# LEPIDOPTERA OF THE CENTRAL BRAZIL PLATEAU. III. PARTIAL LIST FOR THE BELO HORIZONTE AREA, SHOWING THE CHARACTER OF THE SOUTHEASTERN "BLEND ZONE"

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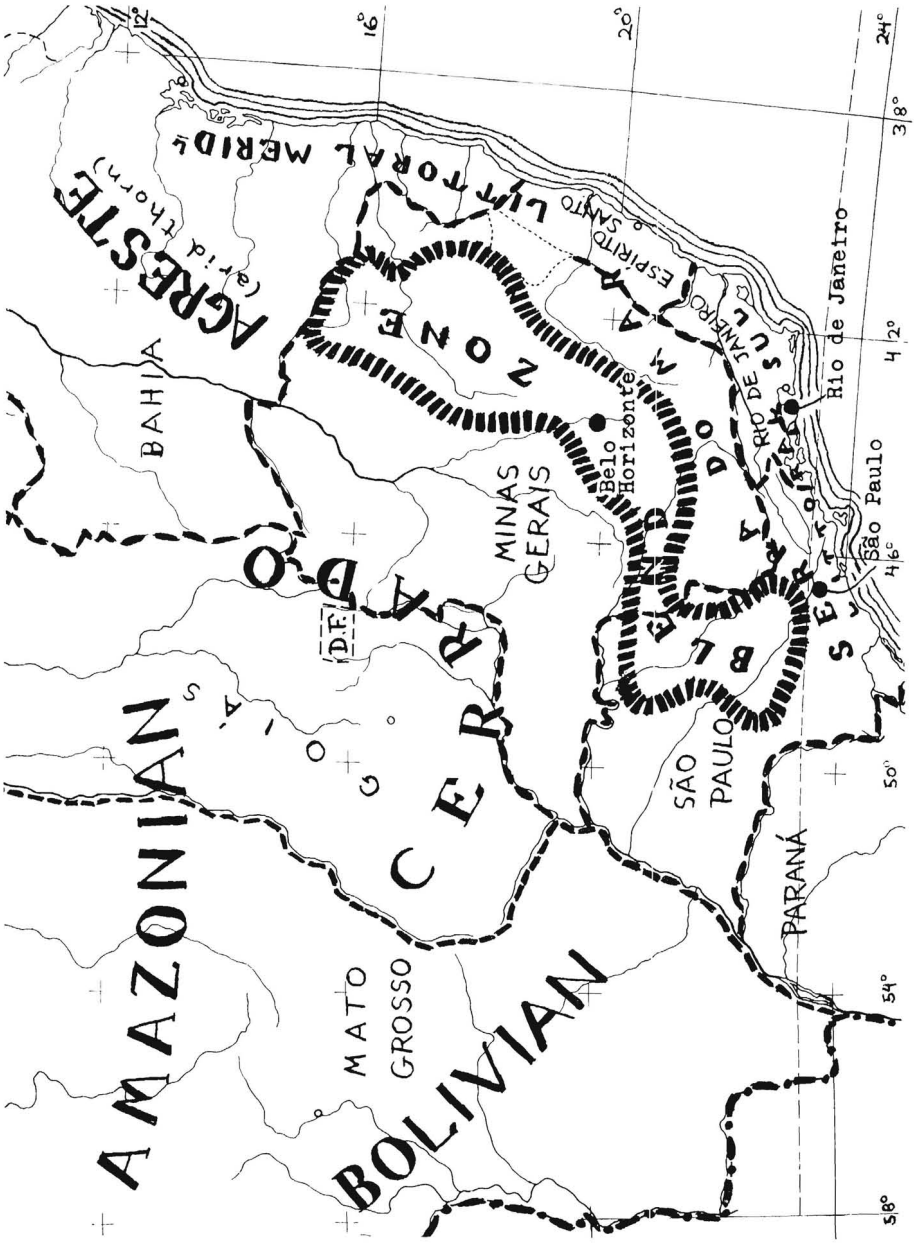
In our first paper on the Rhopalocera of the *cerrado* area of the Brazilian plateau (Brown & Mielke, 1967), we mentioned the existence of a narrow zone at the southeastern edge of this region which, while possessing a fauna closely allied with that of the true planalto, showed also a strong infusion of elements typical of the southeast coastal mountain area of Brazil (*Serra do Mar*) which were absent in the cerrado. This intermediate area is distinguished from that part of the planalto treated in Part I by the presence of a richer soil and more regular rainfall, with corresponding substitution of the dry, scrubby cerrado with a lush open grassland (*campo*, or, if mixed with scrub, *campo cerrado*). The forest is about as restricted in the two regions, occurring mainly along watercourses and around springs (*mata ciliar*). The frequent admixture of cerrado flora with the campo of the blend zone results in the presence of many species of butterflies allied with the region more to the north; but the predominance of the richer-soil campo in conjunction with the heavy moist riverside forests permits the existence of a variety of forms typical of the Serra do Mar, which do not pass farther to the northwest and are thus absent from the list in Part I.

