irrespective of weather conditions.

65. *Heterossais edessa* (Hew., 1854).
Leop 1 ♂ III-38. This and the following six species (except *H. salonina*) are transparent-blue and fly low in the shade and are difficult to follow or distinguish in flight.
66. *Hypoleria emyra* Haensch, 1905.
Fercal 1 ♂ 25-II-66; JZool 1 ♂ 2-II-62, c 21-II-66, 2 ♂ 8-VI-66; PGama 1s 9-VI-66; Leop 5 ♀ III-38; K222 1 ♂ 20-II-66.
67. *Hypoleria goiana* d'Alm., 1951.
Vead 3 ♂; Leop 1 ♀ III-38; PPEflex 3 ♂ 3 ♀ 19-II-66, 2 ♀ 27-II-66; PPW 1 ♂ 7-VI-66. Very heavily marked.

68. *Hypoleria proxima consimilis* Talbot, 1928.
SobrdW c 22-II-66; Maranhão 1♂ 15-VIII-65; JZcol 1♂ 1♀ 21-II-66, c 22-II-66; BrasCC 1♀ 11-VI-66; Vead 1♀; Anap 1♂ 1♀ XI-36, 1♂ 2♀ XII-36, 1♀ 3-II-37; Goiânia 1♀ 5-II-63, 1♂ 7-II-63; Leop 13♂ 4♀ III-38; Vian 1♀ III-30.
69. *Hypoleria salonina* (Hew., 1855).
Contagem 1♂ 23-II-66; Maranhão 1♀ 18-VIII-65; Anap 1♂ XII-35; Leop 7♂ 2♀ III-38; K222 1♂ 8-VIII-65, 1s 20-II-66; PPEflex c 19-II-66, 4s 27-II-66, c 6-VI-66; PPW 1♂ + 3s 6-VI-66, 1♂ 1♀ 7-VI-66. This species differs from our other *Hypoleria* by its transparent-yellow wings.
70. *Pseudoscada erruca* (Hew., 1855).*
PPW 2♂ 27-II-66, c 6, 7-VI-66.
71. *Pseudoscada quadrifasciata* Talbot, 1928.
JZool 1♂ 21-II-66, 1♀ 22-II-66, 1♂ 8-VI-66; Vead 3♂; Anap 1♀ XI-36, 2♂ XII-36, 1♀ 3-II-37; Goiânia 1♀ 29-I-62; Leop 4♂ III-38; Vian 1♀ III-30.
72. *Thyridia themisto* Hbn., 1818.
SobrdW c 22, 24-II-66, c 10-VI-66; JZool 2♂ 1♀ 27-I-62, 2♂ 1-II-62, 1♂ 20-II-63, c 21-II-66, 2♂ 8-VI-66; BrasCC c 11-VI-66; PGama 1s 9-VI-66; Vead 1♂ 1♀; Anap 1♂ XII-35; PPW 1♂ 6-VI-66, 1♂ 7-VI-66. Wings transparent.
73. *Episcada sylvo* (Geyer., 1832).*
JZool c 27-I-62, c 1-II-62, 1♀ 2-II-62, 1♂ 20-II-63, c 21-II-66, c 8-VI-66; Anap 1♀ XII-35; Leop 2♂ III-38. Local, wings transparent-yellow.
74. *Dircenna dero* (Hbn., 1823).*
SobrdR 1♂ 11-VIII-65; SobrdW 2♂ 22-II-66, 1♂ 10-VI-66; Maranhão 2♀ 15-VIII-65; JZool 2♂ 27-I-62, 1♀ 1-II-62; BrasCC c 11-VI-66; PGama 3s 9-VI-66; Tag 1♂; Goiânia 1♂ 30-I-62; Parac 1♀ 10-V-19; K222 2s 20-II-66; PPEflex c 19, 27-II-66, c 6, 7-VI-66; PPW 1♂ 19-II-66, c 27-II-66, c 6, 7-VI-66. Wings transparent.
75. *Dircenna rhoeo* Feld., 1860.*
SobrdR c 22-II-66; SobrdW 1♂ 22-II-66, c 24-II-66, c 10-VI-66; Contagem 1♀ 23-II-66; Fercal c 23, 25-II-66; Maranhão 2♂ 15-VIII-65, 1s 23-II-66; JZool 1♂ 1♀ 27-I-62, 2♂ 1♀ 1-II-62, c 21-II-66; BrasCC c 11-VI-66; PGama 2s 9-VI-66; Goiânia 2♂ 1♀ 6-III-61, 1♂ 27-I-62, 4♂ 4♀ 30-I-62; Vian 6♂ 5♀ III-30, 1♀ XI-31; PPEflex c 19-II-66, 1♀ 6-VI-66, c 7-VI-66; PPW 1♀ 19-II-66, 1♀ 6-VI-66, c 7-VI-66. Relationship to previous species not certain, but probably separate.
76. *Aeria olena* (Weym., 1875).*
SobrdW 1♂ 10-VI-66; Cav 1♂; Tag 1♀; Vian 2♂ 1♀ III-30; PPW a 19, 27-II-66, a 6-VI-66, c 7-VI-66. Local; easily distinguished from following species in flight by darker yellow appearance.
77. *Aeria elara* (Hew., 1855).
SobrdW c 22-II-66, 2♂ + 5s 24-II-66, c 10-VI-66; Contagem c 17, 18-VIII-65, c 23-II-66; Fercal 1♂ 23-II-66, 1♂ 25-II-66; Maranhão c 14, 15, 18-VIII-65, 1♂ 23-II-66, c 12-VI-66; BrasCC c 11-VI-66; PGama c 9-VI-66; Anap 2♂ XI-36, 2♂ XII-36; Goiânia 1♀ 30-I-62; Camp 1♂ I-34; Leop 2♂ 1♀ III-38; Vian 10♂ III-30. Common in forest near Brasília, where *A. olena* is rare.
78. *Oleria aquata* (Weym., 1895).
Maranhão 1♀ 14-VIII-65 (KB); Anap 1♂ XI-36. Low-flying; wings transparent-blue.
79. *Placidula euryanassa* (Feld., 1860).*
PPW 1♂ 6-VI-66. Probably a straggler to the planalto.
80. *Ithomia drymo* Hbn., 1816.
Vian 1♀ III-30. Wings transparent-blue.