We have undertaken to make a representative list of Rhopalocera from some relatively well-collected areas within this blend zone, in order that its mixed nature and influence of the Serra do Mar might be appreciated. The zone covers a rather narrow strip running from the northern part of the state of Minas Gerais (where it meets the northeastern arid thorn forest) southward through this State and across the middle of São Paulo (see Figure 1). As herein delineated, the blend zone reaches a fairly sharp northwestern limit at the start of the true cerrado unmixed with campo (see Part I). Its southeastern limit comes at the edge of the more mountainous and well-watered area of the Serra do Mar, where dense forest thrives even on hilltops away from


AGRESTE
(arid thorn)
LITTORAL MERID
ESPIRITO SANTO
RIO DE JANEIRO
ZONE
MATA DO SUL
BAHIA
Belo Horizonte
Rio de Janeiro
São Paulo
MINAS GERAIS
D.F.
CERRADO
BLUE ZONE
SÃO PAULO
PARANÁ
GOIAS
MATO GROSSO
AMAZONIAN
BOLIVIAN
12°
16°
20°
24°
38°
42°
46°
50°
54°
58°

permanent watercourses; this is perhaps an average of 150 kilometers southeast of the northwestern border with the cerrado.

The elevation of the blend zone is about 600 to 1400 meters, corresponding to the median elevation of the central plateau in general. However, the proximity of the zone to the higher mountains on the southeast coast blurs the sharply distinct wet and dry seasons typical of the cerrado, and rain may be expected in any month of the year (though naturally more rain falls during the hotter summer months which give almost all of the rain to the cerrado to the northwest). The winters, while generally cooler than those in the cerrado, do not include the frosts which occur in the more mountainous areas of the Serra do Mar. These climatic factors permit the existence of elements of fauna typical of the cerrado together with others typical of the Serra do Mar. However, many species of the Serra do Mar do not enter the blend zone, being restricted by the border of the general heavy damp forest with the area of campo and mata ciliar.

The only large city in the blend zone is Belo Horizonte, capital of Minas Gerais, situated at 850 meters elevation in a large bowl surrounded by iron-rich hills, and having a population of nearly one million and a large federal university. The Belo Horizonte area (including the suburbs of Serra and Barreiro which have city water forest reserves, the more distant communities of Brumadinho, Lagoa Santa and Sete Lagoas, and the rolling hilly area known as Serra do Cipó, "Liana Mountains") is quite well-collected, and we (especially KB) have collected considerable material there during the past year. We have gathered our own records, the material in the collection of the Museu Nacional in Rio de Janeiro, and the collections known to us in Belo Horizonte (mostly made by students in zoology courses of the University and University High School, with considerable material also collected by Mr. Ney Carnevalli and Mr. João Evangelista da Silva of the teaching staff of these courses), and herewith present a representative list for the Belo Horizonte area, as being typical of the blend zone. We have also considerable material from other areas in the zone; it agrees well with that from Belo Horizonte, with some additional species being present from both north and south but not changing the overall pattern as set forth below. It must be emphasized that the following list is representative and could not claim to be complete; within each family grouping, the esti-

← MAP: Tentative formulation of the boundaries of the "Blend Zone" in relation to nearby faunal regions. The Serra do Mar includes occasional intrusions of cerrado flora and fauna, as the Cerrado includes occasional islands of "campo" and of heavy Serra do Mar-type forest.