81. *Ithomia agnosia agnosia* Hew., 1854.
SobrdR 1 ♀ 22-II-66; SobrdW c 22, 24-II-66, c 10-VI-66; Contagem c 23-II-66; Fercal c 23, 25-II-66; JZool 1 ♂ 3 ♀ 27-I-62, 4 ♂ 1-II-62, 1 ♀ 20-II-63, c 21-II-66, c 8-VI-66; BrasCC 2s 11-VI-66; PGama c 9-VI-66; Vead 1 ♂; Leop 3 ♂ 3 ♀ III-38; Vian 1 ♂ III-30; PPW 1 ♂ 27-II-66, 1 ♂ 6-VI-66, c 7-VI-66. Often common; wings transparent-blue; PPW specimens have less white on fw band, similar to subsp. *zikani* d'Alm., 1940.
82. *Hypothyris daeta* (Bvd., 1836).*
SobrdR 2s 22-II-66; SobrdW c 22, 24-II-66; Contagem c 17-VIII-65, 1 ♂ 23-II-66; Maranhão a 14, 15, 18-VIII-65, c 12-VI-66; JZool 1 ♂ 21-II-66, c 8-VI-66; Anap 1 ♂ 1-II-37; PPEflex 1s 19-II-66; PPW 2 ♂ 19-II-66, 2 ♂ 27-II-66, c 6-VI-66, 2 ♂ 7-VI-66. Flies 1–2 m above the ground.
83. *Hypothyris laphria* (Dbldy., 1847).
Maranhão 1 ♂ 14-VIII-65, 1 ♂ 1 ♀ 15-VIII-65 (KB). Occurs together with *H. daeta* but at lower numerical density. *H. laphria* evidently is commoner to the east.
84. *Sais rosalia rosalinde* Weym., 1890.
Goiânia 1 ♂ 7-III-63; Leop 2 ♀ III-30, 3 ♂ 1 ♀ I-38. Very local.
85. *Mechanitis lysimnia* (F., 1793).
SobrdR c 22-II-66; SobrdW 1 ♂ 12-VIII-65, c 22, 24-II-66, c 10-VI-66; Contagem c 23-II-66; Fercal c 23, 25-II-66; Maranhão c 14, 15, 18-VIII-65, c 23-II-66, c 12-VI-66; JZool 2 ♀ 27-I-62, c 21-II-66, a 8-VI-66; BrasCC c 11-VI-66; PGama c 9-VI-66; Tag 1 ♀; Goiânia 1 ♂ 2 ♀ 6-II-61, 1 ♂ 30-I-62, 2 ♂ 1 ♀ 7-III-63; Vian 1 ♂ 1 ♀ III-30; K485 c 26-II-66; K222 c 8-VIII-65, c 20-II-66; PPEflex c 19, 27-II-66, c 6-VI-66; PPW c 19, 27-II-66, a 6-VI-66, c 7-VI-66. Widespread, but not usually as common as the following species.
86. *Mechanitis polymnia casabranca* Haensch, 1905.*
SobrdR 1 ♀ 12-VIII-65, c 22-II-66; SobrdW c 22-II-66, a 24-II-66, c 10-VI-66; Contagem a 23-II-66; Fercal c 23, 25-II-66; Maranhão c 14-VIII-65, c 23-II-66, c 12-VI-66; JZool c 27-I-62, 1 ♂ 1-II-62, 1 ♂ 10-III-63, a 21-II-66, c 8-VI-66; BrasCC c 11-VI-66; PGama c 9-VI-66; Vead 3 ♂; Tag 1 ♂; Anap 1 ♂ XI-36, 2 ♂ XII-36, 3 ♂ I-37; Goiânia 1 ♂ 6-III-61, 2 ♂ 27-I-62, 1 ♀ 30-I-62, 1 ♂ 1 ♀ 7-III-63; Vian 2 ♂ 4 ♀ III-30, 2 ♂ XI-31; K485 c 26-II-66; K222 a 8-VIII-65, a 20-II-66; PPEflex a 19, 27-II-66, a 6, 7-VI-66; PPW a 19, 27-II-66, a 6, 7-VI-66. The most widespread and common butterfly of the forests of the planalto. Flies from 0–15 m above the ground.
87. *Xanthocleis psidii pytho* (Feld., 1860).
SobrdW 1 ♂ 22-II-66 (OM); Vead 1 ♂; Goiânia 1 ♂ 30-I-62. Local and rare, flies high and strongly.
88. *Tithorea harmonia pseudethra* Butler, 1873.*
SobrdR 1 ♀ 13-VIII-65; SobrdW 1 ♂ 22-II-66, c 24-II-66; Contagem 1 ♂ 17-VIII-65, c 23-II-66; Fercal c 23, 25-II-66; Maranhão c 14, 15, 18-VIII-65, 1 ♂ 23-II-66, 1s 12-VI-66; JZool 1s 8-VI-66; PGama 9-VI-66; Vead 2 ♀; Tag 1 ♀; Anap 1 ♂ X-36, 1 ♂ III-37; Goiânia 1 ♂ 7-III-63; Vian 1 ♂ III-30; K485 c 22-VIII-65, 2s 26-II-66; K222 c 8-VIII-65, 2s 20-II-66; PPEflex c 19, 27-II-66, c 6, 7-VI-66; PPW c 19, 27-II-66, a 6-VI-66, c 7-VI-66; Go 1 ♂. Widespread, fairly common; does not reach the southeastern coast of Brazil. Flies fairly high.

One or two Ithomiines may be added to this list, such as *Callithomia xantho methonella* and *Hypoleria plistenes*.

ACRAEINAE

89. *Actinote surima* Schaus, 1902.*
Leop 2 ♂ 3 ♀ III-38. Restricted seasonally, probably more widespread.

90. *Actinote pyrrha* (F., 1775).*
Vead 2♂ 1♀; Goiânia 1♀ 30-I-62, 1♀ 6-III-63; PPW 1s 7-VI-66. Occasionally abundant; variable.
91. *Actinote pellenea* Hbn., 1821.*
SobrdW c 11-VIII-65; Maranhão c 14, 15-VIII-65; JZool 1♂ 1-II-62; Goiânia 1♂ 30-I-62. Erratically seasonal. Identified by small size.

This list of *Actinote* should grow to 5–6 species by diligent year-round collecting.

HELICONIINAE

Order and nomenclature in the following list are according to Emsley (1964, 1965).

92. *Heliconius (Heliconius) sarae thamar* (Hbn., 1806).
SobrdR c 11, 12, 13-VIII-65, c 22-II-66; SobrdW 2♂ 12-VIII-65, 2♂ 22-II-66, c 24-II-66, 1♂ 10-VI-66; Contagem 1♂ 23-II-66; Fercal 2s 25-II-66; Maranhão 1♂ 14-VIII-65, 2♂ 18-VIII-65; Vead 1♂ 1♀; Go 1♀ 1926. Identical with specimens from Ecuador or Venezuela; the species may reach its southern limit near Brasília, barely leaving the Amazon River drainage at Sobradinho. Definitely absent from seemingly ideal habitats in JZool, BrasCC, and PGama, 20 km to the south of Brasília.
93. *Heliconius (Heliconius) erato phyllis* (F., 1775).*
SobrdR 2s 22-II-66; SobrdW 1♀ 12-VIII-65, 1♂ 22-II-66, 1♂ 24-II-66; Contagem 1♂ 17-VIII-65, 1♂ 18-VIII-65, c 23-II-66; Fercal c 23, 25-II-66; Maranhão c 14, 15, 18-VIII-65, 1♂ 23-II-66, c 12-VI-66; JZool 4♂ 21-II-66, 1♂ 8-VI-66; BrasCC c 11-VI-66; PGama c 9-VI-66; Vead 1♂ 1♀; Cav 1♂; Tag 1♂; Anap 1♂ 22-III-36, 2♂ 1♀ XII-36, 1♀ II-37; Camp 1♂ I-34, 1♂ I-38; Vian 1♂ III-30; Arag 1♂ II-30; K485 c 22-VIII-65, c 26-II-66; K222 c 8-VIII-65, c 20-II-66; PPEflex c 19, 27-II-66, c 6, 7-VI-66; PPW c 19, 27-II-66, a 6-VI-66, c 7-VI-66. One of the commonest butterflies of the planalto, generally widespread in forests.
94. *Heliconius (Heliconius) melpomene nannus* Stich., 1899.*
SobrdW 1s 22-II-66; Contagem 1♂ 18-VIII-65; Maranhão 1♂ 14-VIII-65, 1♀ 15-VIII-65, 1♂ 23-II-66; JZool 1♂ 1♀ 21-II-66; Tag 1♂. Rare, very local.
95. *Heliconius (Heliconius) besckei* Mén., 1857.*
SobrdR 1♂ 11-VIII-65; SobrdW 1♂ 12-VIII-65, 1♂ 22-II-66, 2♂ 24-II-66; JZool 2♂ 1♀ 20-II-63, 2♂ 21-II-66; PGama 2♂ 9-VI-66; Tag 1♂. This species is sympatric with *H. m. nannus* and is now known to be a distinct species through breeding experiments by Brown & Emsley.
96. *Heliconius (Heliconius) ethillus narceus* Godt., 1819.*
SobrdR c 22-II-66; SobrdW 1♂ 13-VIII-65, c 22-II-66, c 10-VI-66; Contagem 5s 17-VIII-65, c 23-II-66; Maranhão 3s 12-VI-66; JZool 2♂ 1♀ 1-II-62, 1♂ 1♀ 20-III-63, c 21-II-66, c 8-VI-66; BrasCC 2s 11-VI-66; PGama c 9-VI-66; Vead 2♂; Goiânia 2♀ 5-III-63; K222 1♂ 8-VIII-65, 2 s 20-II-66; PPEflex c 19, 27-II-66, c 6-VI-66, 2s 7-VI-66; PPW c 19, 27-II-66, c 6-VI-66, 1♂ 7-VI-66. Widespread, fairly common. Form *polychrous* Feld., 1865.*: SobrdW 1♀ 10-VI-66; Contagem 1♂ 23-II-66; JZool 1♀ 1-II-62, c 21-II-66; Vead 2♂; Goiânia 2♂ 30-I-62; Camp 1♂ I-38; Vian 2♂ III-30; PPW 1♂ 6-VI-66. Predominant in certain areas. Form *satis* Weym., 1875.*: JZool 1s 21-II-66; PPW 1♀ 19-II-66 (OM). This dark form represents a small minority in *ethillus* populations.
97. *Heliconius (Eueides) isabellae dianasus* (Hbn., 1806).*
SobrdR 1♂ 12-VIII-65, 1♀ 13-VIII-65; SobrdW 2♂ 13-VIII-65; JZool 1s 21-II-66, 1♂ 1♀ 8-VI-66; BrasCC 1s 11-VI-66; PPEflex 1♂ 6-VI-66.