mated number for a complete list for the blend zone is given, with the percentage of this number that we have recorded. This percentage is high (60–100%) for Papilionidae, Pieridae, and various subfamilies (except Satyrinae) of Nymphalidae, but low for Satyrinae, Riodininae, Theclinae, Plebejinae and Hesperiidae (20–50%; the latter were in general not collected by the students). We do not plan to publish supplements in order to render this list more complete, as it is presented merely as support for the faunal character of the blend zone and not as a local fauna. However, further observations of ecological interest and perhaps comments on other sections of the blend zone may form part of future communications within this series.[1]

The nomenclature and order of the list follow that of Part I in this series; determinations were made by the authors and by Dr. Romualdo Ferreira d'Almeida, whom we wish to thank for his extensive assistance. The approximate abundance of species in the Belo Horizonte area is given following a standardized scale: a (abundant), present in many areas, several dozen often caught in a day's collecting; c (common), present in many areas, almost surely caught in an average day's collecting in the area; u (uncommon), not surely a part of an average day's catch, but regular and to be expected in at least some localities; and r (rare), only one or two specimens known to, caught or seen by the authors. Seasonal data on the species are included if significant variation has been noted between the seasons, but many species show little difference in occurrence at different times of the year. An asterisk (*) in the list marks species seen in the Museu Nacional or student collections with which the authors have no personal experience in the area covered. A double asterisk (**) indicates a few species in the student collections which, while probably from the Belo Horizonte area, may conceiveably come from areas in which the students reside outside of the blend zone. Essentially all species not asterisked are in the collection of KB.

NYMPHALIDAE

MORPHINAE: Total 2 out of probable 3, 67% (third is *menelaus*).

*Morpho achillaena paulista* Fruhst., 1912: c

*Morpho anaxibia anaxibia* (Esper, 1798): u, Feb.–March

[1] We also have seen and collected a fair number of identifiable Sphingidae, Dysschematidae, Saturnoidea and other Heterocera from the Belo Horizonte area; these likewise show a mixture of forms typical of the cerrado and others of the Serra do Mar, including (as with Rhopalocera) a number of species evidently not present in Paraopeba at the southeastern limit of the cerrado (see Part I) We do not judge these records to be of sufficient completeness or interest to be included in this paper, especially as we have only begun work on the Heterocera of the cerrado; however, we will be glad to provide information on them to interested persons.

SATYRINAE: Total 12 out of estimated 50, 24%.
****Pierella nereis*** (Drury, 1782): r
*Taygetis virgilia* (Cr., 1779): u
*Taygetis celia* (Cr., 1782): u
*Pareuptychia ocirrhoe ocirrhoe* (F., 1777): u
*Hermeuptychia hermes hermes* (F., 1775): c
*Pharneuptychia pharella* (Butl., 1866): u
*Yphthimoides angularis* (Butl., 1867): u
*Yphthimoides celmis* (Godt., 1823): u
*Paryphthimoides* (?) *vestigiata* (Butl., 1867): u
*Haywardina stelligera* (Butl., 1874): r
*Argyreuptychia* (?) *terrestris* (Butl., 1866): r
*Godartiana muscosa* (Butl., 1870): c

BRASSOLINAE: Total 9 out of estimated 15, 60%.
*Brassolis sophorae laurentii* Stich., 1925: c
***Narope cyllarus*** Westw., 1851: r
*Opsiphanes batea* (Hbn., 1821): u, summer
*Opsiphanes cassiae lucullus* Fruhst., 1907: u
*Opsiphanes invirae remoliatus* Fruhst., 1907: u
*Opsiphanes quiteria meridionalis* Stgr., 1887: r
*Eryphanis reevesii* (Dbldy., 1849): r
*Caligo illioneus illioneus* (Cr., 1776): c
*Caligo arisbe* (Hbn., 1825): u, summer