98. *Heliconius (Eueides) alipherus* (Godt., 1819).
SobrdR 1s 22-II-66; SobrdW 2s 22-II-66, c 24-II-66, 1s 10-VI-66; Fercal c 17-VIII-65, c 23-II-66; Maranhão 1♂ 14-VIII-65, 1♂ 15-VIII-65, 1s 23-II-66; JZool 2♂ 1-II-62, c 21-II-66; BrasCC 1s 11-VI-66; PGama 1♂ 9-VI-66; Camp 1♂ I-34.
99. *Colaenis iulia iulia* (F., 1775).
SobrdW 1s 24-II-66, 1♂ 10-VI-66; Contagem 2s 23-II-66; Fercal 2♂ 23-II-66, c 25-II-66; Maranhão 1s 12-VI-66; JZool 1♂ 8-VI-66; BrasCC c 11-VI-66; PGama 3s 9-VI-66; Vead 1♂ 1♀; Cav 1♂; PPEflex 5s 19-II-66, 2s 27-II-66, 2s 6-VI-66, c 7-VI-66; PPW c 19-II-66, 5s 27-II-66, c 6, 7-VI-66.
100. *Dione juno juno* (Cr., 1779).
JZool 1♂ 27-I-62, 1♂ 2-II-62, 1♂ 21-II-66; PGama 3♂ 1♀ 9-VI-66. Local; a very dark form.
101. *Agraulis vanillae maculosa* (Stich., 1907).
SobrdR 1♂ 12-VIII-65; JZool 1♂ 27-I-62, 3s 21-II-66; Vead 1♂; Cav 1♀; Anap 1♂ VII-36; PPEflex 1♀ 19-II-66; PPW 3s 19-II-66, 2s 27-II-66, c 6, 7-VI-66.
102. *Dryadula phaetusa* (L., 1758).
SobrdW 1♂ 13-VIII-65; Maranhão 1♂ 17-VIII-65, c 23-II-66; PPEflex c 6, 7-VI-66; PPW 1s 19-II-66, 1♂ 27-II-66, 2s 7-VI-66.

The number of Heliconians might be increased to 13 through the addition of *Eueides vibilius, Dione moneta* and/or *Philaethria dido* by more intensive collecting.

NYMPHALINAE (includes Charaxinae, Apaturinae, Liminitinae)

103. *Phyciodes thymetus thymetus* (F., 1787).*
SobrdR c 13-VIII-65; SobrdW c 10-VI-66; Contagem c 23-II-66; Fercal c 17-VIII-65, c 23-II-66, 1♂ 25-II-66; Maranhão c 14, 15, 18-VIII-65, c 12-VI-66; JZool 1♂ 1-II-62, 1♂ 8-III-63, c 21-II-66, c 8-VI-66; BrasCC c 11-VI-66; Vead 3♂; Goiânia 3♂ VIII-43 (OC), 3♂ 4♀ 29-I-62, 1♀ 30-I-62; Camp 1♂ 1♀ (OC), 1♂ III-30, 3♂ 2♀ I-34; Leop 1♀ XII-33; Vian 1♂ III-30; PPEflex 1♂ 19-II-66, c 7-VI-66; PPW c 7-VI-66. Found usually near water, widespread and often common.
104. *Phyciodes sejona* Schaus, 1902.*
Fercal c 17, 18-VIII-65; Maranhão 1♂ 14-VIII-65; Anap 2♂ VIII-36, 2♂ XI-36; Camp 1♀ (OC), 7♂ 2♀ I-34. Streamside, local.
105. *Phyciodes pedrona pedrona* Moulton, 1909.
SobrdR c 11, 12-VIII-65; SobrdW c 11, 12-VIII-65, 1♂ 1♀ 24-II-66, 1s 10-VI-66; JZool 1♂ 21-II-66; BrasCC a 11-VI-66; PGama 1s 9-VI-66; Vead 1♂; Camp 2♂ 1♀; Leop 4♂ XII-33; Vian 4♂ III-30. Flies low in open grassy areas.
106. *Phyciodes angusta* (Hew., 1868).
Vead 4♂; Camp 1♂ (OC), 2♂ I-34.
107. *Phyciodes dicoma* (Hew., 1864).*
SobrdW 1♂ 1♀ 22-II-66, 1♂ 1♀ + 3s 24-II-66; Fercal 1♂s 25-II-66; Vead 3♂; Camp 2♂ I-34.
108. *Phyciodes eunice esora* (Hew., 1857).*
SobrdW 2♂ + 1s 24-II-66, 2s 10-VI-66; Fercal 1s 17-VIII-65; Maranhão 1s 15-VIII-65; JZool 1♀ 21-II-66; PGama 1s 9-VI-66; Vead 2♂; Camp 2♂ 1♀ I-34; Leop 2♂ 1♀ XII-33. Tends towards the Amazonian subspecies, *e. eunice.*
109. *Phyciodes lansdorfi* (Godt., 1821).
SobrdW 1♂ 22-II-66; JZool 1♀ 8-VI-66; Camp 1♂ I-34.

110. *Phyciodes ithra* (Kirby, 1871).
SobrdW 1♂ 11-VIII-65, 1♀ 13-VIII-65, c 22, 24-II-66, 3s 10-VI-66; Fercal 2♂ 17-VIII-65, 2s 23-II-66, 1s 25-II-66; Maranhão 2♂ 14-VIII-65, 1s 12-VI-66; JZool 2s 8-VIII-66; Vead 2♂; Tag 2♂; Anap 1♂ XI-36; Goiânia 1♂ VIII-43 (OC); Camp 1♂ III-30, 9♂ 1♀ I-34; Leop 2♂ 1♀ XII-33; PPEflex c 19-II-66, 1♂ 6-VI-66, c 7-VI-66; PPW c 27-II-66, c 6, 7-VI-66. Widespread and common, many habitats.
111. *Phyciodes hermas* (Hew., 1864).*
JZool 1♀ 21-II-66 (KB). This has been regarded as a southern subspecies of the Antillean *frisia* by some authors.
112. *Chlosyne lacinia saundersi* Dbldy., 1847.
Fercal c 15, 17-VIII-65; PPEflex 1♂ + 1s 7-VI-66; PPW 1s 7-VI-66. Very local.
113. *Vanessa virginiensis brasiliensis* (Moore, 1883).
JZool 1♂ + 1s 8-VI-66 (KB); Vead 1♂.
114. *Vanessa myrinna* (Dbldy., 1849).
SobrdW 1♂ 13-VIII-65; JZool c 8-VI-66; Vead 2♂, Goiânia 1♂ 6-III-63.
115. *Junonia evarete evarete* (Cr., 1779).
SobrdW c 11, 13-VIII-65, c 22, 24-II-66, 3s 10-VI-66, Fercal c 23, 25-II-66; Maranhão c 12-VI-66; JZool c 21-II-66, c 8-VI-66; BrasCC c 11-VI-66; Tag 1♂; Anap 1♂ XII-35, 1♂ XII-36, 1♂ 21-XII-36, 1♂ 1♀ II-37, 1♂ 19-II-37 (OC); Leop 2♂ XII-33; Arag 1♀ II-30; K485 c 26-II-66; PPEflex 2s 19-II-66, c 7-VI-66; PPW c 19, 27-II-66, c 6, 7-VI-66. Open roads, grassy areas.
116. *Anartia jatrophae jatrophae* (Joh., 1763).
Maranhão 1♂ 14-VIII-65; JZool 1♂ + 3s 21-II-66, 1♀ 8-VI-66; RClaro 1♂ 13-VIII-63; K485 1♂ 22-VIII-65, c 26-II-66; PPEflex c 19-II-66, c 7-VI-66; PPW 1♂ 19-II-66, 3s 27-II-66, 1s 6-VI-66, c 7-VI-66. Open cultivated areas.
117. *Anartia amathea roeselia* (Eschsch., 1821).*
SobrdR c 11, 13-VIII-65; Fercal c 23, 25-II-66; Maranhão c 14, 15, 18-VIII-65, 1♂ 12-VI-66; JZool 2s 21-II-66; Vead 1♂; Tag 1♂; Anap 1♂ 1♀ XII-36, 2♂ 19-II-37 (OC); Goiânia 2♂ 30-I-62, 1♂ 7-III-63; Camp 1♂ 1934 (OC), 1♂ I-34; Parac 1♂ 26-IV-21; PPEflex c 19-II-66, 3s 6-VI-66, c 7-VI-66; PPW 1♂ 19-II-66, 3s 27-II-66, 2s 6-VI-66, c 7-VI-66. Streamsides and marshes, often very common locally. This form is somewhat like the Amazonian *a. amathea*, with the white band on the fw more broken than in typical *roeselia*.
118. *Metamorpha stelenes stelenes* (L., 1758).
SobrdW 1♂s 24-II-66, 1♂ 10-VI-66; Fercal 1♂ + 1s 23-II-66; PGama 1s 9-VI-66; Vead 1♂; K485 2s 26-II-66; K222 1s 8-VIII-65; PPW 1s 19-II-66, 1s 27-II-66, 2s 6-VI-66, 1s 7-VI-66. Widespread but not common.
119. *Metamorpha trayja* (Hbn., 1823).*
SobrdW 1s 12-VIII-65, 1♀ 22-II-66; Fercal 2♂ + 1s 23-II-66; JZool 1♂ 21-II-66; BrasCC 1s 11-VI-66; PGama 1s 9-VI-66; Vead 1♂; Leop 1♂ XII-33.
120. *Hypanartia lethe* (F., 1793).
Fercal c 23, 25-II-66; JZool c 21-II-66, c 8-VI-66; BrasCC 1s 11-VI-66; PGama 2♂ 9-VI-66; Camp 1♂ I-34. In tangled streamside vegetation.
121. *Limenitis (Adelpha) mincia* Hall, 1938.*
Anap 1♂ 23-VII-37 (OC).
122. *Limenitis (Adelpha) abia* (Hew., 1850).*
PGama 1♂ 9-VI-66 (KB). Deep woods near stream.
123. *Limenitis (Adelpha) cocala riola* Fruhst., 1915.*
SobrdW 1♂ 22-II-66; Vead 1♂; Camp 1♂ I-34; Leop 3♂ XII-33; Vian 1♂ 2♀ III-30, 1♂ XI-31.
124. *Limenitis (Adelpha) pleasure heredia* Fruhst., 1915.*
SobrdW 1♂ 11-VIII-65, 1♂ 22-II-66, 2♂ 24-II-66; Maranhão 1♂ 15-VIII-65, 1s 12-VI-66; PPEflex 2s 7-VI-66; PPW 3♂ 19-II-66, 1♂ 1♀ 27-II-66, c 6, 7-VI-66. Forest streams, local.

125. *Limenitis (Adelpha) melona meridionalis* Fruhst., 1915.
Camp 1 ♂ 1-I-36. In collection of R. F. d'Almeida.
126. *Limenitis (Adelpha) aethalia metana* Fruhst., 1915.*
Contagem 1 ♂ 23-II-66; JZool c 21-II-66, 1 ♂ 8-VI-66; BrasCC 1s 11-VI-66; Vead 1 ♂; Leop 1 ♂ XII-33. A large and brightly colored race occurring in forests generally, not restricted to streamside situations.
127. *Limenitis (Adelpha) cytherea herennia* Fruhst., 1915.*
SobrdR c 11, 12-VIII-65; SobrdW c 22, 24-II-66, c 10-VI-66; Contagem 2s 23-II-66; Maranhão 1 ♂ 15-VIII-65; JZool 1 ♂ 21-II-66, 2s 8-VI-66; BrasCC c 11-VI-66; PGama c 9-VI-66; Vead 1 ♂ 1 ♀; Goiânia 4 ♂ 1 ♀ VIII-43 (OC); Leop 1 ♂ XII-33; Vian 1 ♂ III-30; K485 2 ♂ 22-VIII-65, 1 ♂ 26-II-66; PPW 2s 27-II-66; Ponte Funda, Goiás (near Vian) 2 ♂ 1-III-63. Along streams.
128. *Limenitis (Adelpha) iphicla iphicla* (L., 1764).
SobrdW 1 ♂ 22-II-66; Fercal 1 ♂ 1 ♀ 23-II-66, 2s 25-II-66; Maranhão 3 ♂ 14-VIII-65, 1 ♂ 12-VI-66; PGama 2s 9-VI-66; Vead 2 ♂, Anap 1 ♀ 19-II-37 (OC); Camp 2 ♂ 1 ♀ I-34, 1 ♂ 24-XII-35 (OC); Leop 3 ♂ 1 ♀ III-33; Vian 1 ♂ XI-31. Forest streams, or wet sand (males) near forest. Seems closer to *i. iphicla* than to the southern *i. ephesa.*
129. *Limenitis (Adelpha) thoasa gerona* (Hew., 1868).*
SobrdW 2s 10-VI-66; Maranhão 1 ♂ 14-VIII-65, 1 ♂ 15-VIII-65, 1 ♂ 18-VIII-65; Cav 1 ♂; Anap 1 ♂ 6-I-37 (OC); Goiânia 1 ♂ VIII-43 (OC); Leop 1 ♂ XII-30, 1 ♂ 1 ♀ XII-33; Vian 1 ♂ III-30; Uberl 1 ♂; K222 1 ♂ 8-VIII-65; PPEflex 2 ♂ 19-II-66, 2s 6-VI-66, 1 ♂ 7-VI-66; PPW 3s 6-VI-66. Along streamsides.

The Museu Nacional also has a specimen of typical *th. thoasa* from "Rio Maranhão"; it is possible that the two subspecies meet at the edge of the Amazon drainage, in the planalto.