DANAINAE: Total 3 out of probable 4, 75% (the fourth, *Ituna ilione*, is known from Carmo do Rio Claro, Minas Gerais, in the western tip of the blend zone)
*Danaus* (*Danaus*) *erippus* (Cr., 1775): c
*Danaus* (*Anosia*) *gilippus gilippus* (Cr., 1775): c
*Lycorea ceres ceres* (Cr., 1776): c

ITHOMIINAE: Total 19 out of estimated 25, 76%.
*Hypoleria plisthenes* d'Almeida, 1958: u
*Hypoleria salonina* (Hew., 1855): u
*Pseudoscada erruca* (Hew., 1855): u
*Pteronymia carlia* (Schaus, 1902): u
*Episcada carcinia* (Schaus, 1902): u
*Episcada sylvo* (Geyer, 1832): u
*Dircenna dero* (Hbn., 1823): c
*Dircenna rhoeo* Feld., 1860: r
*Aeria olena* (Weym., 1875): a
*Oleria aquata* (Weym., 1895): u
*Placidula euryanassa* (Feld., 1860): u, somewhat seasonal
*Ithomia agnosia agnosia* Hew., 1854: c
*Ithomia drymo drymo* Hbn., 1816: u
***Hypothyris laphria*** (Dbldy., 1847): r
*Hypothyris daeta* (Bdv., 1836): u
***Sais rosalia rosalinde*** Weym., 1890: r, local
*Mechanitis lysimnia* (F., 1793): c
*Mechanitis polymnia casabranca* Haensch, 1905: c
*Tithorea harmonia pseudethra* Butl., 1873: r

ACRAEINAE: Total 6 out of probable 8, 75%; all highly seasonal.
***Actinote conspicua*** Jord., 1913: r
*Actinote surima* Schaus, 1902: c
*Actinote pyrrha* (F., 1775): c
*Actinote pellenea* Hbn., 1821: u

*Actinote rhodope* d'Alm., 1922: u
*Actinote genitrix* d'Alm., 1922: u, represents form moesa d'Alm., 1925

HELICONIINAE: Total 12 out of probable 15, 80%.
*Heliconius* (*Heliconius*) *sarae apseudes* (Hbn., 1818): u
*Heliconius* (*Heliconius*) *erato phyllis* (F., 1775): a
*Heliconius* (*Heliconius*) *besckei* Mén., 1857: c
*Heliconius* (*Heliconius*) *ethillus narceus* Godt., 1819: c
*Heliconius* (*Eueides*) *isabellae dianasus* (Hbn., 1806): u
*Heliconius* (*Eueides*) *pavanus* Mén., 1857: r
*Heliconius* (*Eueides*) *alipherus* (Godt., 1819): c
*Colaenis iulia iulia* (F., 1775): c
*Dione juno juno* (Cr., 1779): u
****Dione moneta*** Hbn., 1825: r
*Agraulis vanillae maculosa* (Stich., 1907): c
*Dryadula phaetusa* (L., 1758): c, local

NYMPHALINAE, CHARAXINAE: Total 56 out of estimated 80, 70%.
*Euptoieta hegesia hegesia* (Cr., 1780): r
*Phyciodes thymetus thymetus* (F., 1787): c
*Phyciodes sejona* Schaus, 1902: c
*Phyciodes lansdorfi* (Godt., 1821): u
*Phyciodes ithra* (Kirby, 1871): c
*Chlosyne lacinia saundersi* Dbldy., 1847: u
*Vanessa virginiensis brasiliensis* (Moore, 1883): r
*Vanessa myrinna* (Dbldy., 1849): u
*Junonia evarete evarete* (Cr., 1779): c
*Anartia jatrophae jatrophae* (Joh., 1763): c
***Anartia amathea roeselia*** (Eschsch., 1821): c, local
*Metamorpha stelenes stelenes* (L., 1758): c
*Metamorpha trayja* (Hbn., 1823): u
*Hypanartia lethe* (F., 1793): u
*Limenitis* (*Adelpha*) *syma* (Godt., 1823): c
*Limenitis* (*Adelpha*) *mincia* Hall, 1938: u
*Limenitis* (*Adelpha*) *poltius* Hall, 1938: u
*Limenitis* (*Adelpha*) *plesaure heredia* Fruhst., 1915: c
*Limenitis* (*Adelpha*) *cytherea herennia* Fruhst., 1915: c
*Limenitis* (*Adelpha*) *thoasa gerona* (Hew., 1868): c
*Marpesia chiron* (F. 1775): u
*Dynamine tithia* (Hbn., 1823): u
*Dynamine mylitta mylitta* (Cr., 1782): c
*Dynamine artemisia* (F., 1793): u
*Dynamine agacles* (Dalm., 1823): u
*Dynamine athemon maeon* (Dbldy., 1849): r
***Catonephele sabrina*** (Hew., 1852): r
*Callicore pygas thamyras* (Mén., 1857): u, winter only; may be replaced by *splendens* in summer as on the planalto
*Callicore selima selima* (Guenée, 1872): u
*Callicore sorana* (Godt., 1823): c
*Diaethria candrena* (Godt., 1821): u
*Diaethria eluina* (Hew., 1852): r
*Diaethria clymena janeira* Feld., 1862: c
*Epiphile hubneri* Hew., 1861: u (seasonally common)
*Epiphile orea* Hbn., 1823: u
*Temenis laothoe bahiana* Fruhst., 1907: u
*Cybdelis phaesyla* Hbn., 1825: erratic, seasonal