130. *Limenitis (Adelpha) serpa paraena* (Bates, 1865).
PGama 1 ♂ 9-VI-66; Leop 1 ♂ XII-33; K485 1 ♂ 26-II-66.
131. *Marpesia petreus petreus* (Cr., 1776).
K485 1 ♂ s 26-II-66. On wet sand; apparently not common.
132. *Marpesia chiron* (F., 1775).
SobrdR 1 ♂ 12-VIII-65; SobrdW 1s 24-II-66; Fercal 2 ♂ s 23-II-66, 1 ♂ 25-II-66; JZool 1 ♀ 21-II-66; PGama 2s 9-VI-66; RClaro 1 ♂ 19-VIII-63; Camp 3 ♂ I-34; Leop 1 ♂ XII-33, 1 ♂ XII-37; PPEflex 1s 19-II-66; PPW 2s 19-II-66, 1s 27-II-66. On wet sand (males) or at flowers.
133. *Dynamine tithia* (Hübner, 1823).*
JZool 1 ♀ 27-I-62, 3 ♂ 1 ♀ 1-II-62, 1 ♀ 20-II-63, 2 ♂ 21-II-66, c 8-VI-66; PGama 1 ♂ s 9-VI-66; Camp 1 ♂ I-34; Leop 1 ♂ 1 ♀ XII-33; PPEflex 1 ♂ 19-II-66, 1 ♂ 27-II-66. Local, streamside situations.
134. *Dynamine mylitta mylitta* (Cr., 1782).
Fercal 1 ♀ + 2 ♂ s 23-II-66, 1 ♂ 25-II-66; JZool 1 ♂ 27-I-62, c 21-II-66, c 8-VI-66; PGama 2s 9-VI-66; Camp 1 ♂ III-30, 4 ♂ 4 ♀ I-34.
135. *Dynamine aerata* (Butl., 1887).
Camp 1 ♂ 1 ♀ I-34.
136. *Dynamine artemisia* (F., 1793).
SobrdW 1 ♀ 12-VIII-65, 2 ♀ 13-VIII-65; Contagem 1 ♂ 23-II-66; Maranhão 1 ♂ 14-VIII-65; Cav 2 ♂; Tag 2 ♂; Anap 1 ♂ 16-XI-36, 2 ♂ 19-II-37 (OC); Camp 1 ♀ III-30, 3 ♂ 1 ♀ I-34, 1 ♂ 11-XII-35 (OC), 1 ♀ 20-XII-35 (OC), 1 ♂ 4-I-36; Leop 1 ♂ 3 ♀ XII-33.
137. *Dynamine agacles* (Dalm., 1823).
SobrdW 1 ♀ 11-VIII-65, 2 ♂ 12-VIII-65; Fercal c 17, 18-VIII-65, c 23, 25-II-66; Maranhão 1 ♂ 18-VIII-65, 1 ♂ 12-VI-66; JZool 1 ♂ 27-I-62, c 21-II-66, 1 ♂ 8-VI-66; Vead 1 ♂; Tag 1 ♂; Camp 1 ♀ III-30, 3 ♂ 1 ♀ I-34, 1 ♂ 13-XII-35 (OC), 1 ♀ 21-I-36 (OC); Leop 1 ♂ XII-33; Parac 1 ♂ 22-XII-20. Streamsides and in woods in general.

138. *Dynamine limbata* (Butl., 1877).
Maranhão 1s 12-VI-66; Camp 2♂ I-34, 1♂ 20-XII-35 (OC). Similar to an overgrown *agacles*.

139. *Dynamine athemon maeon* (Dbldy., 1849).*
Fercal 3♂ 17-VIII-65, 1♂ 18-VIII-65, c 23-II-66, 1♂ 25-II-66; Maranhão 1♂ 18-VIII-65; Camp 3♂ 1♀ I-34, 1♂ 15-XII-35 (OC), 1♂ 24-XII-35 (OC); PPEflex 1s 19-II-66. Along streamsides.

140. *Dynamine coenus albidula* Weeks, 1901.
Fercal 1♂ 17-VIII-65, c 23, 25-II-66; Maranhão c 14, 15, 18-VIII-65; Tag 4♂; Anap 1♂ VIII-43 (OC); Camp 2♂ III-30, 1♂ I-34, 1♂ 13-XII-35 (OC). Along banks of larger rivers only.

141. *Catonephele numilia penthia* (Hew., 1852).*
SobrdW 1♂ 12-VIII-65, 2♂ 13-VIII-65, 2♂ 22-II-66, 1♂ 1♀ 24-II-66, 1♂ 10-VI-66; JZool 1♀ 1-II-62, c 21-II-66, 1♂s 8-VI-66; Vead 1♀; Anap 1♂ 12-I-37; Leop 1♂ XII-33; PPW 1♂ + 1♀s 27-II-66. Female form *fulva* Röber, 1914: SobrdW 1♀ 12-VIII-65. Female intermediate *penthia-fulva*: SobrdW 1♀ 24-II-66. Female with fw yellow bar reduced to three discrete spots: SobrdW 1♀s 10-VI-66. Deep woods, attracted to sap or banana bait. Females variable; typical form an excellent mimic of *Heliconius sarae*. Form *fulva*, resembling typical females of *n. numilia*, mimics a variety of other *Heliconius* including forms of *erato* and *doris*.

142. *Catonephele acontius* (L., 1771).
SobrdW 2♂ 22-II-66, 1♂ 2♀ 24-II-66; PGama 1♂s 9-VI-66; Leop 2♂ XII-33. Attracted to sap or banana less readily than *numilia*; very local. Females represent an unsolved problem in mimicry studies; *acontius* females resemble only *H. charithonius*, which does not occur in the majority of the range of *acontius*.

The following seven species follow Dillon (1948) except as noted.

143. *Paulogramma peristera* (Hew., 1853).
Vead 1♀; Cav 4♂. Three of the males tend toward the so-called central Brazilian subspecies, *pujoli* (Oberth., 1916); the female is indistinguishable from *p. peristera*. The cline of *peristera* with *pujoli* indicates that the latter is better regarded as a form.

144. *Callicore hydaspes* (Drury, 1782).*
Fercal 1♀ (KB) + 3♂s 23-II-66; Anap 1♀ XI-37; Camp 1♂ I-34; Leop 2♂ XII-33. On wet sand.

145. *Callicore pygas splendens* (Oberth., 1916).
Fercal 2♂ 25-II-66; Maranhão 1♂ 23-II-66; Cav 6♂; Tag 1♀; Anap 1♂ XI-36, 1♂ 19-II-37 (OC); Camp 1♂ I-34; Leop 2♂ XII-33. On wet sand and in nearby forests.

146. *Callicore pygas thamyras* (Mén., 1857).*
SobrdR 1s 13-VIII-65; Cav 1♂ 1♀; Tag 1♀; K485 1♂ 22-VIII-65 (KB). Although different from *C. p. splendens* on both wing surfaces, this is almost certainly the winter (and cold-weather) form of *splendens*.

147. *Callicore selima selima* (Guenée, 1872).*
SobrdR 3♂s 11-VIII-65, 2♂s 12-VIII-65, 3♂s 13-VIII-65, 1♀ 22-II-66; SobrdW 1♀ 12-VIII-65, 1♀ 13-VIII-65, 1♂s 24-II-66, 2♂ 1♀s 10-VI-66; Contagem c 17, 18-VIII-65, 1♀ 23-II-66; Fercal 1♂ 23-II-66, 2♂ + 1♀s 25-II-66; Maranhão 2♂s 14-VIII-65, 1♂ 1♀s 15-VIII-65, 2♂s 18-VIII-65; JZool 2♂s 8-VI-66; PGama 1♂ 9-VI-66; Vead 4♂; Anap 1♂ XI-36, 1♂ 17-XII-36; Goiânia 2♂ 1♀ VIII-43 (OC); Camp 1♂ 6-XII-35 (OC), 4♂ 12-XII-35 (OC); K485 c 22-VIII-65, 1♂ 26-II-66; K222 c 8-VIII-65, c 20-II-66; PPEflex c 19-II-66, 2♀ 27-II-66, 1♀s 6-VI-66, 2♂s 7-VI-66; PPW 1♂s 6-VI-66. Widespread but not always common, generally in forests, readily attracted to sap or banana bait; more easily caught in the winter dry season.

We have specimens of typical *s. selima, s. paulistanus* (Fruhst., 1916), and *s. goyazae* (Dillon, 1948) from all parts of the planalto, the three clearly flying together and occurring in the same brood (although *s. selima* may be more prominent to the southward, *s. goyazae* to the northwest). We thus regard *paulistanus* and *goyazae* as forms of the highly variable nominate *selima*.