*Evonyme margarita* (Godt., 1823): c seasonally
****Evonyme bechina* (Hew., 1852): r
*Mestra hypermestra apicalis* (Stgr., 1888): local
*Hamadryas ferentina ferentina* (Godt., 1821): u
*Hamadryas feronia obumbrata* (Fruhst., 1916): c
*Hamadryas epinome* (Feld., 1867)
and/or *iphthime gervasia* (Fruhst., 1916): u
*Hamadryas amphinome aegina* (Fruhst., 1916): u
*Hamadryas laodamia* (Cr., 1776): u
*Biblis hyperia hyperia* (Cr., 1779): c
*Doxocopa laurentia* (Godt., 1823): local
*Doxocopa kallina* (Stgr., 1888): r
*Colobura dirce* (L., 1758): u
*Prepona demophon extincta* Stgr., 1886: c
*Anaea* (*Zaretis*) *itys strigosus* (Gmelin, 1788–93): u
*Anaea* (*Hypna*) *clytemnestra hubneri* (Butl., 1866): u
*Anaea* (*Memphis*) *appias* (Hbn., 1825): u
*Anaea* (*Memphis*) *ryphea phidile* (Geyer, 1834): c
*Anaea* (*Memphis*) *otrere* (Hbn., 1825): u
*Anaea* (*Memphis*) *arachne victoria* (Druce, 1877): u

LIBYTHEIDAE: 1 out of 1, 100%
*Libytheana carinenta* (Cr., 1779): r

LYCAENIDAE
RIODININAE: Total 20 out of estimated 80, 25%; all very local.
*Hamearis campestris* (Bates, 1868): c
*Euselasia hygenius occulta* Stich., 1919: u
*Leucochimona philemon mathata* (Hew., 1873): u
*Eurybia dardus misellivestis* Stich., 1910: u
*Eurybia elvina tephrias* Stich., 1915: r
*Lyropteryx terpsichore terpsichore* Westw., 1851: r
*Calephelis nilus* (Feld., 1861): u
*Chalodeta epijessa calicene* (Hew., 1866): r
*Riodina lycisca* (Hew., 1847): c
*Lymnas xenia erythra* (Mén., 1855): c
*Emesis lucinda fastidiosa* (Mén., 1855): u
*Emesis diogenia* Prittw., 1865: u
*Emesis ocypore zelotes* Hew., 1872 (?): u
*Apodemia paucipuncta* Spitz, 1930: u
*Anatole zygia epone* (Godt., 1824): u
*Anatole glaphyra modesta* Mengel, 1902: u
*Nymula calyce calyce* (Feld., 1862): c
*Nymula phillone* (Godt., 1824): u
*Stalachtis susanna* (F., 1787): u
*Stalachtis phlegia* (Cr., 1765): u

PLEBEJINAE, THECLINAE: Total 15 out of estimated 75, 20%.
*Leptotes cassius* (Cr., 1775): c
*Hemiargus ceraunus zachaeina* (Butl., 1872): c
*Pseudolycaena marsyas* (L., 1764): u
*Mithras hemon* (Cr., 1775): u
**Atlides cosa* (Hew., 1867): u
*"Thecla" meliboeus* (F., 1793): c
*Rekoa palegon* (Cr., 1780): c
*"Thecla" crambusa* Hew., 1874: u
*Callicista mulucha* (Hew., 1874): u

*Callicista thius* (Hbn., 1832): c
*Callicista faunalia* (Hew., 1868): c
*"Thecla" phrutus* Hbn., 1832: r
*"Thecla" sophocles* (F., 1793): u
*"Thecla" tarania* Hew., 1868: u
*"Thecla" aphaca* Hew., 1867: u
A further 15 species of "Thecla" have been collected and still await identification.

PIERIDAE: Total 28 out of probable 32, 88%.
*Eurema* (*Pyrisitia*) *tenella* (Bdv., 1836): u
*Eurema* (*Pyrisitia*) *leuce* (Bdv., 1836): c
*Eurema* sp.: local (close to *dina*)
*Eurema* (*Eurema*) *deva* (Dbldy., 1847): c
*Eurema* (*Eurema*) *arbela arbela* Geyer, 1832: c
*Eurema* (*Eurema*) *musa* (F., 1793): r, winter
*Eurema* (*Eurema*) *phiale majorina* (d'Alm., 1932): r, summer
*Eurema* (*Eurema*) *albula* (Cr., 1775): c
*Eurema* (*Eurema*) *elathea elathea* (Cr., 1777): c
*Phoebis* (*Aphrissa*) *statira* (Cr., 1777): u
*Phoebis* (*Phoebis*) *neocypris* (Hbn., 1823): r
*Phoebis* (*Phoebis*) *argante argante* (F., 1775): u
*Phoebis* (*Phoebis*) *philea philea* (Joh., 1767): u
*Phoebis* (*Phoebis*) *sennae sennae* (L., 1758): c
*Anteos menippe* (Hbn., 1819): c
*Anteos clorinde* (Godt., 1823): c, seasonal
*Leucidia elvina* (Godt., 1819): c
*Ascia monuste monuste* (L., 1764): c
*Appias drusilla drusilla* (Cr., 1777): u
*Hesperocharis anguitea* (Godt., 1819): u
*Melete lycimnia paulista* (Fruhst., 1907): c
*Pereute antodyca* (Bdv., 1836): r
*Catasticta bithys* (Hbn., 1825): r
*Archonias tereas* (Godt., 1819): u
*Dismorphia psamathe* (F., 1793): u
*Dismorphia thermesia* (Godt., 1819): u, local
*Dismorphia astyocha* Hbn., 1824: r
*Pseudopieris nehemia* (Bdv., 1836): u

PAPILIONIDAE: Total 12 out of estimated 20, 60%. Almost all species are present only in summer (exceptions noted).
*Battus* (*Parides*) *agavus* (Drury, 1782): u
*Battus* (*Parides*) *bunichus* (Hbn., 1822): u
*Battus* (*Parides*) *diodorus* (Hoppf., 1866): c, local (also sparingly in winter)
**Battus* (*Parides*) *nephalion* (Godt., 1819): r
*Battus* (*Battus*) *polydamas polydamas* (L., 1758): c (also occurs in winter)
*Papilio anchisiades capys* (Hbn., 1809): c, erratically seasonal
**Papilio astyalus astyalus* Latr., 1819: c, local
*Papilio hectorides* Esper, 1794: c (also occasionally in winter)
*Papilio scamander grayi* Bdv., 1836: c
*Papilio thoas brasiliensis* Roths. & Jord., 1906: c, also flies in winter
*Papilio torquatus polybius* Swainson, 1823: c
*Graphium lysithous lysithous* (Hbn., 1821): r

HESPERIIDAE: Total 74 out of an estimated 250, 30%
**Pyrrhopyge pelota* Plötz, 1879: u
**Elbella menecrates* (Mab., 1878): r