148. *Callicore sorana* (Godt., 1823).*
SobrdR c 11, 12, 13-VIII-65; SobrdW c 11, 12, 13-VIII-65, c 22-II-66, 1♂ 24-II-66, 2s 10-VI-66; Contagem c 18-VIII-65; Fercal 4s 23-II-66, c 25-II-66; Maranhão 1♂ 23-II-66, 1♀s 12-VI-66; JZool 1♀ 1-II-62, 1♀ 27-II-63; BrasCC 1♀s 11-VI-66; PGama 1♂s 9-VI-66; Vead 1♂; Cav 2♂ 1♀; Anap 1♂ X-36, 1♂ 12-XII-36, 1♀ 5-II-37, 2♂ 19-II-37 (OC); Camp 1♀ III-30, 1♂ I-34, 2♂ 12-XII-35 (OC), 2♂ 13-XII-35 (OC); Leop 2♂ XII-33; Arag 2♀ II-30; Uberl 1♂; K485 1♀ 22-VIII-65, 1♂ 26-II-66; K222 c 8-VIII-65; PPEflex c 19-II-66, c 7-VI-66; PPW 1♀ 19-II-66, 2s 27-II-66, 3s 6-VI-66; Go 1♀ 1926. Common resident of the cerrado, widespread and occurring in nearly all types of habitat.

149. *Catacore kolyma connectens* (Talbot, 1928).
Fercal 3♂ 23-II-66, 3♂ 1♀ 25-II-66; Maranhão 1♂ 23-II-66; Anap 1♂ 16-XI-36; Camp 1♂ I-34; Vian 2♂ XI-31. On wet sand near forest; hard to distinguish from the following species.

The common form of Goiás has the most reduced amount of red on the forewing underside of all forms of *kolyma*, differing also from typical *connectens* in lacking red on the forewing upperside. The two forms fly together in São Paulo and Paraná, and grade westward to *pasithea* in Bolívia. We conclude from dozens of specimens that it is best not to propose further subspecies of *kolyma*, as there is full intergradation of all extreme forms.

150. *Diaethria candrena* (Godt., 1821).*
SobrdR 1s 12-VIII-65, 2s 13-VIII-65; Fercal c 17, 18-VIII-65, 1♂ 23-II-66, c 25-II-66; Maranhão 1♂ 15-VIII-65, 1♂ 18-VIII-65; Anap 1♂ 7-XII-36, 1♂ 23-XII-36, 2♂ II-37, 3♂ 19-II-37 (OC), 1♂ III-37; Leop 5♂ XII-33. Most easily caught on wet sand.

151. *Diaethria eluina* (Hew., 1852).
Anap 1♂ XII-36, 2♂ 19-II-37 (OC); Goiânia 1♂ VIII-43 (OC); Camp 2♂ I-34; Leop 6♂ 1♀ XII-33; Vian 1♀ XI-31.

152. *Diaethria clymena janeira* Feld., 1862.*
SobrdR c 11, 12, 13-VIII-65; Contagem 1♂ 17-VIII-65, 2♂ 18-VIII-65, c 23-II-66; Fercal c 15, 17, 18-VIII-65, c 23, 25-II-66; Maranhão c 14, 15, 18-VIII-65, c 23-II-66, 1s 12-VI-66; JZool 2♂ 1♀ 27-I-62, 2♀ 1-II-62, 1♂ 20-II-63, c 21-II-66, c 8-VI-66; PGama 2s 9-VI-66; Vead 1♂; Cav 1♂; Anap 1♂ I-36, 1♂ 25-X-36, 2♂ 2♀ XI-36, 1♂ 17-XII-36, 1♂ 19-XII-36, 18♂ 1♀ 19-II-37 (OC); Goiânia 1♂ VIII-43 (OC), 1♂ 7-III-63; Camp 1♂ 2♀ III-30, 2♂ I-34; Leop 5♀ XII-33; Vian 1♂ XI-31; K485 c 26-II-66; K222 5♂ 20-II-66.

153. *Callidula pyrame* (F., 1781).
Fercal 1s 17-VIII-65, c 23, 25-II-66; Cav 2♂; Tag 2♂ 1♀; Anap 1♂ 16-XI-36; Camp 1♂ 1♀ III-30, 9♂ 3♀ I-34. Males are best caught on wet sand, females in nearby brushy tangles.

154. *Epiphile hubneri* Hew., 1861.*
Parac 1♂ 12-XII-19, 1♂ 28-XII-20.

155. *Epiphile orea* Hbn., 1823.*
SobrdW 1♀ 22-II-66, 1♂ + 1♂ 1♀s 24-II-66; Vead 1♂; Anap 1♂ 17-VIII-36, 1♂ 6-I-37 (OC), 1♂ VI-37; Camp 2♂ I-34; Leop 5♂ XII-33; Parac 1♂ 12-XII-19. Deep forest, comes fairly well to bait, difficult to capture without aid of bait.

156. *Temenis korallion* Fruhst., 1912.
SobrdW 1♀ 10-VI-66 (KB); Contagem 1♂ 17-VIII-65 (KB), 1♀s 18-VIII-65; Vead 1♂; Leop 4♂ XII-33.
Easily distinguished from following species by exceptionally dark upperside (iridescent purple in males) and relatively clean, dark brown underside, with discal area of forewing ochre.

157. *Temenis laothoe bahiana* Fruhst., 1907.
SobrdW 1♂ 11-VIII-65, 1♂ 12-VIII-65, 1♂ 13-VIII-65, 1♂s 22-II-66, c 24-II-66; Contagem 1♀ 17-VIII-65, 1♂ 18-VIII-65; Fercal c 23-II-66, 5s 25-II-66; Maranhão 1♂ 23-II-66; PGama 3s 9-VI-66; Vead 2♂; Anap 1♂ 19-II-37 (OC); Camp 2♂ 2♀ I-34, 1♂ 24-XII-35 (OC); Leop 10♂ 4♀ XII-33; Vian 1♂ III-30; K222 1♀ 20-II-66; PPEflex 1s 19-II-66; PPW 1s 19-II-66, c 27-II-66, 3s 6-VI-66, 2s 7-VI-66. In dry woods, occasionally on bait, males sometimes on wet sand.

158. *Nica flavilla flavilla* (Godt., 1823).*
Contagem 1♂ 18-VIII-65; K222 2♂ 8-VIII-65; PPEflex 1s 6-VI-66. Lighter form is more common in winter. Form *lunigera* (Fruhst., 1907): Contagem 1♂ 23-II-66; Fercal 1♀ 23-II-66, 1♂ 25-II-66; Maranhão 1s 12-VI-66; PGama c 9-VI-66; Vead 1♂; Camp 2♂ I-34, 2♀ 26-XII-35 (OC); Leop 1♂ XII-33; Vian 3♂ 1♀ III-30, 1♂ 1♀ XI-31; K222 c 20-II-66; PPW 1s 6-VI-66, 1s 7-VI-66. Darker, the predominant form in the planalto. Local, riparian sites.

159. *Cybdelis phaesyla* Hbn., 1825.*
Leop 1♂ XII-33. Seasonally common.

160. *Libythina cuvieri* (Godt., 1819).
SobrdW 4♂ 1♀ 22-II-66, c 24-II-66, c 10-VI-66; JZool 1♂ 25-III-63; BrasCC 1s 11-VI-66; Vead 1♂ 1♀; Leop 2♂ XII-33, 9♂ 2♀ XII-37; Vian 1♂ III-30, 1♂ 1♀ XI-31, 6♂ XII-31. Occurs only in typical cerrado, flying rapidly among the stunted trees 1 m above the ground. Does not enter the forests.

161. *Evonyme bechina* (Hew., 1852).
SobrdW 1♀ 13-VIII-65; Maranhão 1♂ 23-II-66; JZool c 6-II-62; Vead 1♂; Leop 1♂ 2♀ XII-33, 1♂ X-37, 1♂ XI-37, 4♂ XII-37, Vian 3♂ 1♀ III-30; Arag 1♂ XII-31, 2♂ X-33; K485 1♂ 22-VIII-65. Typical of the dry cerrado, very similar to *L. cuvieri* in habits. At times attracted to bait.

162. *Evonyme volumna intricata* (Fruhst., 1909).
SobrdR 1♂ 12-VIII-65 (KB); Vead 1♂.

163. *Evonyme eurota* (Cr., 1775).
Goiânia 1♂ VIII-43 (OC).

164. *Evonyme caelina* (Godt., 1823).*
Vead 1♂.

165. *Evonyme maja* (F., 1775).*
Arag 1♀ X-31.

166. *Evonyme macris phasis* (Feld., 1862).
Leop 1♂ XII-31.

167. *Mestra hypermestra apicalis* (Stgr., 1888).
Maranhão 1♀ 14-VIII-65, 1♀ 15-VIII-65; JZool 1♂s 8-VI-66; Anap 1♂ 1♀ I-36; Goiânia 2♂ 6-III-63; Camp 2♀ III-30, 5♂ 6♀ I-34, 1♂ I-38; K485 1♂ 1♀ 26-II-66; K222 1♂ 1♀ 8-VIII-65, 2♂ 2♀ 20-II-66; PPEflex c 7-VI-66. Exceedingly variable, from nearly pure white to black, white, and orange, but generally more orange beneath than in coastal *h. hypermestra*.

168. *Ectima liria lirissa* (Godt., 1821).*
Fercal 1♂ 23-II-66 (OM); Camp 3♂ I-34; Parac 1♂ 10-V-19.

169. *Hamadryas chloe rhea* (Fruhst., 1907).
SobrdW 1♂ 10-VI-66; Contagem 4♂ 17-VIII-65, c 23-II-66; Fercal 3s 23-II-66; Maranhão 2s 12-VI-66; Vead 1♂; Anap 1♂ XI-36, 3♂ XII-36, 1♂ 7-XII-36, 1♂ 2-I-37 (OC), 1♂ II-37; Camp 2♂ (OC), 4♂ I-34; Vian 2♂

III-30; PPEflex 1 ♂ 7-VI-66. All members of *Hamadryas* attracted readily to bait.

170. *Hamadryas ferentina ferentina* (Godt., 1821).
SobrdW 1 ♂ 12-VIII-65, 1 ♀ 13-VIII-65, 2 ♂ 22-II-66, c 24-II-66, 1 ♂ 10-VI-66; Fercal c 23, 25-II-66; Maranhão a 23-II-66; JZool 1 ♂ 27-I-62, 1 ♂ 5-XII-63, c 21-II-66; Goiânia 2 ♀ 30-I-62, 1 ♂ 6-III-63; PPEflex 1 ♂ 19-II-66, 1 ♂ 7-VI-66. An enormous concentration was noted on manure along a road near the Maranhão, Feb. 23, 1966.

171. *Hamadryas feronia obumbrata* (Fruhst., 1916).*
SobrdR c 22-II-66; SobrdW c 11, 12, 13-VIII-65, c 22, 24-II-66, c 10-VI-66; Contagem 1 ♂ 17-VIII-65, 1s 23-II-66; Fercal c 23, 25-II-66; JZool 1 ♂ 22-II-63, c 21-II-66, 1s 8-VI-66; PGama 1 ♂ 9-VI-66; Vead 1 ♂; Cav 1 ♂; Anap 1 ♂ XI-36; Leop 4 ♂ 1 ♀ XII-33; Vian 2 ♂ 1 ♀ III-30, 1 ♂ XI-31. The commonest *Hamadryas* of the planalto.

172. *Hamadryas iphthime gervasia* (Fruhst., 1916) or *epinome* (Feld., 1867).*
JZool 2 ♂ 21-II-66; Camp 2 ♂ I-34; Leop 2 ♂ 1 ♀ XII-33; Vian 1 ♂ XI-31; PPW 1 ♂ 27-II-66, 1 ♂ 7-VI-66. A species or complex of unclarified taxonomy.

173. *Hamadryas fornax* (Hbn., 1822).
Camp 1 ♂ I-34; Leop 1 ♂ XII-33. Rare.

174. *Hamadryas amphinome aegina* (Fruhst., 1916).*
SobrdW 1 ♂ 11-VIII-65, 1 ♂ 24-II-66; Fercal 1 ♂ 23-II-66, 3s 25-II-66; JZool 1 ♂ 1960, 4 ♂ 1-II-62, 1 ♂ 2-II-62, 1 ♂ 1 ♀ 6-II-62, 1 ♂ 20-II-63, c 21-II-66; Vead 1 ♂; Cav 1 ♂; PPEflex c 19-II-66, 1 ♀ 6-VI-66; PPW 2s 27-II-66.

175. *Hamadryas laodamia* (Cr., 1776).
SobrdW 2 ♂s 13-VIII-65; Contagem 1 ♀ 17-VIII-65, 1 ♂ 18-VIII-65; Fercal c 23, 25-II-66; JZool 1 ♂ 1-II-62, 1 ♀ 20-II-63, c 21-II-66, 1 ♀s 11-VI-66; BrasCC 1 ♂s 11-VI-66; Vead 1 ♂ 2 ♀; Anap 1 ♂ XI-36, 1 ♂ XII-36, 1 ♂ 16-VII-37 (OC); Goiânia 1 ♀ VIII-43 (OC); Camp 1 ♂ 2 ♀ I-34; K222 a 8-VIII-65; PPEflex c 19-II-66, 1 ♂ 1 ♀ 27-II-66, c 7-VI-66; PPW 2s 27-II-66. Readily attracted to bait, but difficult to capture. Does not "click" as do other *Hamadryas* and shows strong affinities with *Biblis*.

176. *Biblis hyperia hyperia* (Cr., 1779).
SobrdW 1s 12-VIII-65, 1s 13-VIII-65; Fercal 2s 23-II-66, 1s 25-II-66; Cav 1 ♂; Camp 1 ♂ III-30, 1 ♂ I-38; Vian 1 ♂ XI-31; PPW 1 ♂ 19-II-66, 2s 6-VI-66. Attracted to bait.

177. *Doxocopa laurentia* (Godt., 1823).*
Fercal 1 ♂s 23-II-66; Anap 1 ♂ XII-36, 2 ♂ 19-II-37 (OC); Leop 2 ♂ XII-33; Vian 1 ♀ XI-31. Not easily found; on wet sand (males) or sunny patches in deep woods and flowers (females).

178. *Doxocopa laure lauretta* (Stgr., 1888).*
Fercal c 23, 25-II-66; Maranhão 1 ♂ 14-VIII-65, 1 ♂s 12-VI-66; PPEflex 1 ♂ 6-VI-66; PPW 1 ♀ 19-II-66, 3 ♂s 27-II-66. Common on wet sand near forest. Includes several named forms, and may not be distinct from the following species.

179. *Doxocopa selima* (Bates, 1865).*
Fercal 1 ♂ 25-II-66 (OM); Tag 2 ♂; Goiânia 1 ♀ VIII-43 (OC).

180. *Doxocopa agathina* (Cr., 1782).
Fercal 1 ♂ 18-VIII-65, c 23, 25-II-66; Tag 1 ♂; Camp 2 ♂ I-34, 2 ♂ 22-XII-35 (OC), 1 ♂ 24-XII-35 (OC); Leop 3 ♂ XII-33. Wet sand, forested rivers.

181. *Doxocopa vacuna* (Godt., 1823).*
Fercal 1 ♂ 23-II-66, 1 ♀ 25-II-66. Wet sand, forested rivers. We regard this as quite distinct from *agathina*.

182. *Pyrrhogyra neaerea arge* Gosse, 1880.*
Goiânia 1 ♂ 30-I-62; PPW 1 ♂ 27-II-66 (OM), 1 ♂s 6-VI-66. Very local; apical spot a little larger than in normal series.