*Mimoniades versicolor versicolor* (Latr., 1823): r
**Mysoria barcastus barta* Ev., 1951: r
*Myscelus amystis epigona* H.-Sch., 1869: r
**Phocides polybius phanius* (Burm., 1880): u
**Phocides pigmalion hewitsonius* (Mab., 1883): r
*Aguna asander asander* (Hew., 1867): u
*Codatractus aminias* (Hew., 1867): r
*Urbanus proteus proteus* (L., 1758): u
*Urbanus esta* Ev., 1952: u
*Urbanus viterboana alva* Ev., 1952: u
*Urbanus dorantes dorantes* (Stoll, 1790): c
*Urbanus teleus* (Hbn., 1821): u
*Urbanus simplicius* (Stoll, 1790): c
*Urbanus procne* (Plötz, 1881): u
*Urbanus chalco* (Hbn., 1823): u
*Urbanus virescens* (Mab., 1877): u
*Astraptes fulgerator fulgerator* (Walch, 1775): r
*Astraptes anaphus anaphus* (Cr., 1777): r
*Autochton reflexus* (Mab. & Boull., 1912): c
*Autochton zarex* (Hbn., 1818): r
*Autochton itylus* (Hbn., 1823): u
*Ablepsis vulpinus* (Hbn., 1820): r
*Spathilepia clonius* (Cr., 1775): r
*Caicella calchas* (Herr.-Sch., 1869): r
*Sophista latifasciata latifasciata* (Spitz, 1930): r
*Polyctor polyctor polyctor* (Prittw., 1868): u
*Nisoniades bipuncta* (Schaus, 1902): r
*Morvina fissimacula fissimacula* (Mab., 1878): r
*Viola violella* (Mab., 1897): c
*Trina geometrina geometrina* (Feld., 1867): u
*Diaeus lacaena lacaena* (Hew., 1871): r
*Quadrus u-lucida parabus* Mielke, 1968: r
*Gindanes brebisson brebisson* (Latr., 1824): r
*Pythonides jovianus fabricii* Kirby, 1871: u
*Pythonides lancea* (Hew., 1868): u
*Sostrata cronion* (Feld., 1867): u
*Mylon menippus* (F., 1776): c
*Xenophanes tryxus* (Stoll, 1780): c
*Antigonus erosus* (Hbn., 1812): u
*Antigonus liborius liborius* Plötz, 1884: r
*Zopyrion evenor evenor* (Godm. & Salv., 1901): r
*Achlyodes busirus rioja* Ev., 1953: u
*Achlyodes mithradates thraso* (Hbn., 1807): u
*Grais stigmaticus stigmaticus* (Mab., 1883) : r
*Timochares trifasciata trifasciata* (Hew., 1868) r
*Chiomara punctum* (Mab., 1878): u
*Pyrgus oileus orcus* (Stoll, 1780): c
*Heliopetes macaira orbigera* (Mab., 1888): r
*Heliopetes domicella willi* (Plötz, 1884): r
*Heliopetes arsalte arsalte* (L. 1758): c
*Anthoptus epictetus* (F. 1793): c
*Phanes rezia* (Plötz, 1883): r
*Cymaenes gisca* Ev., 1955: r
*Callimormus saturnus* (Herr.-Sch., 1869): u
*Vehilius stictomenes stictomenes* (Butl., 1877): u

*Vehilius clavicula* (Plötz, 1884): r
*Moeris remus* (F., 1798): u
*Cobalopsis potaro* (Will. & Bell, 1931): u
*Vettius lucretius* (Latr., 1824): u
*Vettius lafresnayei lafresnayei* (Latr., 1824): r
*Vettius artona* (Hew., 1868): r
*Vettius diversus diversus* (Herr.-Sch., 1869): c
*Vettius marcus marcus* (F., 1787): c
*Onophas columbaria distigma* Bell, 1930: r
*Miltomiges cinnamomea* (Herr.-Sch., 1869): u
*Cobalus virbius hersilia* (Plötz, 1882): u
*Perichares philetis adela* (Hew., 1867): u
*Hylephila phyleus phyleus* (Drury, 1780): c
*Polites vibex catilina* (Plötz, 1886): c
*Wallengrenia premnas* (Wallengr., 1860): r
*Lerodea eufala eufala* (Edw., 1869): r
*Saliana longirostris* (Sepp, 1848): u