183. *Tigridia latifascia* (Butl., 1873).
SobrdW 3s 22-II-66, 1♂ 1♀ (KB) + 3s 24-II-66, 2♂ (KB) + 5s 10-VI-66; Anap 1♀ 16-XI-36. Exceedingly wary and difficult to catch. Comes to bait, but does not stay upon being approached. Lands head-down on tree trunks, with wings closed; when approached, trembles wings to semi-open, closes again, and seems to hop backwards up the tree-trunk; when flushed, unlike other tree-trunk landing species which fly outward and upward (e.g. *Colobura, Callicore, Hamadryas, Historis, Prepona, Evonyme, Myscelia*), *Tigridia* flies sideways in an unpredictable direction, making several tight circles around the tree before flying away at high altitude.
184. *Colobura dirce* (L., 1758).
SobrdW 2♂ 11-VIII-65, c 22, 24-II-66, 1♂ 10-VI-66; Vead 2♂; Goiânia 1♂ VIII-43 (OC); Leop 1♂ XII-33; K222 2♂ 8-VIII-65; PPEflex 1♂ 19-II-66, 1s 6-VI-66, 1♂ 7-VI-66; PPW 1s 27-II-66. Comes to bait. Often seen on tree-trunks in woods and towns, head downward with wings closed; not easy to catch.
185. *Smyrna blomfildia* (F., 1781).
SobrdW 1♀ 12-VIII-65; Fercal 1♂ 25-II-66; Tag 1♂, PPW 1♀s 27-II-66. At wet sand (males) or bait, not common.
186. *Historis odius odius* (F., 1775).
SobrdW 1♀ 13-VIII-65 (KB), 1♂s 24-II-66; Fercal 1♂s 25-II-66; Vead 1♀. Readily attracted to bait.
187. *Agrias claudia godmani* Fruhst., 1895.
SobrdW 1♂ 22-II-66 (OM), 1♂ 24-II-66 (KB); K485 1♂ 22-VIII-65 (KB). We have only seen this unusual subspecies on bait. Pattern rather variable, from very reduced red on forewing (crescent) and only three narrow lines on veins of hindwing, to considerable red on both wings (all from same brood); much blue iridescence.
188. *Prepona meander* (Cr., 1775).
PGama 1♂ 9-VI-66.
Form *fruhstorferi* Röber, 1914: SobrdW 1♂ 13-VIII-65; Vead 3♂ 1♀. This form has the wing completely tan underneath. Comes to bait; plain form commoner than contrasted nominate form.
189. *Prepona demophon extincta* Stgr., 1886.
SobrdW, 1♂ 24-II-66; PGama 1♀s 9-VI-66; Vead 1♂; Camp 1♂ 1♀ 1-34.
190. *Prepona demophoon antimache* (Hbn., 1819).
Vead 1♂.
191. *Prepona laertes laertes* (Hbn., 1811).
SobrdW 1♂ 12-VIII-65 (KB), 1♂ 24-II-66 (KB).
192. *Prepona eugenes laertides* Stgr., 1897.
Anap 1♂ 12-XI-36; Camp 1♂ I-34.
Concepts of the following species are according to Comstock (1961).
193. *Anaea (Siderone) marthesia* (Cr., 1777).
SobrdR 1♂s 22-II-66; SobrdW 1♂ 13-VIII-65, 1♂ 10-VI-66; Vead 2♂ 1♀; Anap 1♀ XI-36; Go 1♂ 1926. Widespread but uncommon, best caught with bait.
194. *Anaea (Zaretis) itys strigosus* (Gmelin, 1788–93).*
SobrdW 1♀ 12-VIII-65, 1♂ 13-VIII-65, 1♂ 22-II-66; Contagem 1♂ 18-VIII-65; Vead 1♂; Vian 1♀ III-30; PPW 1♀ 6-VI-66, 1♂ 1♀ 7-VI-66. Comes readily to bait.
195. *Anaea (Hypna) clytemnestra forbesi* Godm. & Salv., 1884.
Tag 1♂. The southern subspecies (*hubneri*) with the forewing band yellow instead of white, does not seem to pass to the north of the blend zone.
196. *Anaea (Memphis) ryphea phidile* (Geyer, 1834).
SobrdW 3♂s 24-II-66; Contagem 1♂ 17-VIII-65, 1♀ + 2♂s 23-II-66; Fercal

2♂s 23-II-66, c 25-II-66; JZool c 21-II-66; Vead 8♂ 2♀; Tag 1♂; Camp 2♂ I-34; Leop 1♂ XII-33; K222 1♀ 20-II-66; PPW 1♀s 19-II-66, 1♂ + 2♀s 27-II-66, 2♂ 6-VI-66. Widespread and common, on wet sand (males) or bait.

197. *Anaea (Memphis) cratias* (Hew., 1874).*
Cav 2♂; Tag 1♂; Anap 1♂ 21-XII-36; Leop 1♀ XII-33; Vian 1♂ 1♀ XI-31; Arag 1♀ II-30.

198. *Anaea (Memphis) morvus stheno* (Prittw., 1865).
SobrdW 2♂ 24-II-66, 1♂ 1♀ 10-VI-66; Contagem c 17-VIII-65; Maranhão 1♂ 15-VIII-65; JZool 1♀ 27-I-62, 1♀ 1-II-63; Vead 5♂ 1♀; Camp 2♂ I-34; PPW 1♂ 1♀ 27-II-66. Best caught with bait.

199. *Anaea (Memphis) arachne victoria* (Druce, 1877).*
SobrdW 1♂ 11-VIII-65, 1♂ 13-VIII-65, 1♀ 24-II-66; JZool 1♂ 21-II-66; Goiânia 1♂ 30-I-62; Camp 2♂ 24-II-35; PPW 1♀ 19-II-66. Attracted to bait.

We expect to add at least fifteen species to the 97 of Nymphalinae and Charaxinae described here, but it is difficult to predict these. However, the following should occur on the planalto: *Euptoieta hegesia*, two more species of *Phyciodes*, two more species of *Adelpha*, *Dynamine meridionalis* and one further species of *Dynamine*, at least one more *Callicore*, two or more additional species of migratory *Evonyme* (such as *margarita* and *tatila bellaria*), another species of *Prepona* and of *Doxocopa*, *Consul fabius*, and two or three further species of *Anaea (Memphis)* (such as *leonida* or *appias*).

Total for Nymphalidae: 199 species. Predicted to occur on planalto: Approximately 250 species; about 80% represented on present list.

Libytheidae

200. *Libytheana carinenta* (Cr., 1779).
Fercal 1s 17-VIII-65, 1s 18-VIII-65, c 23-II-66; Maranhão 1s 18-VIII-65; JZool 1♂ 1-II-62; Tag 1♂; Vian 1♂ XII-31; K485 1♂ 22-VIII-65; PPW 1s 19-II-66; Go 1♂. Wet sand, riverbanks.

We do not foresee the occurrence of further Libytheidae on the planalto.

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BOOK NOTICE

INSECTS OF HAWAII, Volumes 7 and 8, by Elwood C. Zimmerman. University of Hawaii Press, 535 Ward Avenue, Honolulu, Hawaii 96814, 1958. Volume 7 (Macrolepidoptera): 542 pp., 423 black and white figures. Volume 8 (Pyraloidea): 456 pp., 347 black and white figures. By mail, both $17.50 in United States.

Volume 7 pictures with some detail the 168 species of Macrolepidoptera in 46 genera that were known from Hawaii as of December, 1956. The families Geometridae, Noctuidae and Sphingidae are best represented in the Hawaiian fauna. Of the 158 species of moths treated, 130 are endemic and 28 are foreign introductions. Only two of the ten butterflies in the fauna are endemic. These are *Vanessa tameamea* Eschscholtz and *Vaga blackburni* (Tuely).

Volume 8 contains valuable information pertaining to the 226 species of pyraloid moths, of which 190 are endemic and 36 are foreign introductions. Only four subfamilies of Pyraloidea (Pyraustinae, Scopariinae, Crambinae and Phycitinae) are mentioned as having species endemic to Hawaii.

Both soft-bound volumes contain a checklist of the Lepidoptera mentioned therein, followed by a complete summary of the nomenclatural changes made in each volume and a tabular summary of the endemic Hawaiian species. A discussion of the morphological features and the host-plants of each species is also presented, with keys given in many of the genera.

The black and white photographs comprising most of the figures representing the adults and their genitalia are excellent and are enlarged considerably for detail. Both volumes are essential to anyone interested in the Hawaiian fauna.—GLENN A. GORELICK, *University of California, Berkeley.*