The list above contains at least nine species and subspecies (3½% of the total 269 of an estimated 658 total fauna) which are typical of the cerrado area of the planalto, not normally occurring much to the south of the blend zone into the Serra do Mar (*Sais rosalia rosalinde, Ithomia agnosia agnosia, Evonyme bechina, Diaethria eluina, Callicore sorana, Eurybia elvina tephrias, Stalachtis phlegia, Battus* (*Parides*) *diodorus*, and *Sophista latifasciata*). On the other hand, it contains 33 species and subspecies typical of the Serra do Mar which are absent from the list for the cerrado in Part I (*Pteronymia carlia, Episcada carcinia, Actinote conspicua, Actinote genitrix, Heliconius* (*Heliconius*) *sarae apseudes, Heliconius* (*Eueides*) *pavanus, Limenitis* (*Adelpha*) *syma, Limenitis* (*Adelpha*) *poltius, Catonephele sabrina, Evonyme margarita, Doxocopa kallina, Anaea* (*Hypna*) *clytemnestra hubneri, Anaea* (*Memphis*) *appias, Anaea* (*Memphis*) *otrere, Pierella nereis, Narope cyllarus, Eryphanis reevesii, Caligo arisbe, Opsiphanes batea, Euselasia hygenius occulta, Emesis lucinda fastidiosa, Stalachtis susanna, "Thecla" meliboeus, Pereute antodyca, Catasticta bithys, Battus* (*Parides*) *agavus, Battus* (*Parides*) *bunichus, Papilio astyalus, Papilio hectorides, Elbella menecrates, Vettius lafresnayei lafresnayei, Miltomiges cinnamomea*, and *Onophas columbaria distigma*), and a further 14 southern species and subspecies which are to be regarded as marginal in the cerrado, recorded from only one locality (in some cases, dubiously) and generally fewer than five individuals (*Haywardina stelligera, Placidula euryanassa, Ithomia drymo, Pseudoscada erruca, Limenitis* (*Adelpha*) *mincia, Epiphile hubneri, Cybdelis phaesyla, Chalodetta epijessa calicene, Anatole zygia epone, Dismorphia astyocha, Eurema phiale majorina, Leucidia elvina, Graphium lysithous*, and *Papilio scamander grayi*). The total list thus shows about 18% of

species which are typical of southeastern Brazil and reach their normal northwestern limit within the blend zone, appearing marginally if at all within the cerrado portion of the central plateau.

The remaining species are found in both the Serra do Mar and the cerrado (many being spread over much of tropical America), with the exception of *Hypoleria plisthenes* which may be endemic to the blend zone and certainly has its metropole within it.

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### Literature Cited

Brown, K. S. & O. Mielke, 1967. Lepidoptera of the Central Brazil Plateau. I. Preliminary List of Rhopalocera. *Jour. Lepid. Soc.* 21 (2): 77–106; 21 (3): 145–168.

## *EUSTIXIA PUPULA* (PYRALIDAE) ON CRUCIFERAE

The food plant of *Eustixia pupula* Hübner seems to be unrecorded in the literature, and the species is not cited in various reviews of insects associated with Cruciferae (Hering 1932, Pimentel 1961). During an investigation of the biology of *Pieris* in ruderal situations at Philadelphia, Pa. in 1965–66, a small pyralid larva was encountered repeatedly, but infrequently, on various wild and cultivated Cruciferae in the Eastwick section. An individual taken from *Lepidium virginicum* L. (Virginia peppergrass) on August 27, 1966, and confined in a small box spun an opaque cocoon incorporating leaf debris two days later and eclosed as *E. pupula* during the first week of November. Larvae were also found on cultivated cabbage, *Brassica oleracea* L. cultivars., and on *B. nigra* (L.) Koch. A larva was taken on the latter plant at Ithaca, N.Y., August 21, 1967. It is a leaf feeder, and on cabbage has been found on the undersides of leaves on the outer part of the head. *E. pupula* is uncommon at light and the larvae appear hardly common enough to warrant consideration as possible pests. Dates of adult captures at Philadelphia are May–